SDMS Doc ID 2003018

PHASE I REPORT
TASK ASSIGNMENT K-3
EAST WASHINGTON AREA
PHOENIX AZ

JUNE 1989
DRAFT

KLEINFELDER

transmittal

Date 6-6-89

File 52-1020-01

Copies Lowell Carty

To Jim McDonald
ADEQ
2005 N. Central Ave., Rm. 400
Phoenix, AZ 85004

Subject Draft / Final Phase I Report - K-3

We are sending ☐ Attached ☐ Under separate cover

The following: 2 copies of the Draft / Final Phase I Report, East Washington Study Area

Via:

- ☐ Messenger
- ☐ First Class Mail
- ☐ Air
- ☐ Express
- ☐ United Parcel
- ☐ Air Freight
- ☒ hand delivered by. S. Bloomfield

Transmitted:

- ☐ As Requested
- ☐ For Approval
- ☐ For Your Use
- ☒ For Review & Comment

Remarks

Jim,
We have forwarded two copies of the report instead of one in an effort to help ADEQ expedite the review process.

By Ron Palmer

KLEINFELDER

transmittal

Date 6-6-89

File 52-1020-02

Copies T. McDonald

To Lowell Carty
ADEQ
2005 N. Central Ave, Rm. 400
Phoenix, AZ 85004

Subject K-3 Facilities list

We are sending ☒ Attached ☐ Under separate cover

The following:

K-3 (East Washington Study Area) facilities list sorted according to address.

Via:

- ☐ Messenger
- ☐ First Class Mail
- ☐ Air
- ☐ Express
- ☐ United Parcel
- ☐ Air Freight
- ☒ Hand Delivered

Transmitted:

- ☐ As Requested
- ☐ For Approval
- ☒ For Your Use
- ☐ For Review & Comment

Remarks

This list is not the same list that appears in the current version of the Phase I Report. Per your request all UST sites have been left on this list.

By Ron Thurner

NOTE TO REVIEWERS

The graphics included in this draft final report have been reproduced by the most economical reproductive techniques while still allowing a review of the data and information. Upon approval of this report and incorporation of appropriate changes, more sophisticated reproductive techniques will be employed in order to enhance the asthetic quality of the graphics.

Phase I Report
East Washington Area
Phoenix, Arizona
Task Assignment K-3

DRAFT

June 1989

KLEINFELDER, INC.
4920 E. McDowell Road, Suite 101
Phoenix, Arizona 85008

A report prepared for:

State of Arizona
Department of Environmental Quality
2005 North Central Avenue
Phoenix, Arizona 85004

Phase I Report
East Washington Area
Phoenix, Arizona
Task Assignment K-3

Kleinfelder Job No. 52-1020-01
ADEQ Contract No. 2207-000000-3-3-DM-8038

DRAFT

June 1989

KLEINFELDER, INC.
4920 E. McDowell Road, Suite 101
Phoenix, Arizona 85008

(602) 231-0992

DISCLAIMER

This report has been reviewed by the Arizona Department of Environmental Quality (ADEQ) and other interested parties. This document does not represent a decision or administrative finding of culpability or liability by ADEQ, its consultants, or any other party. This document represents a compilation of data, and lists facilities for continuing evaluation.

ADEQ may use the information contained in this document in addition to any other information that might be available, to make a further determination of any course of action to identify and, as appropriate, remediate sources of environmental contamination.

DRAFT

DRAFT

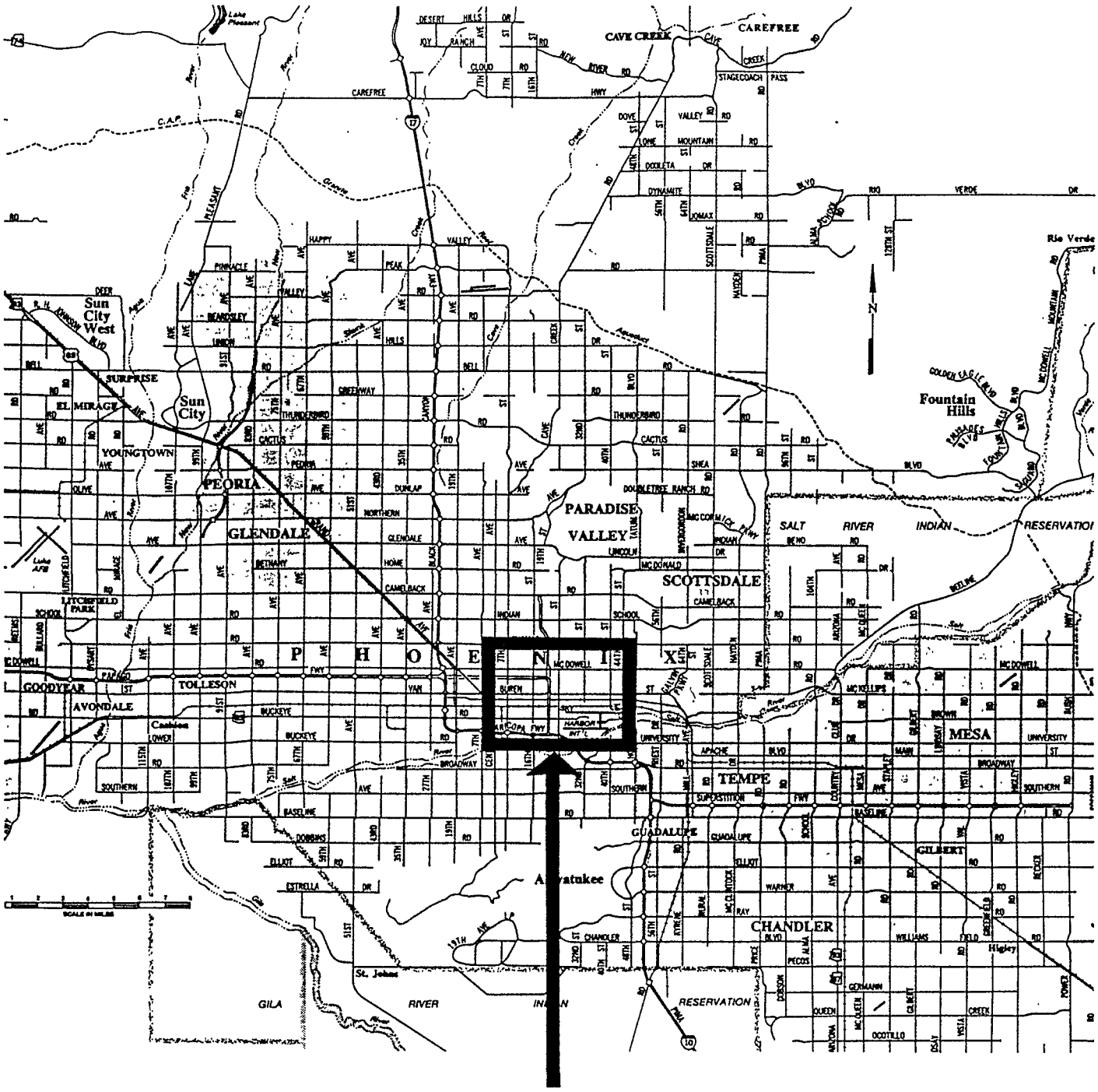
EXECUTIVE SUMMARY

This Phase I Report has been prepared by Kleinfelder, Inc. (as consultant) with assistance from Malcolm Pirnie, Inc. (as subconsultant) as part of the requirements of Contract Number 2207-000000-3-3-DM-8038 with the Arizona Department of Environmental Quality (ADEQ) for Task Assignment K-3, East Washington (formerly Eastlake Park) Study Area, Phoenix, Arizona (Figure 1). This Phase I Report describes the results from data gathering activities and presents a listing of facilities for continuing evaluation. The report was prepared in support of activities under the State's Water Quality Assurance Revolving Fund (WQARF), which has as its primary goal the maintenance of beneficial uses of the State's water resources. A draft report was submitted to ADEQ on October 7, 1988. ADEQ subsequently made the report available for public review and comment. The comments received are included as an appendix to this report.

For this study, a literature and records search was conducted to provide background information on the geology, hydrogeology, and present and past land use, and to identify potential chemical manufactures, users, and disposers within the East Washington Study Area. The literature and records search involved a review of various local, State, and Federal documents and records. In addition, aerial photographs dating back to 1953 were reviewed and used in identifying potential sites of chemical releases. Historical water quality data were collected and compiled using Kleinfelder's data management software (ENVIS). These data were then compared with Federal Maximum Contaminant Levels (MCLs) and Arizona Department of Health Services (ADHS) Action Level guidelines (AALs). MCLs are the enforceable drinking water standards set by the U.S. Environmental Protection Agency (EPA). AALs are draft interim public drinking water supply criteria set, and currently being revised, by the ADHS. The compilation of results was reviewed and arranged in groupings of elevated chemical concentrations, which outlined areas of potentially affected ground water.

Six areas in the East Washington Study Area were identified in which concentrations of volatile organic compounds (VOCs) exceeded MCLs or AALs. The VOCs most commonly observed at

DRAFT



East Washington Study Area

KLEINFELDER

Project Number 52-1020-01 June 1989

ADEQ Task Assignment K-3
East Washington Study Area
Phoenix, Arizona

VICINITY MAP

FIGURE 1

these sites were trichloroethene (TCE), tetrachloroethene (PCE), trans-1,2-dichloroethene (trans-1,2-DCE), 1,1-dichloroethene (1,1-DCE), benzene, vinyl chloride, and chloroform. The concentrations of the VOCs detected at or above MCLs or AALs are listed in Appendix D of this report. The six general geographic locations are:

1. 48th Street and McDowell Road
2. 40th Street and the Salt River Channel
3. 24th Street and Van Buren Street
4. 20th Street and Mojave Street
5. 16th Street and Jackson Street
6. Central Avenue and Washington Street

The geographic locations are given for ease of reference purposes only and are not to be interpreted as "plumes". Several of these geographic locations may be part of a single plume; however, there are insufficient data to positively link them together at this time.

The compilation of historic ground water quality data, as well as the review of literature and records, and a reconnaissance of properties and wells, led to a limited sampling of ground water and soils in order to supplement historic data. Ground water samples were analyzed for general minerals, volatile organic compounds (VOCs), and metals.

The analytical results from the samples collected as part of this Phase I study indicated the presence of detectable levels of VOCs in five wells. In four of these wells, VOCs were detected at concentrations above MCLs and AALs. The four wells and associated VOCs are:

Well (A-1-3)8bdal (Old Courthouse - north well)

1,1-DCE	7.3 ug/L
PCE	1.4 ug/L
TCE	37.5 ug/L

Well (A-1-3)8bda2 (Old Courthouse - south well)

1,1-DCE	15 ug/L
PCE	2 ug/L
TCE	58 ug/L

DRAFT

Well (A-1-3)8cdd (piezometer located at the NW corner of Buckeye Road and Central Avenue)

PCE	1.4 ug/L
TCE	5.7 ug/L

Well (A-1-3)10aa (Sun Motor Exchange)

0.9 feet of floating product measured. Analytical results indicated 230,000 ug/L of fuel hydrocarbons in the C6-C24 range.

At two locations, concentrations of PCE in the soils exceeded the ADHS recommended soil cleanup level of 0.067 mg/kg. The locations and associated PCE concentrations were:

1601 East Madison Street (Western Automatic Machine Company)

4.6 mg/kg

721 South 12th Place (B.S.& W. Energy Corporation)

0.5 mg/kg

Based on the results of records and literature searches and field reconnaissance, a list of approximately 995 facilities was compiled for further study. In July, 1988, a questionnaire was sent to these facilities requesting information on chemical use and past handling practices, and the nature of facility activities. Approximately 280 responses were subsequently returned.

The facilities were then evaluated by: reviewing available documents and literature regarding potential sources; observing existing facilities and environmental practices during field reconnaissance; reviewing the responses to the questionnaire; and assessing the proximity of the facility to known chemical concentrations in the ground water.

Evaluation of the facilities resulted in the determination of the most appropriate investigative activities to be carried out at specific facilities during the next phase of investigation.

The primary uses of ground water within the study area are irrigation, cooling, and industrial. Although wells in the area are not generally used for municipal supply, migration of the observed chemicals could possibly impact the future use of the ground water. It is also possible that any private domestic wells located downgradient could be affected.

DRAFT

This report is based on the available background information, collected field data, responses to the questionnaire, and the scope of work approved by ADEQ. No inference as to the completeness of the available information is made; and it should be understood that the field effort was not exhaustive. The level of effort expended on field reconnaissance and sampling was given by the project's Scope of Work and budgetary allowances. For these reasons, the listing of facilities is only intended to be a list of facilities for continuing evaluation.

Based on the above findings and limitations, a number of recommendations are made. These include:

- redefining the study area's boundaries
- reissuing the questionnaire to those facilities that did not respond
- continuation of site inspections and record searches
- characterization and delineation of affected areas
- remediation of affected ground water
- frequent monitoring of the area's ground water.

DRAFT

TABLE OF CONTENTS

			Page
Executive Summary			
1.	Project Purpose and Background		1-1
	1.1	Summary of the Water Quality Assurance Revolving Fund	1-1
		1.1.1 Purpose	1-1
		1.1.2 Key Elements of WQARF	1-1
		1.1.3 ADEQ Programs Funded by WQARF	1-1
		1.1.4 Use of WQARF by Political Subdivisions and State Agencies	1-3
		1.1.5 Process for Selecting and Remediating Sites	1-3
		1.1.6 Enforcement Under WQARF	1-3
		1.1.7 Work by WQARF Contractors	1-4
		1.1.8 Proposed Phase II Activities	1-6
	1.2	Introduction	1-7
	1.3	Objectives	1-8
	1.4	Purpose	1-9
	1.5	Background	1-9
2.	Geologic and Hydrogeologic Conditions		2-1
	2.1	Introduction	2-1
	2.2	Geologic Conditions	2-1
		2.2.1 Regional Geology	2-1
		2.2.2 Regional Geologic Structure	2-2
		2.2.3 Local Geology	2-2
	2.3	Hydrogeologic Conditions	2-3
		2.3.1 Climatology	2-3
		2.3.2 Regional Hydrogeology	2-4
		2.3.3 Regional Ground Water Quality	2-5
		2.3.4 Hydrogeologic Conditions Underlying the East Washington Area	2-6
3.	Data Collection		3-1
	3.1	Introduction	3-1
	3.2	Literature and Records Search	3-1
	3.3	Questionnaires	3-6

DRAFT

	3.4	Field Activities	3-7
		3.4.1 Reconnaissance of Properties	3-7
		3.4.2 Reconnaissance of Wells	3-8
		3.4.3 Sampling of Wells	3-9
		3.4.4 Sampling of Soils	3-11
		3.4.5 Analysis of Soil and Ground Water Samples	3-13
		3.4.6 Quality Assurance/Quality Control	3-14
	3.5	Other Investigations Currently Underway	3-15
4.	Results of Investigation		4-1
	4.1.	Introduction	4-1
	4.2	Literature and Records Search	4-1
		4.2.1 Zoning	4-1
		4.2.2 Aerial Photograph Review	4-2
	4.3	Questionnaire Data	4-2
	4.4	Ground Water Quality Data	4-2
		4.4.1 Historic Data	4-2
		4.4.2 Recent Data	4-7
	4.5	Soil Sampling Data	4-12
	4.6	Distribution of Chemicals in the Ground Water	4-17
		4.6.1 Areal Distribution	4-17
		4.6.2 Vertical Distribution	4-23
5.	Determination of Phase II Investigative Activities		5-1
	5.1	Methodology	5-1
		5.1.1 Literature and Records Search	5-3
		5.1.2 Site Reconnaissance	5-4
		5.1.3 Questionnaire Responses and Compliance	5-5
		5.1.4 Proximity to Observed Chemicals in the Ground Water	5-5
	5.2	Continuing Evaluation of Facilities	5-6
6.	Conclusions		6-1
	6.1	Chemical Releases into the Ground Water	6-1
	6.2	Continuing Evaluation of Facilities	6-2
	6.3	Potential Effects of Ground Water Degradation	6-3
		6.3.1 Potential Impacts on Water Users	6-3
		6.3.2 General Health Effects of Chemicals	6-4

DRAFT

6.4 Limitations of Collected Information 6-4

7. Recommendations 7-1

7.1 Redefine Study Area Boundaries 7-1

7.2 Continuation of Investigations 7-1

7.3 Involvement of Facilities 7-2
7.3.1 Site Characterization 7-2
7.3.2 Remediation 7-2

7.4 Refine Estimate of Distribution of Chemicals in the Ground Water 7-2

7.5 Monitoring 7-3

8. Limitations 8-1

9. References 9-1

LIST OF TABLES

Table 4-1 Recent Ground Water Sampling Locations 4-8

Table 4-2 Summary of Recent Ground Water Sampling Results 4-9

Table 4-3 Recent Soil Sampling Locations 4-13

Table 4-4 Summary of Recent Soil Sampling Results 4-15

Table 4-5 Summary of VOCs Detected in the Ground Water in the East Washington Study Area 4-18

Table 4-6 Depths of Wells in Which VOCs Have Been Detected Above MCLs or ADHS Action Levels 4-24

Table 6-1 Locations of Potentially Affected Municipal Wells 6-3

LIST OF FIGURES

Figure No.	Description	Following Page No.
1.	Vicinity Map	1-7
2.	Ground Water Sampling Locations	3-9
3.	Soil Sampling Locations	3-12
4.	Process for Listing of Facilities for Continuing Evaluation	5-1
5.	Revised Study Area Boundary	7-1

DRAFT

APPENDICES

A. Facilities List
B. Sample Questionnaire
C. Laboratory Data Sheets
D. Analytical Data Exceeding Maximum Contaminant Levels or ADHS Action Levels
E. Comments on the Draft Phase I Report
F. Response to Comments

LIST OF PLATES

1. Regional Geology, Ground Water Contours and Areas of Observed Chemicals Above MCLs or ADHS Action Levels

2. Well Locations and Ground Water Quality

DRAFT

1 PROJECT PURPOSE AND BACKGROUND

1.1. Summary of the Water Quality Assurance Revolving Fund

1.1.1 Purpose

This section provides background information on the Water Quality Assurance Revolving Fund (WQARF), its major provisions, revenue sources, enforcement mechanisms, and how it was used in support and administration of this work.

1.1.2 Key Elements of WQARF

WQARF, described in ARS 49, Article 5, consists of State appropriations of $5 million per year, civil and criminal penalties, and recoveries from responsible parties, with a Fund cap of $25 million. The Fund may be used for Federal Superfund (CERCLA) match, remedial actions where there is no responsible party, emergency remedial actions, monitoring waters of the State, investigations, and administration. The statute defines remedial actions as those actions reasonable and necessary in the event of a threat or release of hazardous substances that may affect waters of the State, to monitor the release, dispose of material or take other actions necessary to minimize damage, and may include providing alternative water supplies.

1.1.3 ADEQ Programs Funded by WQARF

The following programs in the Arizona Department of Environmental Quality (ADEQ) are funded by WQARF:

DRAFT

- *Statewide Water Quality Monitoring*

  The Statewide water quality monitoring expenditures are authorized by ARS 49-282 B.6 and described in ARS 49-225. They are administered by the ADEQ Office of Water Quality and cover both surface water and ground water.

- *Health Effects Studies Conducted by ADHS*

  The health effects studies are administered via an intergovernmental agreement with Arizona Department of Health Services (ADHS), Division of Disease Prevention. The contract is monitored and administered by ADEQ and individual task assignments are issued requesting health-based criteria for unregulated substances, epidemiological studies, risk assessments, and the like.

- *Emergency Actions*

  ADEQ may access WQARF to support emergency actions on a case-by-case basis. There are two emergency contractors, Chemical Waste Management and Disposal Control Services, available on a 24-hour per day basis to respond throughout the State. WQARF-supported emergency actions have been taken by the ADEQ Emergency Response Unit at five sites to date.

- *Long-term Remedial Action Program*

  The present report covers one of the long-term remedial action sites under WQARF. An annual priority list process for selection of such long-term projects has been established. Three types of long-term remedial actions have been identified: those conducted by voluntary or responsible parties, those conducted by other state agencies or political subdivisions, and those conducted by ADEQ through its contractors where responsible parties have not been identified. The Department has two long-term remedial action contractors, Kleinfelder (with subcontractor Malcolm Pirnie), and The Earth Technology Corporation. To date, eight projects have involved ADEQ contractors (one of which this report addresses), eight have been conducted by political subdivisions, and three have been conducted by voluntary parties, for a total of 19 projects. Six new projects have been proposed for this year's priority list and seven projects from last year have been proposed for additional funding.

1.1.4 Use of WQARF by Political Subdivisions and State Agencies

The law provides for the use of the fund by political subdivisions of the State which use water for drinking water purposes, or by any State agency. The political subdivision must provide matching funds. The annual priority list process, described in A.A.C. R18-7-105. begins July 1 each year when ADEQ sends letters to all City and State agencies and places newspaper advertisements requesting applications. The applications, called letter of intent, are evaluated by ADEQ and a priority list is drafted and subject to a 30-day public comment period. ADEQ then writes decision records reserving funds for each site and gives the applicants 90 days to submit remedial action plans. An intergovernmental agreement incorporating the remedial action is then signed and invoices are paid as the work progresses.

1.1.5 Process for Selecting and Remediating Sites

ADEQ submits its own letters of intent at the same time the municipalities and other State agencies submit theirs. The letters of intent are evaluated by ADEQ staff using the eligibility and evaluation forms which assess the population and environment at risk; the routes of exposure; the amount, fate, and hazard of the contaminants; the possible extent of migration; the availability of responsible parties; the effectiveness of the proposed remedial action; its practicality and cost effectiveness; and the availability of other funding or enforcement mechanisms. The scores are reviewed by a committee which includes representatives of the Departments of Water Resources and Health Services and a draft priority list is drawn up.

Similarly, the remedial action plans are reviewed by ADEQ's technical staff. The remedial actions shall protect public health and the environment, provide for cleanup to allow the use of water, and be reasonable, necessary, and cost effective. Remedial action requirements are given in A.A.C. R18-7-108. Where public interest is expressed, a period of public review may be provided as given in A.A.C. R18-7-110.

1.1.6 Enforcement Under WQARF

Responsible party is defined in ARS 49-283. In general, a responsible party is defined as one who owned or operated the facility, owned or possessed the hazardous substance, or accepted the hazardous substance for transport to a disposal or treatment facility; and,

engaged in or permitted others in business, permitted the disposal, knew of the hazards or took contributing actions. ARS 49-285 provides for strict, joint, and several liability, which is retroactive. ADEQ may take civil action for cost recovery, request the court to impose a fine of $5,000 per day for violation of an order, or impose punitive damages up to three times the cost of the remedial action. A facility is not considered to be a responsible party merely because they use chemicals, are located in proximity to observed chemicals in the ground water, or own land which has ground water contamination beneath it.

Remediation is ADEQ's highest priority and in cases of imminent and substantial danger, ADEQ cleans up first and enforces later. In cases of long-term contamination where no immediate danger exists, ADEQ seeks responsible parties in accordance with the provisions of ARS 49-282.B.2. through 5.

1.1.7 Work by WQARF Contractors

The WQARF contractors were used for eight projects: Miracle Mile, Tucson; West Van Buren, Phoenix: West Central Phoenix; East Central Phoenix; East Washington, Phoenix (formerly Eastlake Park); South Mesa; Northeast Mesa; and Nogales Wash. The purpose of the work was to:

1) Investigate and identify the existence and extent of hazardous substances in the ground water,

2) Initiate the process of identifying the source and nature of the hazardous substances, and

3) Determine the danger to the public health or welfare or to the environment in order to provide for a timely, cost effective and reasonable cleanup of the contamination.

The contractors produced the following work products:

1) A Summary Report compiling:

   - Historic water quality and water level measurements,

DRAFT

- Analysis of historic aerial photography from the 1950s to the present for signs of disposal and discharge which could affect area surface water or ground water,

- Area-wide geologic and hydrologic conditions which may affect the rate and direction of contaminant movement,

- Zoning which allows for activities known to utilize chemicals or precursors to chemicals which were found in ground water, and

- Records searches for various incidents or violations which could indicate discharges of hazardous substances to the environment.

2) A workplan outlining further work to be done in Phase I

3) A soil sampling plan, along with the rationale for site selection

4) A ground water sampling plan, along with the rationale for site selection

5) A draft Phase I Report

ADEQ decided to have an open review process for the draft Phase I reports and disseminated them to public libraries, local agencies, and facilities identified in the reports. ADEQ also solicited comments and received numerous replies, many of which were critical of the process, the data, and its presentation in the report. As a result of the comments, ADEQ made the following changes:

1) Terminology and processes were standardized between the two contractors,

2) ADEQ prefaced the final reports with a letter defining the proposed future actions,

3) The terms "high, medium, or low priority facilities" were eliminated,

4) Written comments were incorporated in the appendices of the report along with a responsiveness summary,

5) Errors of fact and omission were corrected,

6) Site boundaries were recommended to be reduced where possible to encompass areas containing wells in which chemicals were observed above MCL's or Arizona action levels,

7) The term "suspected sources of contamination" and "potential responsible parties" were eliminated,

8) Information gathered by the contractors was indexed and made available for public review, and

9) Introductory chapters on WQARF requirements and processes were included.

1.1.8 Proposed Phase II Activities

Facilities, located in or near the areas of observed chemicals in the ground water, which previously failed to respond to the questionnaire, may be sent a second questionnaire by certified mail. Those which fail to respond to the second request may be subject to search warrant and record seizure. In allocating resources for Phase II, facilities which are scheduled for physical testing will be the first to receive additional investigation by ADEQ. Facilities scheduled for site inspections will be the second group, and facilities scheduled for records searches will be the third group addressed. Facilities which previously completed a questionnaire and are not identified for further technical investigations have been eliminated from Phase II activities at this time.

Physical testing may include soil gas monitoring, well installation, soil sampling, geophysical testing or additional monitoring. Site inspection may include visual and physical inspection of the facility, field screening measurements, employee interviews, determination of site operational and disposal history, a review of storage facilities for hazardous substances, and a review of the facility history of disposal, spills, leaks, fires, and emergency incidents. Records searches may include a review and compilation of facility records including chemical purchases, analytical data, wastewater discharge

records, water use records, hazardous waste manifests, activity records, invoices, and facility maps and plans, or, records from sources outside the facility such as historical aerial photographs, compliance records, wastewater discharge records, registered dry wells, registered underground storage tanks, fire department records, complaints, and analytical data. ADEQ may cease technical investigation of a facility dependent on information gathered or provided.

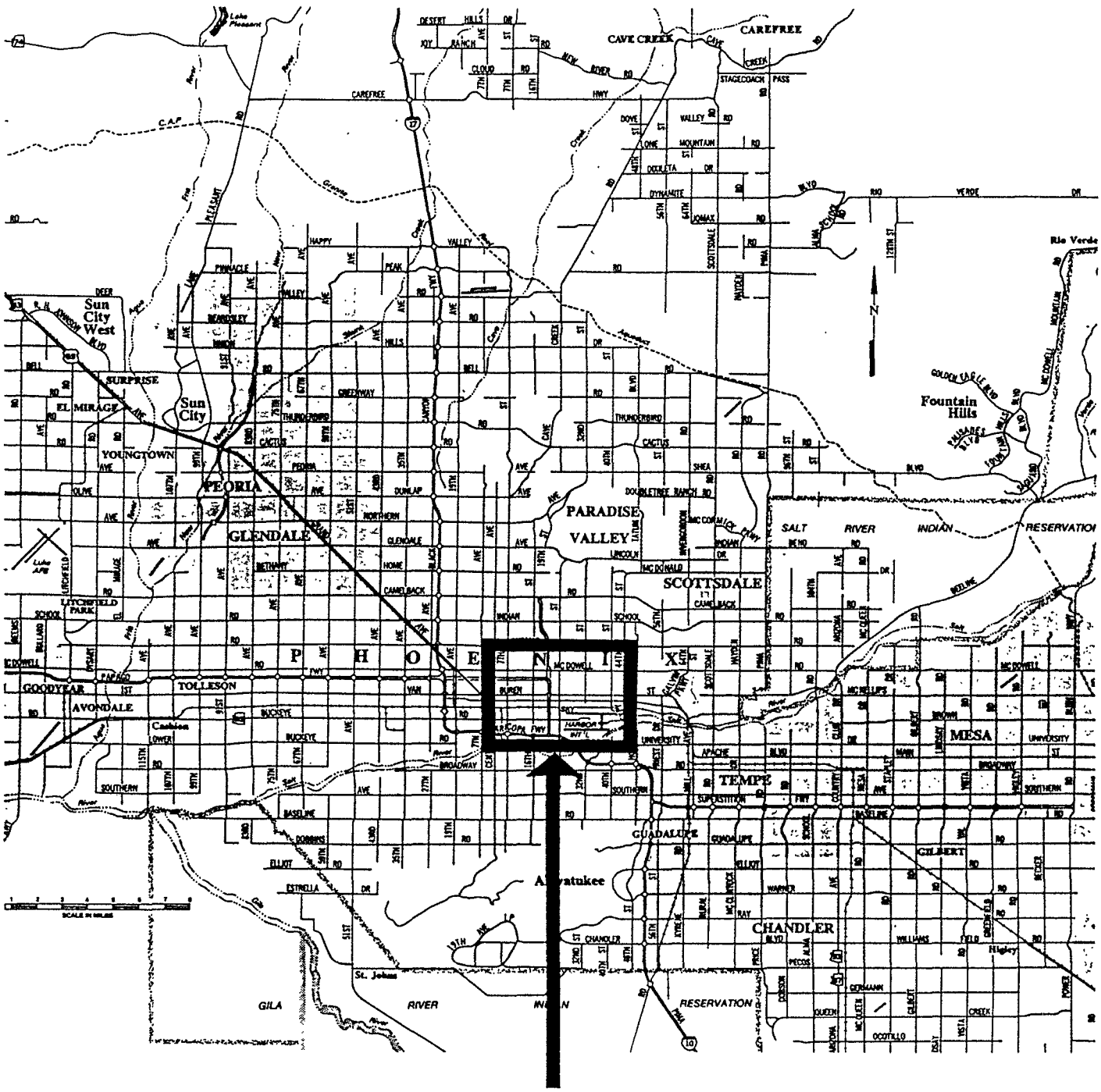
If a facility is determined by ADEQ to be a responsibly party, ADEQ will initiate the formal notice procedures which require ADEQ to show there has been a release or threat of a release of a hazardous substance from a facility which may present an imminent and substantial danger to the public health or welfare. ADEQ will encourage private parties to initiate voluntary cleanup actions at any time. ADEQ will also seek cost recovery and applicable penalties if responsible parties fail to perform remedial actions after being ordered pursuant to ARS 49-286 and 287. Where ADEQ cannot identify responsible parties, the Fund will be used to initiate remedial actions. ADEQ will oversee and coordinate work being conducted simultaneously in adjacent areas by private parties and contractors so as to avoid duplication. ADEQ will also provide for community relations including public presentations and written information.

1.2 Introduction

The project study area consists of approximately 24 square miles in southeastern Phoenix and is bounded by Thomas Road on the north, 7th Avenue on the west, 48th Street on the east, and a line even with Lower Buckeye Road on the south. The study area is illustrated in Figure 1.

Volatile organic compounds (VOCs) were first observed in the ground water in this area of the city when the Arizona Department of Health Services (ADHS) sampled a well irrigating the Eastlake Park grounds on July 29, 1983. The results indicated the presence of several VOCs. While the 19 wells known to be affected prior to this study are used for irrigation or commercial cooling towers and no municipal water supply wells have been found to be affected, the same aquifer is used as a municipal water supply in other areas of Phoenix. The general area of East Washington consists of residential, commercial, and industrial neighborhoods including Phoenix Sky Harbor International Airport, the main commercial aviation facility serving the Phoenix area.

DRAFT



East Washington Study Area

KLEINFELDER

Project Number 52-1020-01 June 1989

ADEQ Task Assignment K-3
East Washington Study Area
Phoenix, Arizona

VICINITY MAP

FIGURE 1

Historic ground water analyses have indicated the presence of at least fifteen volatile organic compounds (VOCs) at concentrations above the U.S. Environmental Protection Agency (EPA) Maximum Contaminant Levels (MCLs) and/or Arizona Department of Health Services (ADHS) Action Level guidelines (AALs) within the East Washington Study Area. MCLs are the enforceable drinking water standards set by the EPA. AALs are draft interim public drinking water supply criteria set, and currently being revised, by the ADHS.

1.3 Objectives

This Phase I Report has been prepared by Kleinfelder, Inc. (as prime consultant) and Malcolm Pirnie, Inc. (as subconsultant) as part of the requirements of Contract Number 2207-000000-3-3-DM-8038 with the Arizona Department of Environmental Quality (ADEQ) for Task Assignment K-3, East Washington Area, Phoenix, Arizona (Figure 1). In conducting Phase I, Kleinfelder was responsible for project management, the review of aerial photographs, questionnaire distribution and the processing of responses, the sampling of ground water and soils, the computer managing of historic ground water quality data, and the production of project-related reports. Malcolm Pirnie was responsible for collecting published data on regional and local geology and hydrogeology, the collection and assimilation of government records including available historic water quality data, the reconnaissance of properties and wells, and the listing of facilities. ADEQ staff wrote Section 1.1 of this report. This Phase I Report describes the findings from activities carried out during this study, and presents a list of facilities for continuing evaluation.

The objectives of this study are:

A. Establish a database consisting of available documents such as governmental records, technical papers, and pertinent hydrogeologic studies which can assist ADEQ in assessing potential environmental impacts and health effects.

B. Establish, from available or compiled technical data, more applicable site boundaries either within or beyond the previously described confines which will encompass the observed extent of chemicals in the ground water.

C. Conduct or coordinate further information gathering and field work necessary to list facilities which warrant additional study as to their potential for having contributed to the chemicals in the ground water.

D. List the facilities and respective investigative activities planned for the next phase of investigation.

1.4 Purpose

This report is intended to be a starting point for remediating ground water quality degradation in the study area. Presented as an appendix to this report is a list of facilities for continuing evaluation. The report also presents conclusions and recommendations relative to subsequent investigative efforts.

1.5 Background

In fulfilling one of the requirements of this contract, a Summary Report was submitted to ADEQ on April 29, 1988. The purpose of that report was to establish a database to assist ADEQ in assessing impacts on the ground water, and in evaluating the health effects associated with the use of the area's ground water. The work activities involved in the preparation of the Summary Report included: a literature and records search to provide background information on the geology and hydrogeology, land use, and potential chemical manufacturers and users within the area, and sites where potential uncontrolled releases may have occurred; a field reconnaissance of the area with emphasis on making observations in the industrial area and on confirming well locations; and a review of historical aerial photographs to identify land uses which are characteristic of chemical storage and use, or waste disposal.

The Summary Report discussed the available data in light of: 1) the hydrogeologic characteristics of the Salt River Valley Basin; 2) EPA MCLs promulgated under the Safe Drinking Water Act; and 3) draft ADHS interim criteria for public drinking water supply. The results of the data gathering efforts for the Summary Report are reviewed in Section 4 of this report.

In June of 1988, Kleinfelder submitted a Workplan to ADEQ which described the sequence of activities to be carried out during, and subsequent to, the preparation of the Summary Report. The purpose of the activities described in the Workplan was to assist with identifying potential sources of chemicals found in the ground water in the study area. These activities included further review of aerial photos, continued literature and records searches, development and

distribution of questionnaires to appropriate parties in the area, and design and implementation of soil and ground water sampling programs.

In July, 1988, a questionnaire was developed and mailed to facilities in the area which might manufacture, store, use, or dispose of chemicals. The information requested on this questionnaire included such things as industrial operations performed, dates of operation, chemical substances used, disposal practices, storage facilities on site, and spill records. The results of this questionnaire mailing are discussed in Section 4.

In August of 1988, Kleinfelder submitted to ADEQ Ground Water and Soil Sampling Plans which were designed to supplement historic data and aid in investigating the ground water contamination observed in the study area. The Ground Water Sampling Plan proposed the sampling of selected existing wells in the general area of chemicals found in the ground water. The Soil Sampling Plan proposed the sampling of soils at sites which appeared, on aerial photos, to have stained soils, chemical storage facilities, or other land-use practices which may potentially cause the release of chemicals into the ground water. Soil sampling sites were also selected based on an evaluation and interpolation of available water quality data, and field reconnaissance of the area. The sampling proposed in these plans was carried out during the month of August, 1988. The results of these sampling programs are also presented in Section 4.

Along with presenting a review of historic information and recently collected data, this Phase I Report presents and discusses a list of facilities for continuing evaluation. The list of facilities is presented in Appendix A. Conclusions and recommendations are given in Section 6 and 7, respectively. Related information collected or summarized during this phase of the investigation has been indexed and is available at ADEQ.

A draft of this Phase I Report was submitted to ADEQ on October 7, 1988. ADEQ subsequently made the report available for review and comment. The comments received are included as Appendix E to this report. Responses to those comments are also included in this report as Appendix F.

DRAFT

2 GEOLOGIC AND HYDROGEOLOGIC CONDITIONS

2.1 Introduction

This section presents a condensation of the geologic and hydrogeologic information as discussed in the Summary Report (Kleinfelder, 1988). The information given is derived from available published and unpublished reports, maps and other data sources and does not represent any findings from field work performed by the consultants. Discussed in this section are: regional and local geology; geologic structure; regional hydrogeology and ground water quality; and a description of the aquifer units underlying the study area, including ground water movement and quality. Determination of site-specific hydrogeologic conditions such as ground water gradient, flow direction, and velocity were not within the scope of this first phase of the study. Regional characteristics have been relied upon where they generally appear to be representative of the conditions underlying the study area. More detailed, site-specific investigations are planned for subsequent phases of the study.

2.2 Geologic Conditions

2.2.1 Regional Geology

The Phoenix area is located within the Salt River Valley Basin, which is part of the Basin and Range physiographic province as described by Fenneman (1931). The Salt River Valley Basin is a structural depression formed by Cenozoic crustal extension and is characterized by broad sloping valleys bounded by northwest-trending mountain ranges, including the McDowell, Superstition, Sierra Estrella, and White Tank Mountains.

The Salt River Valley Basin occupies a broad alluvial valley composed of Cenozoic (Oligocene to Recent) sedimentary deposits. The alluvial basin extends to maximum

projected depths of approximately 10,000 feet (Oppenheimer, 1980) and predominantly consists of consolidated to unconsolidated sands and gravels, with local discontinuous clays and silts. The valley floor elevations range from a minimum of 800 feet in the southwest portion of the basin to a maximum of 2000 feet in the northeast. These sedimentary deposits are underlain by crystalline and volcanic bedrock formations of late Cretaceous to early Tertiary age.

Cenozoic basin-fill material can be divided into four general stratigraphic units, including: the Red unit, of Oligocene-Miocene age; the Lower unit, of Miocene-Pliocene age; the Middle unit, of Pliocene-Pleistocene age; and the Upper unit, of Holocene (Recent) age. Detailed descriptions of these stratigraphic units are given in the Summary Report (Kleinfelder, 1988).

2.2.2 Regional Geologic Structure

The geologic structure in the Phoenix area is predominantly associated with Basin and Range crustal extension causing widespread, northwest-trending normal faulting. As evidenced by the displacement within the local sedimentary deposits, the faulting apparently occurred during the early Tertiary Period. High-angle normal faults separate large mountain blocks by a series of broad, downfaulted alluvial valleys. Pre-Basin and Range sediments and the older basin-fill deposits (basal portion of the Lower unit) are offset by these high-angle normal faults throughout the Salt River Basin. Younger sedimentary basin-fill deposits were not subject to this faulting, and evidence of displacement is not detected in the alluvial deposits above the basal portion of the Lower unit (Brown, 1988).

2.2.3 Local Geology

Similar to the Phoenix area as a whole, the East Washington Area is underlain by a thick sequence of Cenozoic sedimentary deposits that form the major aquifer units of the Salt River Valley Basin. Although the sedimentary basin is known to locally exceed thicknesses of 10,000 feet, the Middle and the Upper units typically form the primary aquifers. The Upper Unit is a highly productive aquifer in the central portion of the basin and along the Salt River (ibid.).

The sedimentary deposits primarily consist of unconsolidated to semi-consolidated silts, sands, and gravels that yield substantial quantities of ground water. Local semi-confined conditions may occur due to both interbedded clay layers within the Middle unit, and basalt and pyroclastic layers within the Lower unit (ibid.).

The Upper Unit is considered the most productive aquifer within the study area, and is observed at the surface throughout the study area. The thickness of the Upper Unit generally increases in a westerly direction, and ranges from a minimum thickness of 200 feet in the east up to 450 feet in the west (ibid.).

Non-waterbearing bedrock formations are observed at the surface east of the study area (i.e. the Papago Buttes). The bedrock surface dips steeply beneath the adjacent alluvial deposits and is encountered at depths of approximately 2,000 feet in wells in the western portion of the study area.

Determination of site-specific geologic conditions was not within the scope of work for this phase of the study. However, site-specific investigations are planned for subsequent phases of the study.

2.3 Hydrogeologic Conditions

2.3.1 Climatology

The Salt River Valley is located within the Sonoran Desert Climatic Region and is characterized by hot summers and cool winters. Average maximum temperatures reach a high of 105°F in July and a low of 65°F in December. Minimum temperatures range from of 80° F in July to 39° F in December (Green and Sellers, 1964).

Precipitation averages 7.2 inches annually in the vicinity of the study area. The majority of the precipitation occurs in both the hot summer months of July through September, and the cooler winter months of December through March. Little precipitation occurs during the spring and fall. Average annual evaporation is approximately 72 inches, with the greatest evaporation occurring during the hot summer months (Sellers, 1974).

DRAFT

2.3.2 Regional Hydrogeology

For the purposes of this report, the geologic materials in the Phoenix region have been grouped into two broad categories: non-water-bearing and water-bearing. The general distribution of the geologic materials is presented on Plate 1. Non-water-bearing formations comprise the mountain ranges bounding the alluvial valleys and the smaller isolated mountains found within the central basin on the valley floor. These geologic units include Precambrian through Tertiary igneous, metamorphic, volcanic, and consolidated sedimentary rocks. They do not produce appreciable amounts of water, and may cause restrictions or barriers to ground water flow.

Water-bearing deposits that form the major aquifer units in the Phoenix area include the basin-fill sediments observed in the central portion of the valley. The largely unconfined aquifers are primarily composed of unconsolidated, medium and coarse-grained sediments, although perched and semi-confined conditions may be locally present due to interfingering finer-grained deposits.

Regional ground water elevations and ground water contours developed from the most recently available (i.e. 1983) DWR ground water data are shown on Plate 1. The ground water contours suggest that regional ground water movement in the study area is generally to the west. Because the Salt River is normally dry but is also the main channel for surface runoff and a source of recharge to the ground water, the hydraulic gradient fluctuates measurably during runoff. **As a result, ground water gradients and flow directions may vary throughout the year and from site to site within the East Washington Study Area.**

Ground water recharge to the basin aquifers is derived from infiltration of precipitation, infiltration of runoff from the adjacent mountains, infiltration of controlled releases from upstream reservoirs along the Salt River, return flow from agricultural irrigation, canal seepage, and subsurface ground water inflow from adjacent areas. Although the ground water basins in the Phoenix region are considered to be in overdraft condition, ground water elevations have increased locally by as much as 50 to 70 feet since the mid-1960s, due to overall decreases in ground water use, and from higher than normal precipitation.

2.3.3 Regional Ground Water Quality

Regional ground water quality in the Salt River Valley is controlled by the natural geologic formations and infiltration of recharge water derived from precipitation, runoff and irrigation return flow. Calcium and sodium are the predominant cations, and chloride and bicarbonate are the most common anions in ground water in the Phoenix region. Historic ground water quality data indicate a broad overall change in ground water chemistry in recent years from calcium bicarbonate water to sodium chloride water. This change is reported to be attributable to return flows of applied irrigation in excess of the consumptive use of the vegetation (Brown, 1988).

Total dissolved solids (TDS) concentrations from wells in the Salt River Valley range from a reported minimum of approximately 200 mg/L near Sun City, northwest of the study area, to 7,000 mg/L near Buckeye, west of the study area. Most wells containing high TDS concentrations are perforated within the Upper unit. TDS concentrations of ground water samples from wells within the study area generally exceed the EPA recommended drinking water standard of 500 mg/L. Increased recharge from above average precipitation in recent years has resulted in a decline in TDS concentrations in aquifers near the Salt River, but concentrations generally remain above the recommended standards (ibid.).

Elevated nitrate concentrations in ground water samples obtained from wells in the Phoenix area have been linked to nitrate fertilizers applied in the agricultural areas and naturally occurring organic material in the alluvial deposits (USGS, 1988). Nitrate concentrations in the Phoenix area locally exceed the EPA recommended drinking water standard of 10 mg/L (as nitrogen) in areas north of Sky Harbor Airport. Other locations within the valley also contain localized elevated concentrations of nitrate, but are typically encountered at concentrations below the recommended levels.

Elevated fluoride concentrations in the Phoenix area are typically associated with wells perforated in the Lower unit. Ground water obtained from wells near the Phoenix Mountains and along the eastern boundary of the study area have occasionally exceeded the Federal secondary limit of 2.0 mg/L, but rarely exceed the MCL of 4.0 mg/L.

2.3.4 Hydrogeologic Conditions Underlying the East Washington Area

The project study area consists of approximately 24 square miles in southeastern Phoenix and is bounded by Thomas Road on the north, 7th Avenue on the west, 48th Street on the east, and a line even with Lower Buckeye Road on the south. Although semi-confined conditions may occur locally, the saturated basin-fill deposits are assumed to be a single unconfined aquifer system with appreciable amounts of water available within each geologic formation (ibid).

2.3.4.1 Aquifer Characteristics

Although the sedimentary basin is known to locally exceed 10,000 feet in depth (Oppenheimer, 1981), the upper portion of the Lower unit and Upper unit typically form the primary aquifers underlying the East Washington Area.

The Lower unit is divided into two separate sub-units based on general geologic characteristics. The lower portion of the Lower unit is predominantly composed of evaporite deposits interfingered with conglomeritic and basaltic layers. The thickness of these deposits penetrated by wells within the study area ranges from less than 50 feet at the eastern study area boundary to greater than 1,000 feet in the western portion of the study area. Hydraulic conductivities ranging from 6 to 14 feet per day have been reported (Laney, 1986).

The upper portion of the Lower unit, although less homogeneous than the lower sub-unit, has similar aquifer characteristics. Depth to the upper sub-unit ranges from 750 feet near Barnes Butte, to 500 feet near Central Avenue. The thickness of this unit is highly variable, ranging from 500 feet near 7th Avenue, to locally absent in the eastern portion of the study area.

The Middle unit, a main aquifer in the Salt River Valley, is absent throughout most of the study area. Thin sequences of the Middle Unit have been penetrated by wells to the west of the study area with estimated thicknesses of up to 100 feet, but no information is presently available that suggests that this unit extends east into the study area.

The Upper unit is the most productive ground water aquifer unit within the study area. The thickness of the unit ranges from 200 feet near the Phoenix Mountains to the north, to 300 feet near the western portion of the study area. Within the study area, the Upper unit includes fluvial deposits of the Salt River stream channel and associated terrace deposits. The Upper unit is everywhere exposed at the surface throughout the study area except at those locations where the non-waterbearing formations are exposed. Ground water levels are typically above the base of the Upper unit, with saturated thicknesses ranging from 10 to 60 feet in the east to 200 feet in the west. Hydraulic conductivities in the Upper Unit reportedly range from 180 ft/day to 1,700 ft/day (ibid.).

2.3.4.2 Ground Water Movement

Ground water movement within the study area is controlled by several general geologic features, including: the location and distribution of non-waterbearing formations; locally discontinuous and regionally extensive fine-grained or consolidated deposits; and the presence of fault systems in the basal portion of the Lower unit. The location and volume of ground water extracted from the aquifer by local water users also affect the general ground water flow pattern, and result in seasonal variations in flow direction.

Under non-pumping conditions, the direction of ground water movement is primarily in a westerly direction, roughly parallel to the Salt River drainage. Recharge from infiltration of flood flows along the Salt River has reportedly not significantly changed the flow directions in surrounding areas, but may cause local increases in ground water elevations immediately adjacent to the channel. Under dynamic conditions, the direction and rate of ground water flow varies measurably throughout the year and from site to site within the East Washington Area.

The depth to ground water within the study area ranges from approximately 40 feet along the Salt River to greater than 80 feet in the northwestern portion of the study area, based on 1983 data. Historic ground water level data indicate a general decline of ground water elevations from 1950 to 1965 of up to 70 feet in the northwestern portion of the study area. Over the same period, ground water elevations near the Salt River were subject to declines of up to 25 feet. Recent

ground water elevation data indicate a general rise in ground water elevations of up to 20 feet in the northwestern portion of the study area (ADWR, 1986).

Based on ADWR (ibid.) data regional hydraulic gradients appear to average approximately 25 feet per mile (0.005) to the west and southwest in the eastern portion of the study area, and 18 feet per mile (0.003) to the west in the western portion of the study area. Ground water movement within the study area is predominantly within the deposits of the Upper unit.

2.2.3.4 Ground Water Quality

Analyses of ground water samples obtained from wells within the study area indicate TDS values above the EPA secondary standard (500 mg/L) for drinking water.

From wells sampled as a part of this study, a maximum value of 1960 mg/L was detected in Well (A-1-3)2aab. Historic analytical results indicated that TDS values have exceeded 3000 mg/L.

Historically, very hard water has been observed in wells. Historical data gathered during this study indicates hardness values as high as 746 mg/L. Results of samples collected as part of this study indicated hardness values as high as 384 mg/L.

Available data pertaining to the distribution and concentration of the chemical constituents identified from previous ground water analyses are presented in Appendix B of the Summary Report (Kleinfelder, 1988). The distribution of chemicals in the ground water, based on historic and recent sampling is discussed in Section 4.6 of this Phase I Report. Additional details of the local hydrogeologic conditions are included in the Summary Report (Kleinfelder, 1988).

DRAFT

3 DATA COLLECTION

3.1 Introduction

This section discusses the methods of data collection and sources of data used for this study. The sources of data discussed in the following pages included: numerous government agencies and financial institutions; aerial photographs; field reconnaissance; a questionnaire distributed during this study; and soil chemistry and ground water quality data from sampling conducted as part of this study, as well as that from available historic records.

3.2 Literature and Records Search

A literature and records search was conducted to provide background information on the geology, hydrogeology, and land use, and to identify potential chemical manufacturers and users, and areas where potential uncontrolled releases may have occurred within the East Washington Study Area. The literature and records search involved a review of:

- Maricopa County and City of Phoenix zoning and tax assessors' information to determine land-use classifications and property owners;
- United States Environmental Protection Agency (EPA), Arizona Department of Environmental Quality (ADEQ), Maricopa Association of Governments (MAG), police, and fire department records relative to chemical users, disposers, and accidental spills;
- available published and unpublished reports, maps, and aerial photographs for geologic, hydrogeologic, and land-use characteristics;
- Arizona Department of Water Resources (ADWR), Salt River Project (SRP), and City of Phoenix records for water quality data, water well locations, construction details, and uses.

The following discussion provides a summary of the information categories and the entities contacted during the course of the investigation. A list of references is presented in Section 9 of this report. The information which has been collected or summarized has been indexed and is available at ADEQ.

3.2.1 United States Environmental Protection Agency (EPA)

The EPA was contacted to obtain preliminary assessment and other available information from Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), and Superfund Amendments Reauthorization Act (SARA) files for facilities within the East Washington Study Area.

3.2.2 United States Geological Survey (USGS)

The USGS was contacted to obtain geologic and hydrogeologic information available for the Phoenix area. The USGS also provided pertinent information on the construction, water quality, and location of wells within the East Washington Area. The information obtained is included in the geology and hydrogeology sections of this report and the Summary Report (Kleinfelder, 1988).

3.2.3 United States Soil Conservation Service (SCS)

Available maps and publications were obtained from the SCS and reviewed to determine soil characteristics, such as soil texture and infiltration rates. The information obtained has been used to determine the distribution of native soils and to estimate infiltration rates in the East Washington Area.

3.2.4 Arizona Department of Environmental Quality (ADEQ)

The ADEQ provided access to available records and reports pertaining to the study area. This information included: a compilation of previous ground water quality analyses; available waste permit data; underground storage tank listings; dry well listings; previous geologic and hydrogeologic reports; compliance files; permits;

CERCLA, SARA and RCRA files; and Fire Incidence Reports (FIRs). ADEQ also provided a list of key contacts for relevant information.

3.2.5 Arizona Department of Health Services (ADHS)

The ADHS was contacted to obtain information pertaining to disease prevention studies that may have been conducted in the Phoenix area. The ADHS indicated that the Division of Disease Prevention is conducting a series of relevant studies in Maricopa County

3.2.6 Arizona Department of Transportation (ADOT)

ADOT was contacted to obtain a list of permitted transporters of hazardous wastes. These transporters are required to obtain an EPA ID number. ADEQ maintains this list of transporters and ID numbers.

3.2.7 Arizona Department of Water Resources (ADWR)

The ADWR provided information from the well registration, Ground Water Survey Inventory (GWSI), well logs, and general files. Available ADWR reports on the Phoenix area were also compiled. These data have been used to help develop the well location maps and the hydrogeologic information included in the text.

3.2.8 Arizona State Structural Pest Control Board

The Structural Pest Control Board provided a listing of certified pesticide applicators in the Phoenix area. This list was used in the evaluation of the facilities currently handling these types of chemicals.

3.2.9 Maricopa Association of Governments (MAG)

MAG was contacted to obtain documents pertaining to previous studies that have been conducted within the study area. Although MAG has not done site specific studies within the study area, it did provide regional information pertaining to ground water use. In addition, MAG provided 1985 census data for Maricopa County, including the East Washington Study Area.

DRAFT

3.2.10 Maricopa County Assessors Office

Maricopa County Assessors Office was contacted, and subdivision maps and parcel identification information, including parcel owners and legal addresses, were gathered for the study area. These data provided the owner's name and address of properties of interest, but did not necessarily provide information pertaining to the current land occupant. Where a land-use practice suggestive of chemical usage, waste handling, or disposal was observed or documented, the parcel owner and identification information were included in the data base.

3.2.11 Maricopa County Bureau of Air Pollution Control

Maricopa County Bureau of Air Pollution Control (APC) was contacted to obtain information on facilities using VOCs. The APC personnel indicated that compliance files were kept for those facilities using VOCs within the East Washington Study Area. These files included information on the number of degreasing units in operation and the types of chemicals utilized for degreasing operations on site.

3.2.12 Maricopa County Department of Civil Defense and Emergency Services

Maricopa County Department of Civil Defense and Emergency Services provided the community right-to-know filings from local industries. These files were used to determine which facilities may have activities that use the chemicals detected in ground water samples throughout the study area.

3.2.13 Maricopa County Department of Public Health

Maricopa County Department of Public Health provided a list of septic tank users and registered public water companies within the study area.

3.2.14 Maricopa County Planning Department

The Maricopa County Planning Department was contacted to provide land use and zoning information. This information was utilized to identify the distribution of industrial and commercial property within the study area.

3.2.15 City of Phoenix

City of Phoenix personnel were contacted to obtain ground water quality data, well construction and location data, and previous reports published for sites within the Phoenix area.

3.2.16 City of Phoenix Fire Department

The City of Phoenix Fire Department was contacted to obtain FIRs and lists of facilities storing hazardous chemicals within the study area. These files included a listing, by street names and block numbers, of all Arizona firms within the study area that regularly store, use or handle organic, toxic, or hazardous substances. However, these records can only be accessed through the administration of a court order. Therefore the ADEQ was used as an alternate source for SARA and FIR listings. ADEQ personnel indicated that their files did not contain summaries of code violations noted by Fire Department personnel during routine inspections of facilities. The Fire Department files were not available for use in this report.

3.2.17 City of Phoenix Industrial Waste Discharge

City of Phoenix Industrial Waste Discharge personnel were contacted to obtain permits and files on facilities improperly disposing of wastes into the sewer systems. Several facilities within the study area have been cited for non-compliance with wastewater standards.

3.2.18 City of Phoenix Planning Department

City of Phoenix Planning Department was contacted to provide land-use and zoning information. This information was used to help identify the distribution of industrial and commercial lots within the study area.

DRAFT

3.2.19 Salt River Project

Salt River Project personnel were contacted to obtain information regarding the location, status, construction data, previous ground water quality analyses, and operational history of wells within the study area.

3.2.20 University of Arizona and Arizona State University

University of Arizona and Arizona State University personnel in the Water Resources Research Center (WRRC), Geology, and Climatology Departments were contacted for information on the general hydrogeology, geology and land-use practices in the study area. Also provided was climatic data for stations within the study area.

3.2.21 Aerial Photographs

Part of background data gathering involved procurement of both recent and historic aerial photography for the East Washington Area. Aerial photography was obtained for the years 1953, 1965, 1972, 1980 and 1986. The aerial photographs were used in identifying potential sites of chemical releases on the ground surface. The sites are described and identified on 1986 aerial photographs in Appendix A of the Task K-3 Final Summary Report (Kleinfelder, 1988).

3.2.22 Quality Assurance/Quality Control

The numerical data obtained during the literature and records search were checked for duplication and errors, and placed into a computer data base to assist in data compilation and correlation. ENVIS, the Kleinfelder Environmental Information System, was utilized for data storage, manipulation, and reporting. Information included in the data base was verified through random double entry. Water quality data stored in ENVIS are included in the Summary Report (Kleinfelder, 1988).

3.3 Questionnaires

During July, 1988, a questionnaire was sent to a preliminary group of approximately 995 facilities. The preliminary listing of facilities, which was developed from site reconnaissance and searches of available data sources, included facilities that use, store, produce, or dispose of

chemicals (including petroleum hydrocarbons) and/or apparently did so in the past. A copy of the questionnaire is included in Appendix B. The results of the questionnaire response are summarized in Section 4.3.

3.4 Field Activities

For this report, a number of field activities were conducted. These included a reconnaissance of properties and wells, and the sampling and analysis of ground water and soils.

3.4.1 Reconnaissance of Properties

A field reconnaissance of the study area was performed during March, 1988. Further field investigation was carried out through August, 1988. The reconnaissance of properties focused on observing the industrial and commercial areas as determined from zoning information. The following discussion presents a summary of activities conducted during these field activities.

Reconnaissance activities followed the general guidelines outlined in the "Procedures for Identifying Responsible Parties," (USEPA, 1982). **The field reconnaissance was not comprehensive due to the limited access of many of the private and commercial facilities.** The scope of this phase of the project did not include efforts leading to authorized access.

If observed during the field investigations, the following were recorded:

- DRUMS: the number, status, and, if readily apparent, contents of drums at a facility, as well as visual observations of disposal or storage practices

- STAINED SOIL: the presence of stained (or discolored) soil and stockpiled soils

- NOTABLE PRACTICES: land-use practices that deviated from Federal, State, or local requirements including, but not limited to: disposal of fluids into wells, sumps, dry wells, or gravel pits; unusual storage of drums; and unusual storage or handling of chemicals

- STORAGE TANKS: the existence of underground and above ground storage tanks; the number of tanks and contents whenever possible

- GENERAL HOUSEKEEPING: the overall cleanliness and orderliness of the facility

- DRY WELLS: locations; proximity to facilities, chemical use and storage; stained soils; and unusual disposal practices

- INDUSTRY TYPE: (e.g. electronics manufacturing, metal fabrication)

- POTENTIAL USE: chemical use based on the type of industry and typical chemical uses obtained from such references as the Merck Index.

3.4.2 Reconnaissance of Wells

A reconnaissance of wells in the East Washington Study Area was performed during March, 1988, to note their location and current status, if possible. Further field investigation was completed through August, 1988. The initial reconnaissance of wells focused on observing the location, type of pumping equipment installed, operational status, and potential owner. The following discussion presents a summary of the activities conducted during the well reconnaissance.

Initially, available information pertaining to well locations, water quality, well construction, and well ownership was gathered from Federal, State, and local government agencies, private water purveyors, and various published and unpublished reports. The reported well locations were plotted on a base map of the study area at a scale of 1:9,600. Legal well designations were used to approximately locate wells within a 10-acre area. A preliminary survey of the well locations was then performed to verify and adjust well locations. Project personnel, for the most part, did not enter private or commercial properties, and restricted their observations to publicly accessible lands. This limit on site access was primarily due to budgetary constraints which did not allow the time required to gain access to the large number of private sites involved. Where feasible, the well owner was contacted to verify the well location and operational status.

The locations of the wells documented in the historical records and observed during the field investigation are shown on Plate 2. The following general information was observed regarding the well status:

- LOCATION: The location of a well was plotted on the base map. Wells that could not be located, or were enclosed and could not be observed, were noted.

- EQUIPMENT: If visible, the well head was inspected for the type of installed pumping equipment.

- STATUS: The active, inactive, or abandoned status of the well was recorded.

- OWNER: The name of the owner or facility operator was noted if obtained during the reconnaissance visit.

Following the field reconnaissance of wells, additional information was obtained regarding the operational status and use of the wells from owners, operators, or State and local agencies.

3.4.3 Sampling of Wells

A ground water sampling plan was submitted to ADEQ by Kleinfelder on August 5, 1988. In this plan the sampling of 16 existing wells in the area was proposed in order to supplement existing data. In proposing the wells to be sampled those wells which had previously been located in the field were considered. Most of the wells selected for sampling were located near areas of observed elevated chemical concentrations, or were located in areas where data are sparse or completely lacking (Figure 2). In addition, some wells were sampled to verify previous analytical results. Analyses of the samples collected from these wells included VOCs, general minerals, and select metals.

Ground water samples were collected between August 8 and 16, 1988. Of the 16 wells proposed for sampling, only 8 could be sampled. The remaining wells either could not be located or were not operational. The locations of wells that were sampled and resulting data are given in Section 4.4.2. A ninth sample was collected at the point of surface water runoff from the paved area at Sky Harbor International Airport. Two

DRAFT

KEY TO FIGURE 2

▲ Wells in Which VOCs Have Been Detected Above MCLs or ADHS Action Levels

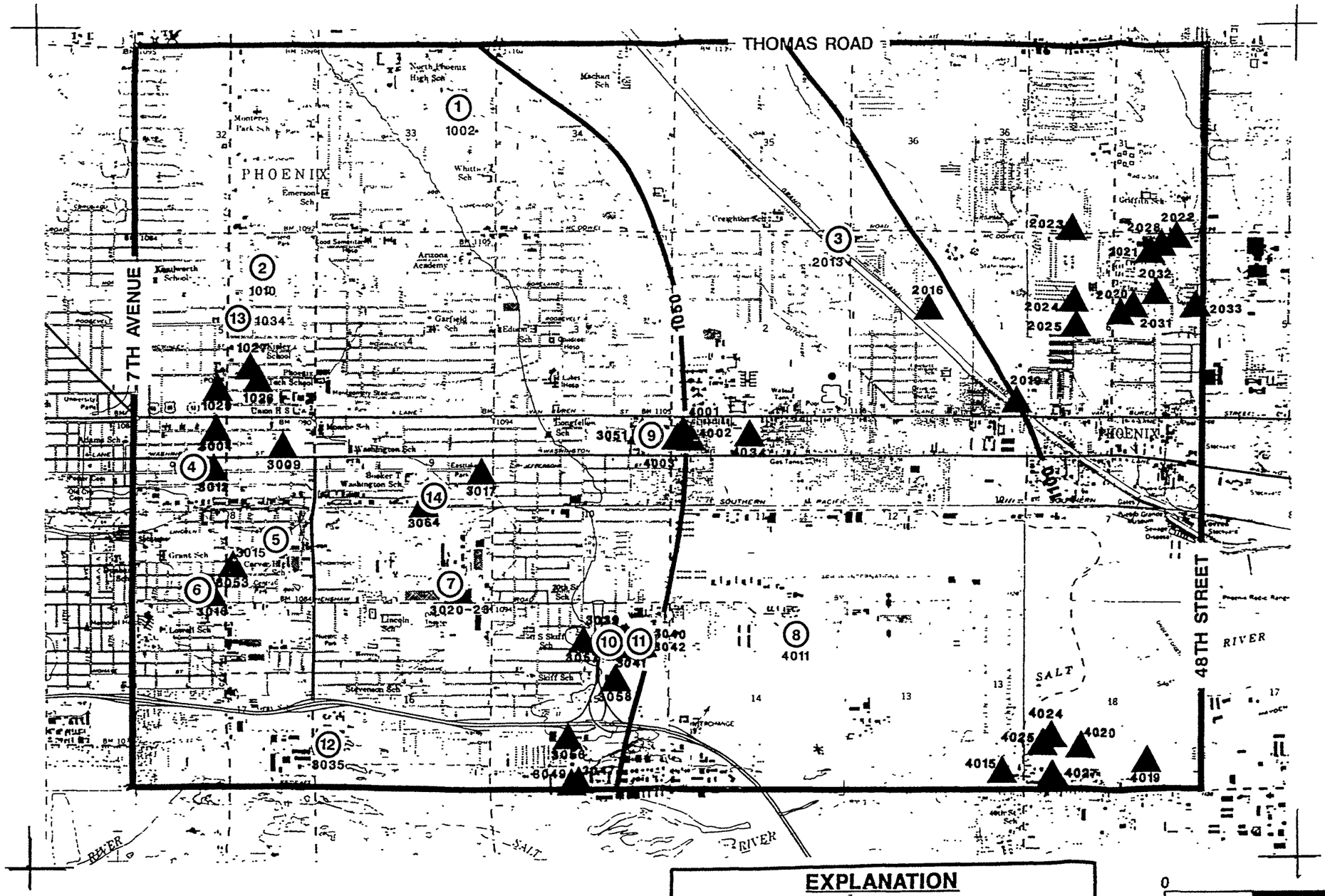
ENVIS Site Number	Legal Well Designation	Owner Desigation or Common Name
1026	(A-1-3)5dcd	ADOT PWT-8
1027	(A-1-3)5dd	Republic & Gazette (R&G)
1029	(A-1-3)5cda	U.S. Post Office
2016	(A-1-3)1bdd	DM126
2019	(A-1-3)1ddd	SRP 18E 5N
2020	(A-1-4)6acc	DM104
2021	(A-1-4)6aba	DM106
2022	(A-1-4)6aab	MP49
2023	(A-2-4)31ccd	DM119
2024	(A-1-4)6bdb	DM120
2025	(A-1-4)6bcb	DM121
2028	(A-1-4)6aac	MP50
2031	(A-1-4)6acc	Willis
2032	(A-1-4)6adb	MP51
2033	(A-1-4)6ada	DM115
3004	(A-1-3)8baa	Security Center
3009	(A-1-3)8aac	Greyhound
3012A	(A-1-3)8bda1	Old Courthouse-north
3012B	(A-1-3)8bda2	Old Courthouse-south
3016	(A-1-3)8cdd	Not Available
3017	(A-1-3)9ada	Eastlake.Park
3020	(A-1-3)9ddc1	FMC-1
3021	(A-1-3)9ddc2	FMC-2
3022	(A-1-3)9ddc3	FMC-3
3039	(A-1-3)15aac1	AVIS MW-1
3040	(A-1-3)15aac2	AVIS MW-2
3041	(A-1-3)15aac3	AVIS MW-3
3042	(A-1-3)15aac7	AVIS MW-7
3047	(A-1-3)15cdd1	ADOT #D-1
3049	(A-1-3)15cdd3	ADOT #D-3
3053	(A-1-3)8dcb	ADOT WT-8
3056	(A-1-3)15cad	ADOT #D-6
3057	(A-1-3)15abc	ADOT #D-9
3058	(A-1-3)15acc1	ADOT #D-7
3064	(A-1-3)9acc	Tiernay Turbines (4 wells)
4001	(A-1-3)11bbb1	Deer-O OW1
4002	(A-1-3)11bbb2	Deer-O OW2
4003	(A-1-3)11bbb3	Deer-O OW3
4015	(A-1-3)13dda	Tanner 40th St.
4019	(A-1-4)18dbc	Estes NE
4020	(A-1-4)18cac	Estes E
4024	(A-1-4)18cbd1	Estes NW
4025	(A-1-4)18cbd2	Estes W
4027	(A-1-4)18cca1	Bradley Production
4034	(A-1-3)11baa	Desert Hills

DRAFT

KEY TO FIGURE 2 (continued)

ENVIS Site Number	Legal Well Designation	(#)	Owner
1002	(A-2-3) 33abd	1	St. Augustina Church
1010	(A-1-3) 5abd	2	Medical Center
2013*	(A-1-3) 2aab	3	Salt River Project(16.9E6N)
3012*(A&B)	(A-1-3) 8bda(1&2)	4	Old Courthouse (2 wells)
3015	(A-1-3) 8dac	5	ADOT
3016*	(A-1-3) 8cdd	6	Not Available
3021*	(A-1-3) 9ddc2	7	FMC-2
4011	(A-1-3) 14abc[a]	8	Sky Harbor Airport
3051*	(A-1-3) 10aa	9	Sun Motor Exchange
3039	(A-1-3) 15a	10	AVIS Rent-A-Car
3043	(A-1-3) 15a	11	AVIS Rent-A-Car
3035*(A&B)	(A-1-3) 16ccb(1&2)	12	Ameron (2 wells)
—	(A-1-3) 5acc[a]	13	KPNX TV
3064	(A-1-3) 9acc[a]	14	Tiernay Turbines

* Wells actually sampled
(#) Sample location number
(a) Estimated location designation



EXPLANATION

(12) Wells Considered for Sampling
Note: See key for wells actually sampled

▲ Wells in which VOCs have been detected above MCLs or ADHS Action Levels
4001 ENVIS Site Number

Phase I Study Area Boundary

1050 Regional Ground Water Contours (after ADWR, 1986)

ADEQ Task Assignment K-3
East Washington Study Area
Phoenix, Arizona

GROUND WATER SAMPLING LOCATIONS

FIGURE 2

KLEINFELDER

Project Number 52-1020-01

June 1989

DRAFT

additional wells, (A-1-3)1ddd and (A-2-3)36aaa2, in the study area were sampled by SRP.

A sampling notebook was prepared prior to sampling, and maintained throughout the sampling activities. Information contained in this notebook included: water levels; well locations; condition of the well heads; casing volume calculations; estimated pumping rates; pH, conductivity and temperature measurements taken during the pumping of the well; and appearance of the discharge water during pumping.

Prior to sampling, the sampling equipment was decontaminated either by steam cleaning or by cleaning in the following manner:

1. laboratory-grade detergent scrub
2. tap water rinse
3. triple rinse with distilled water
4. triple rinse with methanol
5. air dry
6. triple rinse with distilled water.

Prior to use at each sampling location the pH, conductivity, and temperature meters were calibrated according to manufacturer's recommended procedures.

Upon arrival at each well the depth to water was measured, where possible, to the nearest 100th of a foot using a water level probe manufactured by Solinst.

In all wells where the dimensions of the well were known or could be determined, five casing volumes were evacuated from the well before samples were taken. In wells where the volume of the casing could not be determined, the well was evacuated until the pH, temperature, and conductivity of the discharge water stabilized. During the evacuation period the appearance of the discharge water was also noted and recorded in the field notebook.

Just prior to sampling, the appropriate sample bottles were labeled with a water proof marker. Sample bottle labels included the following information:

- sample ID
- time and date of sample collection
- analyses requested
- samplers' names
- project number
- preservative added by the laboratory.

When filling the sample bottles, care was taken to ensure that there was no head space remaining. After filling each bottle (particularly VOC vials), the cap and a Teflon-lined septum were placed on the bottle, and the bottle was then inverted and checked for air bubbles. If bubbles were observed, more sample water was added until all head space was removed. Hydrochloric acid was added, as a preservative, into the VOC sample bottles prior to sampling. Ground water samples collected for metals analyses were vacuum filtered (through a disposable 0.45-micron filter) in the field prior to being placed in the sample bottle. Nitric acid was placed, as a preservative, into these sample bottles prior to sampling. The preservatives were added to the sample bottles by the laboratory.

Upon completion of sampling at each well, sample containers were placed in a cooler with Blue Ice to maintain the proper temperature (approximately $4^{o}C$). The coolers, with chain-of-custody, were transported to the analytical laboratory (Analytical Technologies, Inc. of Phoenix, Arizona) at the end of each day of sampling. Analytical Technologies is EPA and State certified for the types of analyses performed during this study.

3.4.4 Sampling of Soils

A soil sampling plan was submitted to ADEQ by Kleinfelder on August 5, 1988. In this plan the sampling of soils at 27 locations was proposed. These locations were chosen based on an evaluation and interpretation of available water quality data, examination of aerial photographs, and observations made during field reconnaissance of the area. Analyses of soils collected from these locations included VOCs and metals.

Soil samples were collected between August 17 and 25, 1988. Of the 27 proposed soil sampling locations, 16 were sampled. The remaining sites were not sampled because surfaces were paved, where they had not been paved in the 1986 air photos, or because,

upon close inspection, no evidence could be found on the site to justify sampling. Soil sampling locations are shown on Figure 3 and resulting data are presented in Section 4.5.

The sampling notebook prepared for the ground water sampling was maintained throughout the soil sampling activities. Information recorded during soil sampling included descriptions of sampling locations, soil descriptions, measurements taken with the photoionization detector (PID), and observations made at the site.

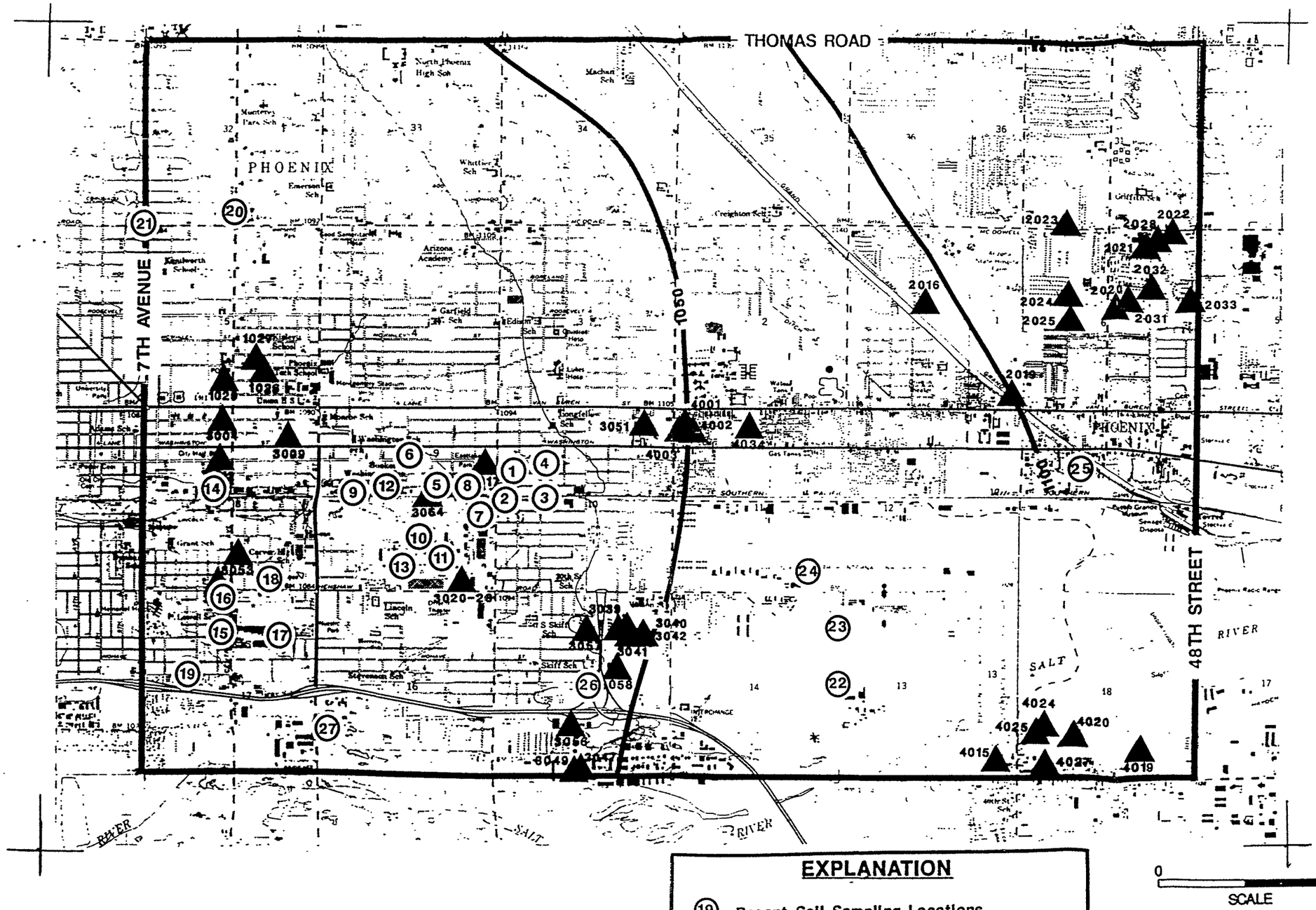
Non-disposable sampling equipment was decontaminated before each sampling location as previously described.

Samples were collected by first drilling with a stainless steel hand auger to a depth of two to three feet in order to reach subsurface soils. The surface soils were avoided in an effort to collect samples where the VOCs had not yet completely volatilized. Before sampling from the bottom of the augered holes, readings were taken inside the holes with the PID to get an indication of the presence of any VOCs. After reaching the desired depth, a core sampler was driven into the underlying soil, beginning at the bottom of the hole. The core sampler, manufactured by GeoMatic, Inc., used 3-inch diameter, 6-inch long brass tubes to extract intact soil samples. After extracting the sample tubes from the augered holes, the ends of the tubes were covered with Teflon film, followed by plastic caps, and then sealed with tape and immediately placed in a cooler with Blue Ice. Duplicate samples were collected by taking two samples immediately adjacent to each other. The chilled samples were transported to the laboratory accompanied by chain of custody forms. Copies of the chain-of-custody forms are included in Appendix C with the laboratory results.

Soil samples to be analyzed for metals were collected from the soils extracted from the hole with the stainless steel auger and placed into glass containers. Duplicate samples were collected in the same manner as duplicate samples for VOCs.

Each sample container was labeled with the following information:

- sample ID
- time and date of sample collection
- analyses requested



EXPLANATION

(19) Recent Soil Sampling Locations

▲ Wells in which VOCs have been detected above MCLs or ADHS Action Levels

4001 ENVIS Site Number

Phase I Study Area Boundary

1050 Regional Ground Water Contours (after ADWR, 1986)

ADEQ Task Assignment K-3
East Washington Study Area
Phoenix, Arizona

SOIL SAMPLING LOCATIONS

FIGURE 3

KLEINFELDER

Project Number 52-1020-01

June 1989

DRAFT

DRAFT

KEY TO FIGURE 3 (continued)

Soil Sample Location Number	Owner
1*	Western Automatic Machine Co.
2	SRP Yard
3	Precision Electric Co , Inc.
4*	Metal Products, Inc.
5	Tiernay Turbines
6	Old Carling Brewery Site
7*	Kaiser Holtzbau
8*	Arvin Industries Inc.
9*	Southern Pacific Railroad (2 samples)
10*	B S & W Energy Corporation
11*	Precision Grinding
12	Reliance Steel & Aluminum
13	South of Southern Pacific Switching Yard
14	APS
15*	Mission Uniform & Linen
16*	Interstate Parts & Machine Co.
17*	Cahill Desert Products
18*	Hays Roofing & Supply, Inc.
19*	Apache Electric & Electronics
20	Mountain Bell
21	Best Cleaners
22*	Arizona Air National Guard
23*	Sky Harbor International Airport
24	Sky Harbor International Airport
25*	Henes Stamping Inc.
26	Handy & Harmon Electronic Materials Corp.
27*	Ameron

* Location actually sampled

DRAFT

KEY TO FIGURE 3 (continued)

Soil Sample Location Number	Owner
1*	Western Automatic Machine Co.
2	SRP Yard
3	Precision Electric Co., Inc
4*	Metal Products, Inc.
5	Tiernay Turbines
6	Old Carling Brewery Site
7*	Kaiser Holtzbau
8*	Arvin Industries Inc.
9*	Southern Pacific Railroad (2 samples)
10*	B S & W Energy Corporation
11*	Precision Grinding
12	Reliance Steel & Aluminum
13	South of Southern Pacific Switching Yard
14	APS
15*	Mission Uniform & Linen
16*	Interstate Parts & Machine Co.
17*	Cahill Desert Products
18*	Hays Roofing & Supply, Inc.
19*	Apache Electric & Electronics
20	Mountain Bell
21	Best Cleaners
22*	Arizona Air National Guard
23*	Sky Harbor International Airport
24	Sky Harbor International Airport
25*	Henes Stamping Inc.
26	Handy & Harmon Electronic Materials Corp.
27*	Ameron

* Location actually sampled

DRAFT

- samplers' name
- project number.

3.4.5 Analysis of Soil and Ground Water Samples

Soil and ground water samples were submitted to Analytical Technologies for analysis. Ground water samples were analyzed for VOCs (EPA Methods 601 and 602) using a gas chromatograph. This method analyzes for the following organic compounds:

chloromethane	bromomethane
vinyl chloride	trichlorofluoromethane
methylene chloride	chloroethane
1,1-dichloroethene	1,1-dichloroethane
1,2-dichloroethene	1,2-dichloroethane
1,1,1-trichloroethane	1,1,2-trichloroethane
carbon tetrachloride	bromodichloromethane
1,1,2-tetrachloroethane	1,2-dichloropropane
trans-1,3-dichloropropene	trichloroethene
dibromochloromethane	1,2-dichlorobenzene
1,3-dichlorobenzene	1,4-dichlorobenzene
dichlorodifluoromethane	cis-1,3-dichloropropene
2-chloroethylvinylether	bromoform
chloroform	tetrachloroethene
toluene	benzene
chlorobenzene	ethylbenzene
xylenes	

Some of the ground water samples were also analyzed for primary drinking water standard metals using an inductively coupled plasma/atomic absorption spectrophotometer. The analyzed metals included the following:

arsenic	barium
cadmium	chromium
lead	mercury
selenium	silver

In addition, a general minerals suite (California Title 22) of analyses was performed on some ground water samples in order to help characterize the hydrologic system. These analyses included the following:

DRAFT

alkalinity	pH
conductivity	hardness
total dissolved solids	calcium
chloride	copper
fluoride	iron
magnesium	zinc
manganese	nitrate
sodium	sulfate
potassium	

Soil samples were analyzed for VOCs using EPA methods 8010 and 8020. These methods analyze for the same VOCs listed above for methods 601 and 602 (the equivalent analysis for water samples).

At locations where high levels of metals might be found in the soil, the samples were also analyzed for the suite of metals listed above using an inductively coupled plasma spectrophotometer and an atomic absorption spectrophotometer. The samples were prepared for analysis using the extraction procedure (EP) as described in 40 CFR 261, Appendix II.

3.4.6 Quality Assurance/Quality Control

3.4.6.1 QA/QC Samples

During the sampling program conducted as a part of this study, duplicate field samples were collected and analyzed as blind samples by the laboratory. Samples were coded to assure that the laboratory did not know which samples were duplicates.

Background soil samples were collected in the field. The exact locations were selected in the field where undisturbed and apparently uncontaminated soil could be found within the study area.

For ground water sampling, equipment rinsate samples and travel blanks were also submitted to the laboratory. Equipment rinsate samples were collected in order to verify the effectiveness of equipment decontamination. Travel blanks were included in order to detect laboratory or inadvertent contamination during sample handling and transport.

Laboratory quality control samples consisted of matrix spike and reagent blank samples. Details of the laboratory's QA/QC program are included as Appendix B in the Ground Water and Soil Sampling Plans (Kleinfelder, 1988).

3.4.6.2 Sample Custody

Complete chain-of-custody records were maintained from the time of sample collection until the samples arrived at the laboratory. Samples were in the custody of the sampler until they were turned over to the laboratory. The chain-of-custody was maintained by having the sample receiving clerk at the laboratory sign the chain-of-custody form.

3.4.6.3 Laboratory Sample Management and Document Control

Samples submitted to the laboratory were handled according to procedural safeguards established by the EPA. Details of these procedures are included in Appendix B of the Ground Water and Soil Sampling Plans (ibid.).

3.5 Other Investigations Currently Underway

A number of public and private entities within the East Washington Study Area have recently been studying chemical concentrations in the ground water. The following list provides a summary of these investigations. This list is derived from previous environmental reports provided by the ADEQ, ADHS, and EPA. This list contains only those entities that are working with oversight by ADEQ to determine the extent and cause of chemicals in the ground water in a specific area. This list is not comprehensive, is for information only, and should not be interpreted in any way to infer that these entities are or are not the sources of chemicals in the ground water.

- 48th Street and McDowell Road, Motorola Incorporated (52nd Street facility)
- 40th Street and the Salt River Channel, City of Phoenix (Estes Landfill)
- 40th Street and Salt River Channel, Bexon Equipment & Mining Corporation (40th Street Landfill)
- 28th Street and Air Lane, ITT Cannon
- 24th Street and Van Buren Street, Deer-O Paint Company
- 20th Street and Interstate 10, Avis Rent-A-Car

DRAFT

- 15th Street and Buckeye Road, FMC Corporation

In order to avoid duplication of effort and to conserve WQARF resources, a detailed analysis of data reported for these sites was not included in the this study.

DRAFT

4 RESULTS OF INVESTIGATION

4.1 Introduction

This section presents the results of the data gathering activities conducted for this study. In particular it describes: the classification of the zoning codes within the study area; the results of the aerial photo interpretation; interpretation of historic water quality data; results of recent ground water and soil sampling conducted as a part of this study; and results of the questionnaire distributed and returned during this study.

4.2 Literature and Records Search

A literature and records search was completed to provide background information on the geology, hydrogeology, and land use, and to identify potential chemical manufacturing, use, and disposal within the East Washington Study Area. The following discussion provides a summary of the findings developed from the literature and records search portion of the investigation.

4.2.1 Zoning

Maricopa County and City of Phoenix zoning maps and codes were obtained to assist in identification of the distribution of industrial and commercial properties within the study area. Based on existing land-use patterns, the 1987 zoning codes were grouped as described in Table 1 of the Summary Report (Kleinfelder, 1988). Some zones represented those areas most likely to have activities involving fuels, chemicals, or chemical waste generation. Other zones contained land-use practices that are only occasionally associated with chemical use and chemical waste generation. Land users in areas that are zoned residential are not expected to be significant generators or users of chemicals. The distribution of the zones are illustrated on Plate 1 of the Summary Report (ibid.).

DRAFT

4.2.2 Aerial Photograph Review

After reviewing the aerial photos described in Section 3.2.21, sites that could be potential sources of chemicals were identified and described. These included various land uses such as: agricultural, mining, and industrial. The sites identified in this study area included: sites with holding or settling ponds; an international airport with several terminals and maintenance areas; a large railroad switching yard; sand and gravel mining operations; landfills, some of which may have been sand and gravel mining operations; numerous junk yards filled with old car bodies and other debris; above-ground storage tank areas; several industrial sites with debris and spoil piles; a wastewater treatment facility; drum storage sites; a concrete pipe manufacturing facility; and several sites where stained soil was apparent.

The areas identified as having a strong potential for past land uses conducive to environmental impacts were plotted on the base maps, and correlated to the zoning and parcel information for identification purposes. The results of the air photo investigation were used as an aid in selecting soil sampling locations.

4.3 Questionnaire Data

In July, 1988, a questionnaire was mailed to 995 facilities located in the East Washington Area. To date, approximately 280 responses to the questionnaire have been returned. The responses were reviewed and compared with other available information regarding those facilities.

4.4 Ground Water Quality Data

4.4.1 Historic Data

The available historic ground water quality data indicate that at least 27 VOCs have been observed, above detection limits, in numerous locations throughout the study area as shown on Plates 1 and 2. Fifteen of these VOCs have been observed at concentrations exceeding MCLs or AALs.

Of the numerous locations where VOCs were historically observed in the ground water above detection limits, the VOC concentrations exceeded MCLs and/or AALs in six general locations as depicted on Plate 1 and described later in this section. Specific well

designations and analytical results exceeding MCLs or AALs are also presented on Appendix D. The VOCs which were observed at concentrations exceeding the MCLs and/or AALs include the following:

Chemicals (acronym)	MCL*	AAL*
trichloroethene (TCE)	5.0	5.0
tetrachloroethene (PCE)	NE	1.0
1,1-dichloroethene (1,1-DCE)	7.0	7.0
trans-1,2-dichloroethene (trans-1,2-DCE)	NE	70
1,1,1-trichloroethane (TCA)	200	200
1,1,2,2-tetrachlorethane (PCA)	NE	0.50
vinyl chloride	2.0	2.0
benzene	5.0	5.0
ethylbenzene	NE	680
chlorobenzene	NE	60
toluene	NE	2000
xylenes	NE	440
methylene chloride	NE	4.7
chloroform	100(a)	3.0(b)
carbon tetrachloride	5.0	5.0

* all units are in ug/L
NE = none established
(a) for total trihalomethanes
(b) when source is not a by-product of chlorination

In addition to the VOCs listed above, concentrations above detection limits were observed for the following:

Chemicals (acronym)	MCL*	AAL*
1,1-dichloroethane (1,1-DCA)	NE	NE
1,2-dichloroethane (1,2-DCA)	5.0	5.0
1,1,2-trichloroethane (1,1,2-TCA)	NE	1.0
1,2-dichlorobenzene (0-DCB)	NE	620
1,3-dichlorobenzene	NE	NE
1,4-dichlorobenzene (p-DCB)	75	75
dibromochloromethane	100(a)	NE
bromodichloromethane	100(a)	NE
chloroethane	NE	NE
1,1,2-trichloro-1,2,2-trifluoroethane (Freon 113)	NE	NE
1,2-dichloropropane	NE	1.0
pthalates	NE	NE

* all units are in ug/L
NE = none established
(a) for total trihalomethanes

In addition to the compounds listed above, elevated concentrations of Chevron S-350 solvent were reported. Barium, iron, sulfate and manganese were also found at elevated levels (above background) within the study area, and nitrate concentrations locally exceeded standards in the northeast portion of the study area.

The following paragraphs discuss the general geographic locations at which VOCs were historically observed above MCLs or AALs. **The geographic locations are given for ease of reference purposes only and are not to be interpreted as "plumes". Several of these geographic locations may be part of a single plume, however, there are insufficient data to positively link them together at this time.** A more accurate estimate of the distribution of the chemicals in the ground water is planned for Phase II of the investigation.

48th Street and McDowell Road

In this area, numerous wells have been sampled as part of a remedial investigation/feasibility study (RI/FS) being conducted by Motorola Inc. for its facility located at 52nd Street and McDowell Road. **The data used in this report relative to the Motorola facility are taken from Dames and Moore's draft RI/FS report and are therefore subject to revision.**

To the east of 48th Street, mean concentrations of numerous VOCs (Plate 2) above MCLs and AALs have been observed in the ground water. These VOCs include TCE, PCE, trans-1,2-DCE, 1,2-DCA, 1,1-DCE, TCA, chloroform, carbon tetrachloride, chlorobenzene, and methylene chloride. Also, to the west of 48th Street (i.e. within the East Washington Study Area boundary), concentrations of TCE, PCE, 1,1-DCE, trans-1,2-DCE, TCA, chloroform, methylene chloride, and carbon tetrachloride above MCLs and AALs have been observed in wells sampled as part of Motorola's RI/FS. The well located farthest to the west, that was sampled as part of the Motorola study, appears to be Well (A-1-3)1bdd (DM126). The highest mean concentrations of the VOCs observed in selected wells in this area are presented on Plate 2.

40th Street and Salt River Channel

This is the vicinity of the Estes and 40th Street (i.e. Bradley) landfills. Concentrations of TCE, PCE, trans-1,2-DCE, 1,1-DCE, chloroform, vinyl chloride, benzene, and

chlorobenzene above MCLs and AALs have been detected in wells in this area. These wells include:

Well (A-1-4)18dbc (Estes NE)
Well (A-1-4)18cac (Estes E)
Well (A-1-4)18cbd1 (Estes NW)
Well (A-1-4)18cbd2 (Estes W)
Well (A-1-4)18cca1 (Bradley Production)
Well (A-1-3)13dda (Tanner 40th Street)

The owners of the Estes and 40th Street landfills are conducting voluntary investigations of their respective sites with oversight by ADEQ.

24th Street and Van Buren Street

In this area, concentrations of PCE, TCE, trans-1,2-DCE, 1,1-DCE, 1,1,2,2-PCA, methylene chloride, benzene, xylene, and chloroform above MCLs and AALs have been observed in the ground water. Concentrations of "Chevron S-350" in the ground water have also been noted in the historical records. The affected wells in this area include:

Well (A-1-3)11baa (Desert Hills)
Well (A-1-3)11bbb1 (Deer-O OW1)
Well (A-1-3)11bbb2 (Deer-O OW2)
Well (A-1-3)11bbb3 (Deer-O OW3)
Well (A-1-3)10aa (Sun Motor Exchange)

Deer-O Paints and Sun Motor Exchange are conducting investigations at their respective facilities with oversight by ADEQ.

20th Street and Mojave Street

VOCs detected at concentrations above MCLs and AALs in this area include benzene, ethylbenzene, toluene, xylene, TCE, PCE, and 1,1-DCE. The affected wells in this area include:

DRAFT

Well (A-1-3)15aac1 (AVIS MW1)
Well (A-1-3)15aac2 (AVIS MW2)
Well (A-1-3)15aac3 (AVIS MW3)
Well (A-1-3)15aac7 (AVIS MW7)
Well (A-1-3)15cdd1 (ADOT #D-1)
Well (A-1-3)15cdd3 (ADOT #D-3)
Well (A-1-3)15cad (ADOT #D-6)
Well (A-1-3)15acc1 (ADOT #D-7)
Well (A-1-3)15abc (ADOT #D-9)

Avis is currently studying a portion of this area with oversight by ADEQ.

16th Street and Jefferson Street

This is the location of Eastlake Park where concentrations of TCE, PCE, and 1,1-DCE above MCLs and AALs have been detected in Well (A-1-3)9ada.

Central Avenue and Washington Street

Within this general area bounded by Buckeye Road on the south, Roosevelt Street on the north, 7th Street on the east and 7th Avenue on the west, concentrations of VOCs above MCLs and AALs have been detected in several wells. The VOCs include TCE, PCE, 1,1-DCE, methylene chloride, and chloroform. The affected wells include:

Well (A-1-3)5dd (Phoenix Newspapers, R&G)
Well (A-1-3)5cda (U.S. Post Office)
Well (A-1-3)5dcd (ADOT PWT-8)
Well (A-1-3)8aac (Greyhound)
Well (A-1-3)8baa (Security Center)
Well (A-1-3)8bda1 (Old Courthouse - north)
Well (A-1-3)8bda2 (Old Courthouse - south)
Well (A-1-3)8cdd (owner information not available)
Well (A-1-3)8dcb (ADOT WT-8)

DRAFT

4.4.2 Recent Data

Review of the historical data led to a limited sampling of existing wells in order to supplement the historical data. As described in Section 3.4.3, those wells proposed for sampling were located near areas where VOCs had been observed in the ground water, or in areas where data were sparse or completely lacking. Wells recently sampled by SRP or other parties were not resampled. The results of the ground water sampling efforts conducted as part of this study are summarized in Tables 4-1 and 4-2. Laboratory data sheets are included in Appendix C.

The analytical results from the ground water samples collected during this study indicate the presence of VOCs above detection limits in the five locations listed on Table 4-2.

In four of these wells, VOCs were detected at concentrations above MCLs and AALs. The four wells and associated VOCs are:

Well (A-1-3)8bda1 (Old Courthouse - north well)

1,1-DCE	7.3 ug/L
PCE	1.4 ug/L
TCE	37.5 ug/L

Well (A-1-3)8bda2 (Old Courthouse - south well)

1,1-DCE	15 ug/L
PCE	2 ug/L
TCE	58 ug/L

Well (A-1-3)8cdd (piezometer located at the northwest corner of Buckeye Road and Central Avenue, owner information not available)

PCE	1.4 ug/L
TCE	5.7 ug/L

Well (A-1-3)10aa (Sun Motor Exchange)

Encountered 0.9 feet of floating product. Analytical results indicated 230,000 ug/L of fuel hydrocarbons in the C6-C24 range.

DRAFT

TABLE 4-2
SUMMARY OF RECENT GROUND WATER SAMPLING RESULTS
EAST WASHINGTON STUDY AREA
AUGUST 1988
VOLATILE ORGANIC COMPOUNDS (VOCs) DETECTED

PARAMETER	WATER QUALITY STANDARD (ug/L)	OWNER DESIGNATION / LEGAL WELL DESIGNATION / (ENVIS NUMBERS) Old Courthouse North (A-1-3)8bda1 3012A	Old Courthouse South (A-1-3)8bda2 3012B	Not Available (A-1-3)8cdd 3016	FMC-2 (A-1-3)9ddc 3021
Dibromochloromethane	100 E*	<0.2	<0.2	0.3	<0.2
1,1-Dichloroethane	NE	2	3.1	0.6	0.4
1,1-Dichloroethene	7.0 AE	7.3	15	2.3	3.4
Trans-1,2-dichloroethene	70 A**	16.5	22.8	1.6	0.8
Tetrachloroethene	1.0 A	1.4	2	1.4	0.3
1,1,1-Trichloroethane	200 AE	<0.2	0.3	0.5	<0.2
Trichloroethene	5.0 AE	37.5	58	5.7	4.9

In Well (A-1-3)10aa (Sun Motor Exchange) floating product (0.9 feet) was encountered and analyzed. Results indicated 230,000 ug/L fuel hydrocarbons in the C6-C24 range.

All units are in micrograms per liter (ug/L) unless otherwise noted.
Only those compounds detected during this sampling program are listed.
NE indicates none established.
E indicates EPA Maximum Contaminant Levels (MCLs).
A indicates ADHS Action Level (AAL) guideline
* for total trihalomethanes.
** for both trans-1,2-DCE and cis-1,2-DCE.
Values exceeding MCLs or AALs are underlined.

DRAFT

TABLE 4-2 (continued)
SUMMARY OF RECENT GROUND WATER SAMPLING RESULTS
EAST WASHINGTON STUDY AREA
AUGUST 1988
GENERAL MINERALS

PARAMETER	WATER QUALITY STANDARD (mg/L)	SRP 16.9E6N (A-1-3)2aab 2012	Not Available (A-1-3)8cdd 3016	FMC-2 (A-1-3)9ddc 3021	Ameron (A-1-3)16ccb1 3035A	Ameron (A-1-3)16ccb2 3035B	Old Courthouse North (A-1-3)8bda1 3012A	Old Courthouse South (A-1-3)8bda2 3012B
Carbonate	NE	<1	<1	<1	<1	<1	<1	<1
Bicarbonate	NE	344	324	306	266	246	290	298
Hydroxide	NE	<1	<1	<1	<1	<1	<1	<1
Conductivity	NE	2770	1450	1260	996	654	1060	1050
pH	6.5-8.5	7.5	7.5	7.7	7.7	8.0	8.2	8.0
TDS	500*	1960	900	752	554	544	848	850
Hardness	NE	384	190	163	141	110	257	231
Anions								
Chloride	250*	463.8	257.4	179.5	138.2	133.7	252.8	236.8
Fluoride	4.0	0.51	0.30	0.30	0.31	0.35	0.35	0.31
Nitrate as (N)	10	1.53	2.22	1.87	0.2	<0.1	0.40	0.69
Sulfate	250*	338	109	85	51	45	100	92
Cations								
Calcium	NE	88	20	25	30	22	60	52
Magnesium	NE	39.8	34.1	24.4	16.0	13.4	26.0	24.6
Potassium	NE	5.3	10.5	6.4	4.5	4.6	5.7	5.6
Sodium	NE	388	173	172	141	131	182	180

All units are in milligrams per liter (mg/L) unless otherwise noted.
Water Quality Standards are EPA Maximum Contaminant Level unless otherwise noted.
*EPA Secondary Maximum Contaminant Level.
NE indicates none established.

DRAFT

TABLE 4-2 (continued)
SUMMARY OF RECENT GROUND WATER SAMPLING RESULTS
EAST WASHINGTON STUDY AREA
AUGUST 1988
DETECTED METALS

	OWNER DESIGNATION							
	LEGAL WELL DESIGNATION							
	ENVIS NUMBER							
PARAMETER	WATER QUALITY STANDARD (mg/L)	SRP 16.9E6N (A-1-3)2aab 2012	Not Available (A-1-3)8cdd 3016	FMC-2 (A-1-3)9ddc 3021	Ameron (A-1-3)16ccb1 3035A	Ameron (A-1-3)16ccb2 3035B	Old Courthouse North (A-1-3)8bda1 3012A	Old Courthouse South (A-1-3)8bda2 3012B
Copper	1.0*	0.022	0.097	0.036	0.124	<0.010	<0.010	<0.010
Iron	0.3*	1.18	20.5	3.5	<0.030	0.960	0.065	0.069
Manganese	0.05*	0.022	3.80	0.102	0.141	0.319	<0.010	<0.010
Zinc	5.0*	0.085	0.083	0.033	<0.010	<0.010	<0.010	<0.010

All units are in milligrams per liter (mg/L) unless otherwise noted.

* EPA Secondary Maxiumum Contaminant Level.

In addition to the wells sampled as a part of this study, SRP, the FMC Corporation, and Tiernay Turbines also sampled wells for VOCs while this study was being conducted. Analyses of samples in June 1988, from SRP wells 18E5N and 18E7N ((A-1-3)1ddd and (A-2-3)36aaa2) detected no VOCs.

The sampling of four monitoring wells by the FMC Corporation at its facility (1450 E. Lower Buckeye Road) in May 1988, indicated the presence of TCE, PCE, 1,1-DCE, 1,1-DCA, trans-1,2-DCE, chloroform, and chlorobenzene in the ground water. PCE and TCE were detected at concentrations (1.55 ug/L and 5.74 ug/L respectively) above MCLs and AALs.

The sampling of four monitoring wells at the Tiernay Turbines facility (1301 E. Jackson Street) in March and April 1988, indicated the presence of TCE, PCE, 1,1-DCE, trans-1,2-DCE, 1,1-DCA, TCA, benzene, ethylbenzene, toluene, and xylenes in the ground water. TCE (up to 32 ug/L), PCE (up to 2 ug/L), 1,1-DCE (up to 44 ug/L), trans-1,2-DCE (up to 530 ug/L), and benzene (up to 17ug/L) were detected above MCLs and AALs.

4.5 Soil Sampling Data

As part of this study soil samples were collected at sites where there seemed to be potential for the presence of chemicals in the soils. These sites were proposed based on land-use practices in the area, stained soil locations, and proximity to areas where chemicals had previously been observed in the ground water. The sampled locations are listed in Table 4-3 and shown on Figure 3. Details of the sampling program are described in Section 3.4.4. The results of the soil sampling effort are summarized in Table 4-4.

Laboratory data sheets are included in Appendix C. In summary, the results of the sample analyses indicated the presence of VOCs in the soil at the following locations:

- Western Automatic Machine Company, 1601 East Madison, PCE (4.6 mg/kg)
- Southern Pacific Railroad Switching Yard (two locations sampled), between 7th and 16th Streets, south of Jackson, toluene (0.2 and 0.3 mg/kg)
- B.S. and W. Energy Corporation, 725 South 12th Place, PCE (0.5 mg/kg), toluene (3.1 mg/kg), and xylenes (6.1 mg/kg)

TABLE 4-3
RECENT SOIL SAMPLING LOCATIONS
EAST WASHINGTON STUDY AREA

SAMPLE LOCATION NUMBER	SUMMARY REPORT AIR PHOTO REFERENCE SITE NO./PLATE NO.	LOCATION	DESCRIPTION	SAMPLE TYPE
1	NONE	1601 E. Madison St.	Western Automatic Machine Company drum storage	VOC
2	NONE	1616 E. Lincoln St.	SRP Yard	None, asphalt covered
3	NONE	1822 E. Jackson St.	Precision Electric Co., Inc.	None, asphalt covered
4	NONE	1845 E. Madison St.	Metal Products, drum storage	VOCs, metals
5	NONE	1301 E. Jackson St.	Tiernay Turbines	None, recently sampled by others
6	NONE	S.W. corner 12th St. & Lincoln St.	Old Carling Brewery Site	Access denied
7	41/A-15	602 S. 16th St.	Kaiser Holtzbau	VOCs, metals
8	41/A-15	500 S. 15th St.	Arvin Industries Inc.	Sample taken at boundary of sample location No. 7 (adjacent)
9	39/A-15	Between 7th & 16th Sts. S. of Jackson St.	Southern Pacific Switching Yard, stained soil, drum storage	VOCs (sampled at two points)
10	40/A-15	725 S. 12th Place	B.S. & W Energy Corporation, stained soil, tanks	VOCs, metals
11	NONE	1411 E. Hadley St.	Precision Grinding open pits, drum storage	VOCs
12	NONE	1109 E. Jackson St.	Reliance Steel & Aluminum	None, asphalt covered
13	NONE	N. of Tonto St. between 11th & 12th St.	South of Southern Pacific Switching Yard, drum storage	None, asphalt covered
14	NONE	501 S. 1st Ave.	Gas filling station for APS vehicles	None, asphalt covered
15	NONE	1601 S. 1st Ave.	Mission Uniform & Linen	VOCs

DRAFT

TABLE 4-3 (continued)
RECENT SOIL SAMPLING LOCATIONS
EAST WASHINGTON STUDY AREA

SAMPLE LOCATION NUMBER	SUMMARY REPORT AIR PHOTO REFERENCE SITE NO./PLATE NO.	LOCATION	DESCRIPTION	SAMPLE TYPE
16	27/A-11	1321 S. Central Ave.	Interstate Parts & Machine Co.	VOCs
17	26/A-11	490 E. Pima St.	Cahill Desert Products	VOCs, sampled adjacent vacant lot
18	NONE	747 E. Buckeye Rd.	Hays Roofing & Supply, Inc., stained soil	VOCs
19	NONE	313 W. Apache St.	Apache Electric & Electronics, scrap metal, plastics	VOCs, metals
20	NONE	16 W. McDowell Rd.	Mountain Bell	None, asphalt covered
21	NONE	1515 N. 7th Ave.	Best Cleaners	None, asphalt covered
22	8/A-4	Sky Harbor Int'l Airport	Arizona Air National Guard, stained soil near terminals	VOCs
23	8/A-4	Sky Harbor Int'l Airport	stained surface near terminals	VOCs (one sample collected at end of pavement where runoff is directed)
24	8/A-4	Sky Harbor Int'l Airport	stained surface near terminals	None: Site 23 sampled instead
25	NONE	4225 E. Madison St.	Henes Stamping Inc., unlined ponds/effluent	VOCs, metals
26	NONE	2113 E. Mohave St.	Handy & Harmon Electronic Materials Corp., observed drums labeled chloroethene and trichloroethane	None, asphalt covered
27	22, 24/A-9	2325 S. 7th St.	Ameron	Metals, unable to obtain sample at depth for VOCs

DRAFT

DRAFT

TABLE 4-4
SUMMARY OF RECENT SOIL SAMPLING RESULTS
EAST WASHINGTON STUDY AREA
AUGUST 1988
VOLATILE ORGANIC COMPOUNDS (VOCs) DETECTED

PARAMETER	SOIL CLEANUP LEVEL* (mg/kg)	SAMPLE LOCATION NUMBERS FACILITY NAME 1 West. Auto. Machine Company	9A So. Pacific Switching Yard	98 So. Pacific Switching Yard	10 B.S.& W. Energy Corp	11 Precision Grinding
Tetrachloroethene	0.067	4.6	<0.010	<0.010	0.5	<0.010
Toluene	200	<0.250	0.2	0.3	3.1	0.4
Xylenes (m,p-,o-)	44	<0.250	<0.250	<0.250	6.1	<0.250

PARAMETER	SOIL CLEANUP LEVEL (mg/kg)	SAMPLE LOCATION NUMBERS FACILITY NAME 16 Interstate Parts & Machine Co.	22 AZ Air National Guard	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
Ethylbenzene	680	<0.025	<0.025	0.04	0.1	<0.025	<0.025
Toluene	200	0.1	0.03	0.1	0.1	0.03	0.09

All units are in milligrams per kilogram (mg/kg).
Only those compounds detected during this sampling program are listed.
* indicates ADHS Soil Clean-up level guidelines.
Values exceeding guidelines are underlined

DRAFT

TABLE 4-4 (continued)
SUMMARY OF RECENT SOIL SAMPLING RESULTS
EAST WASHINGTON STUDY AREA
AUGUST 1988
EP TOXICITY DETECTED METALS

PARAMETER	MAXIMUM CONCENTRATION OF CONTAMINANTS FOR CHARACTERISTIC OF EP TOXICITY (ppm)	SAMPLE LOCATION NUMBER / FACILITY NAME					
		4	7	10	19	25	27
		Metal Products	Kaiser Holtzbau	B.S. & W. Energy Corporation	Apache Electric & Electronics	Henes Stamping	Ameron
Arsenic	5	0.028	0.017	0.012	0.026	0.026	<0.005
Barium	100	1.3	0.85	0.47	0.22	1.2	1.3
Cadmium	1	0.023	0.019	0.016	0.014	0.016	0.028
Chromium	5	<0.02	<0.02	<0.02	<0.02	<0.02	0.06
Copper	(A)	NT	NT	NT	NT	158	NT
Lead	5	0.18	0.19	0.16	0.18	0.12	0.33
Silver	5	0.014	0.016	<0.010	0.013	0.014	0.026

*Maximum concentration of contaminants for characteristic of EP Toxicity are reported in milligrams per liter (mg/L) or ppm per 40 CFR 261.24.

All laboratory results are reported in milligrams per kilogram (mg/kg) or ppm unless otherwise noted.

Samples were analyzed for EP Toxicity, not for total metals.

NT indicates not tested.

(A) Not an EP Toxicity metal.

- Precision Grinding, 1411 East Hadley, toluene (0.4 mg/kg)
- Interstate Parts and Machine Company, 1321 South Central Avenue, toluene (0.1 mg/kg)
- Arizona Air National Guard at Sky Harbor International Airport, toluene (0.03 mg/kg).

Toluene was also detected (up to 0.1 mg/kg) in all four background samples. Therefore, the concentrations of toluene detected in the above soil samples are questionable. Ethylbenzene was detected (0.04 and 0.1 mg/kg) in two of the four background samples, but in none of the other soil samples taken.

At two locations, concentrations of PCE in the soils exceeded the ADHS recommended soil cleanup level of 0.067 mg/kg. The locations and associated PCE concentrations were:

- 1601 East Madison Street (Western Automatic Machine Company), 4.6 mg/kg

- 721 South 12th Place (B.S. & W. Energy Corporation), 0.5 mg/kg

4.6 Distribution of Chemicals in the Ground Water

4.6.1 Areal Distribution

Based on available historic water quality data, supplemented by data from samples collected during this first phase of investigation, a number of wells have been identified as containing various concentrations of VOCs. Table 4-5 presents a summary of the wells in which the VOCs have been detected; lists the VOCs detected in each well; and, lists the wells in which the VOC concentrations reportedly exceed MCLs or AALs. The locations of the wells in which VOCs exceed MCLs or AALs are indicated on Figures 2 and 3 as well as Plate 1. Specific concentrations of VOCs for those wells are presented in Appendix D as well as on Plate 2. **As described in Section 4.4.1 the wells in which VOCs exceed MCLs or AALs have been grouped, for reference purposes only, into the following general geographic locations. These locations, as depicted on Plate 1, should not be interpreted as "plumes".**

1. 48th Street and McDowell Road
2. 40th Street and the Salt River Channel
3. 24th Street and Van Buren Street

Tanner 40th St.

● observed above detection limits

* floating product (0.9 feet)

TABLE 4-5

SUMMARY OF VOCs OBSERVED IN THE GROUND WATER IN THE EAST WASHINGTON STUDY AREA

Legal Well Desig. / ENVIS No. / Owner Desig.	1,1-dichloroethane	1,2-dichloroethane	1,1-dichloroethene	trans-1,2-dichloroethene	tetrachloroethene	1,1,2,2-tetrachloroethane	trichloroethene	1,1,1-trichloroethane	chloroform	carbon tetrachloride	methylene chloride	benzene	ethylbenzene	chlorobenzene	toluene	xylenes	bromodichloromethane	dibromochloromethane					
(A-1-3)9ada 3017 Eastlake Park	●	●	◉	●	◉	●	◉						●	●									
(A-1-3)9bdd 3050 Carling Brewery					●		●						●	●									
(A-1-3)9acc 3064 Tiernay Turbines	●		◉	◉	◉		◉	●				◉	●		●	●							
(A-1-3)9ddc 3020-3023 FMC	●		●	●	◉		◉		●					●									
(A-1-3)8abc 3055 Hanny	●	●	●	●			●	●		●													
(A-1-3)8aac 3009 Greyhound	●		●	●	●		◉																
(A-1-3)8baa 3004 Security Center		●	●	●	●		◉	●															
(A-1-3)5cda 1029 U.S.P.O.	●	●	●	●			◉	●							●		●						
(A-1-3)5dd 1027 R&G	●	●	◉	●	◉		◉	●	◉		◉												
(A-1-3)8bda1 3012A Old Courthouse N.	●	●	◉	●	◉		◉																
(A-1-3)8bda2 3012B Old Courthouse S.	●	●	◉	●	◉		◉	●				●	●										
(A-1-3)17bbd 3027 Harmon Park					●		●		●				●				●	●					

● observed above detection limits ◉ observed above MCLs or ADHS Action Level guidelines

DRAFT

TABLE 4-5 (continued)

SUMMARY OF VOCs OBSERVED IN THE GROUND WATER IN THE EAST WASHINGTON STUDY AREA

Legal Well Desig. / ENVIS No. / Owner Desig.	1,2-dichlorobenzene	1,1-dichloroethane	1,2-dichloroethane	1,1-dichloroethene	trans-1,2-dichloroethene	tetrachloroethene	1,1,2,2-tetrachloroethane	trichloroethene	1,1,1-trichloroethane	chloroform	methylene chloride	vinyl chloride	benzene	ethylbenzene	toluene	xylenes	phthalates	Chevron S-350
(A-1-3)11bbb1 4001 Deer-O OW1			●	◉	◉	◉		◉		◉							●	
(A-1-3)11bbb2 4002 Deer-O OW2					◉	●		◉		◉	◉				●		●	●
(A-1-3)11bbb3 4003 Deer-O OW3					◉			◉		◉			◉	●	●	◉	●	●
(A-1-3)11baa 4034 Desert Hills					◉		◉	◉		◉								
(A-1-3)10aa 3051 Sun Motor Exch.																		●*
(A-1-3)15aac 1 3039 AVIS MW-1													◉	◉	◉	◉		
(A-1-3)15aac 2 3040 AVIS MW-2		●			●			●					◉	●	●	●		
(A-1-3)15aac 3 3041 AVIS MW-3		●			●	●		◉	●				◉			●		
(A-1-3)15adb 3044 AVIS MW-4		●			●			●										
(A-1-3)15abd 3043 AVIS MW-6		●						●										
(A-1-3)15aac 7 3042 AVIS MW-7													◉		●	●		
(A-1-3)13dda 4015 Tanner 40th St.	●	●			◉			◉				◉						

● observed above detection limits ◉ observed above MCLs or ADHS Action Level guidelines

* floating product (0.9 feet)

DRAFT

[redacted] observed [redacted] above detection limit [redacted] observed [redacted] above MCL [redacted] or ADEQ action level guidelines [redacted]

** These data are from Dames and Moore Draft RI/FS study for Motorola 52nd Street, and are subject to revision

TABLE 4-5 (continued)

SUMMARY OF VOCs OBSERVED IN THE GROUND WATER IN THE EAST WASHINGTON STUDY AREA

Legal Well Desig. / ENVIS No. / Owner Desig.	1,1-dichloroethane	1,2-dichloroethane	1,1-dichloroethene	trans-1,2-dichloroethene	1,2-dichloropropane	tetrachloroethene	1,1,2,2-tetrachloroethane	trichloroethene	1,1,1-trichloroethane	chloroform	carbon tetrachloride	ethylbenzene	bromodichloromethane	dibromochloromethane
(A-1-3)15cdd1 3047 ADOT #D-1						◉		●		●				
(A-1-3)8cdd 3016 not available	●	●	●	●		◉		◉	●					●
(A-1-3)15cdd3 3049 ADOT #D-3			●			◉		●		●				
(A-1-3)15cad 3056 ADOT #D-6	●		◉	●		◉		◉		●				
(A-1-3)15acc1 3058 ADOT #D-7	●		●	●		●		◉		●				
(A-1-3)15acc2 3059 ADOT #D-8	●		●	●		●		●		●				
(A-1-3)15abc 3057 ADOT #D-9	●		●	●		●		◉		●				
(A-1-3)8acd 3054 ADOT PWT-7	●				●						●	●	●	
(A-1-3)5dcd 1026 ADOT PWT-8		●	●	●		◉		◉			●		●	
(A-1-3)8dcb 3053 ADOT WT-8						●	●	◉						

DRAFT

TABLE 4-5 (continued)

SUMMARY OF VOCs OBSERVED IN THE GROUND WATER IN THE EAST WASHINGTON STUDY AREA

Legal Well Desig. / ENVIS No. / Owner Desig.	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	1,1-dichloroethane	1,2-dichloroethane	1,1-dichloroethene	trans-1,2-dichloroethene	tetrachloroethene	trichloroethene	chloroethane	1,1,1-trichloroethane	1,1,2-trichloroethane	chloroform	carbon tetrachloride	methylene chloride	vinyl chloride	benzene	ethylbenzene	chlorobenzene	toluene	xylenes	pthalates	Freon 113
(A-1-4)18dbc 4019 Estes NE				●		●	●	◉	◉				◉						●				
(A-1-4)18cac 4020 Estes E	●	●	●	●		◉	◉	◉	◉	●	●	●				◉	●	●	◉	●	●	●	
(A-1-4)18cbd1 4024 Estes NW	●		●	●		●	◉		◉	●						◉	●		●	●			
(A-1-4)18cbd2 4025 Estes W	●		●	●	●	●	◉	●	◉	●	●					◉	◉	●	◉	●	●	●	
(A-1-4)18cca1 4027 Bradley Prod.	●		●	●		◉	◉	◉	◉	●	●					◉	●		●	●			
(A-2-4)31ccd ** 2023 DM 119						●		◉	●		●												
(A-1-4)6bdb ** 2024 DM 120									◉		◉												
(A-1-4)6bcb ** 2025 DM 121							◉	◉	◉		●			◉									
(A-1-3)1bdd ** 2016 DM 126							●	◉	◉										●				
(A-1-3)1ada ** 2018 AZ Land Dept.				●		●	●	●	●		●		●										
(A-1-3)1ddd ** 2019 SRP 18E 5N						●			◉		●				●								●

● observed above detection limits ◉ observed above MCLs or ADHS Action Level guidelines

** These data are from Dames and Moore Draft RI/FS study for Motorola 52nd Street, and are subject to revision

DRAFT

TABLE 4-5 (continued)

SUMMARY OF VOCs OBSERVED IN THE GROUND WATER IN THE EAST WASHINGTON STUDY AREA

Legal Well Desig. / ENVIS No. / Owner Desig.	1,1-dichloroethene	methylene chloride	chloroform	carbon tetrachloride	chlorobenzene	tetrachloroethene	trans-1,2-dichloroethene	1,1,1-trichloroethane	trichloroethene	1,1-dichloroethane	1,2-dichloroethane	Freon 113
(A-1-4)6acc ** 2020 DM104	◉	◉	●	●	●	◉	●	●	◉	●	●	●
(A-1-4)6ada ** 2033 DM115	◉		●	●		◉	●	●	◉	●	●	●
(A-1-4)6aba ** 2021 DM106	●	◉	◉	◉	●	◉	●	◉	◉	●		●
(A-1-4)6adb ** 2032 MP51	◉	●	◉		●	◉	◉	●	◉	●		●
(A-1-4)6aab ** 2022 MP49	◉	◉	◉	◉		◉	◉	◉	◉	●		●
(A-1-4)6aac ** 2028 MP50	●		◉	●		◉	●	●	◉		●	●
(A-1-4)6acc ** 2031 Willis						◉	◉	◉	◉	●		

● observed above detection limits

◉ observed above MCLs or ADHS Action Level guidelines

DRAFT

4. 20th Street and Mojave Street
5. 16th Street and Jackson Street
6. Central Avenue and Washington Street

The area identified above as "16th Street and Jackson Street" was previously (Section 4.4.1) identified as the "16th Street and Jefferson Street" area. However, new data generated during the time this study was being conducted suggest that Eastlake Park (16th Street and Jefferson Street), the FMC (16th Street and Buckeye Road) and the Tiernay Turbines (13th Street and Jackson Street) facilities may be part of a single area of degraded ground water. Therefore, these three areas have been identified with a single geographic location (16th Street and Jackson).

4.6.2 Vertical Distribution

As discussed in Section 2 of this report, the basin-fill material can be divided into three general stratigraphic units: the Upper Unit; the Middle Unit; and the Lower Unit. Although semi-confined conditions may occur locally, the saturated basin-fill deposits are assumed to be a single unconfined aquifer system with appreciable amounts of water available within each geologic formation (Brown, 1988).

The depths of wells in which VOC concentrations exceed MCLs or AALs (see Table 4-6) were used to estimate the vertical distribution of VOCs in the ground water. Based on the descriptions of the aquifer units presented in Section 2.3.4.1 it appears that most of the wells penetrate the Upper and/or Middle Units between 50 and 450 feet below the ground surface. More detailed investigations, which might include isolated-zone testing, are needed before a more reliable estimate of the vertical distribution of the VOCs in the ground water can be made.

DRAFT

Table 4-6

Depths of wells in Which VOCs Have Been Detected Above MCLs or ADHS Action Levels

ENVIS Site Number	Legal Well Designation	Owner Designation	Well Depth (feet below ground surface)
3017	(A-1-3)9ada	Eastlake Park	302
3064	(A-1-3)9acc	Tiernay Turbines (4 wells)	88-107.6
3020-23	(A-1-3)9ddc	FMC (4 wells)	82-85
3009	(A-1-3)8aac	Greyhound	NA
3004	(A-1-3)8baa	Security Center	163
1029	(A-1-3)5cda	U.S. Post Office	NA
1027	(A-1-3)5dd	R & G (Phoenix Newspapers)	238
3012A	(A-1-3)8bda1	Old Courthouse N.	299
3012B	(A-1-3)8bda2	Old Courthouse S.	199
3016	(A-1-3)8cdd	Not Available	99
3047	(A-1-3)15cdd1	ADOT #D-1	NA
3049	(A-1-3)15cdd3	ADOT #D-3	NA
3056	(A-1-3)15cad	ADOT #D-6	NA
3058	(A-1-3)15acc1	ADOT #D-7	NA
3057	(A-1-3)15abc	ADOT #D-9	NA
1026	(A-1-3)5dcd	ADOT PWT-8	90
3053	(A-1-3)8dcb	ADOT WT-8	76
4001	(A-1-3)11bbb1	Deer-O OW1	86
4002	(A-1-3)11bbb2	Deer-O OW2	90
4003	(A-1-3)11bbb3	Deer-O OW3	85
4034	(A-1-3)11baa	Desert Hills	63
3051	(A-1-3)10aa	Sun Motor Exchange	76
3039	(A-1-3)15aac1	AVIS MW-1	85
3040	(A-1-3)15aac2	AVIS MW-2	99
3041	(A-1-3)15aac3	AVIS MW-3	107
3042	(A-1-3)15aac7	AVIS MW-7	115
4019	(A-1-4)18dbc	Estes NE	100
4020	(A-1-4)18cac	Estes E	100
4024	(A-1-4)18cbd1	Estes NW	100
4025	(A-1-4)18cbd2	Estes W	100
4027	(A-1-4)18cca1	Bradley Production	160
4015	(A-1-3)13dda	Tanner 40th St.	200
2020	(A-1-4)6acc	DM104	306*
2021	(A-1-4)6aba	DM106	370*
2022	(A-1-4)6aab	MP49	260*
2028	(A-1-4)6aac	MP50	257*
2031	(A-1-4)6acc	Willis	250
2032	(A-1-4)6adb	MP51	250*
2033	(A-1-4)6ada	DM115	56
2023	(A-1-4)31ccd	DM 119	300*
2024	(A-1-4)6bdb	DM 120	155
2025	(A-1-4)6bcb	DM 121	310*
2016	(A-1-4)1bdd	DM 126	270
2019	(A-1-3)1ddd	SRP 18E 5N	155

NA = Not Available
* Completed for sampling at multiple intervals

DRAFT

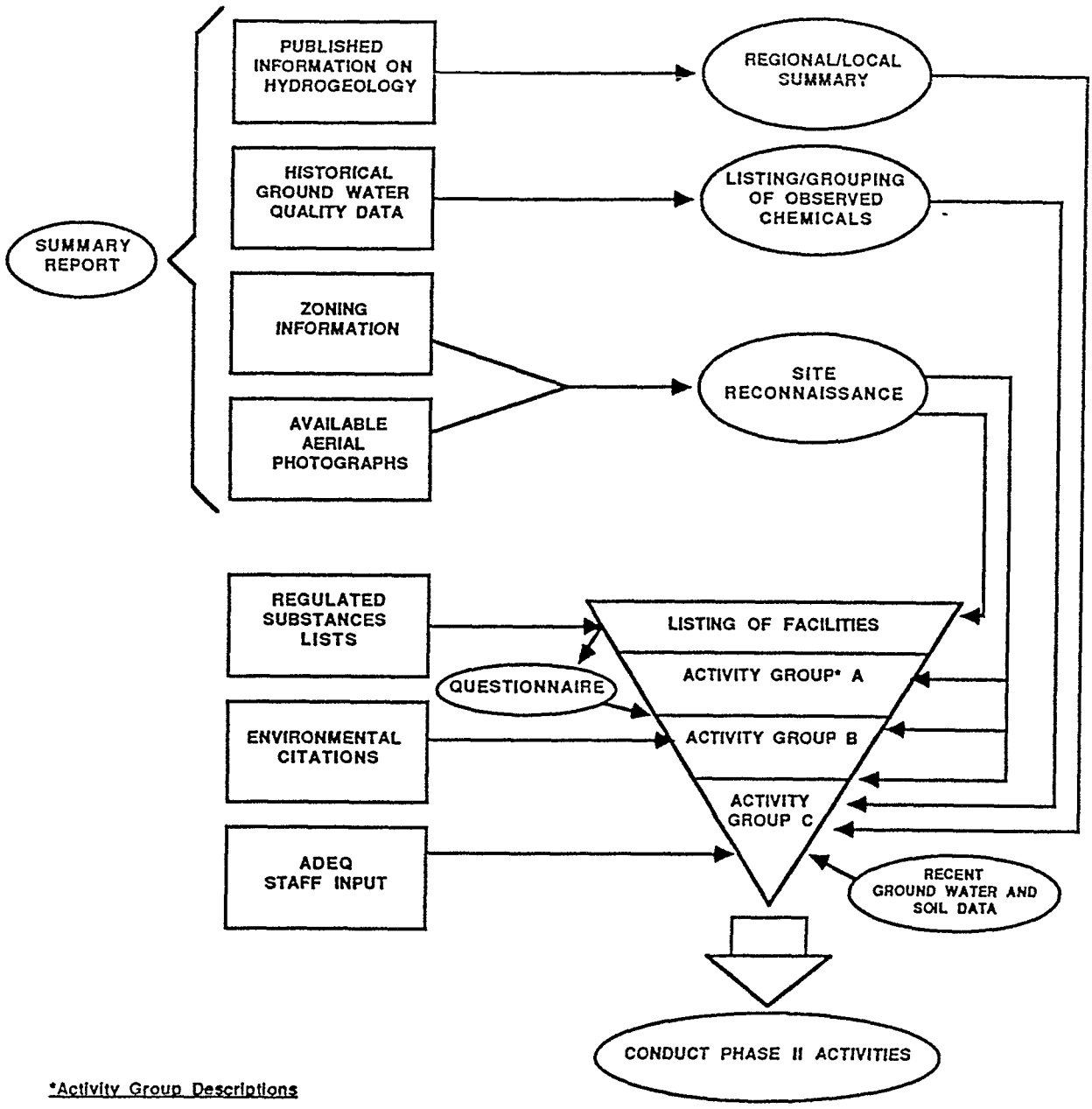
5 DETERMINATION OF PHASE II INVESTIGATIVE ACTIVITIES

5.1 Methodology

The following sections provide a summary of the rationale and procedures used in developing: 1) a list of facilities for continuing evaluation; and 2) recommendations for the level of effort for continuing evaluation. The process (shown schematically in Figure 4) refined initial listings of facilities within the study area, to eventually establish a list of facilities proposed for further work in Phase II of the continuing WQARF investigations. Future investigative activities to be carried out at the listed facilities may include some or all of the following: questionnaire responses; detailed records searches; detailed site inspections; and physical testing. Facilities requiring questionnaire responses would satisfy the requirement by submitting a response to ADEQ's questionnaire. A detailed records search would entail a review of land uses, ownership, aerial photographs, etc., in a manner similar to that performed for environmental site assessments conducted during the buying or selling of property. Detailed site inspections would be conducted at a given facility by trained ADEQ or contractor staff. "Physical testing" may include: near surface soil sampling and analysis; soil boring (with sampling and analysis); and ground water sampling and analysis. "Physical testing" could also include the construction of monitoring wells or the hydrogeologic characterization of the site. The specific activities recommended to be carried out at respective facilities are indicated on the facilities list in Appendix A.

The activities leading to the determination of appropriate future investigative activities for listed facilities included: reviewing available information previously published and contained in the Summary Report (Kleinfelder, 1988); observing existing facilities and practices during site reconnaissance; reviewing responses to the questionnaire developed for this study; evaluating the data obtained by this study during recent ground water and soil sampling; reviewing additional historic ground water quality data acquired since the publishing of the Summary Report; reviewing available public records regarding regulated substances and environmental citations for the listed facilities; and incorporating ADEQ input.

DRAFT



*Activity Group Descriptions

A: respond to questionnaire plus records search
B: Activity Group A plus site inspection
C: Activity Group B plus physical testing

KLEINFELDER

Project Number 52-1020-01 June 1989

ADEQ Task Assignment K-3
East Washington Study Area
Phoenix, Arizona

Process for Listing of Facilities for Continuing Evaluation

FIGURE 4

A review of compiled data and information was conducted to determine appropriate future investigative activities at the respective facilities. Figure 4 illustrates the linking of information and how some information was used to define groups of facilities warranting subsequent activities. Figure 4 uses rectangles to designate information collected by other parties and generally publicly available; the ovals indicate information generated by this study; and the inverted triangle depicts the process of listing facilities and determining appropriate subsequent activities.

The list of facilities indicates what investigative activities are planned for each facility. The list should not be construed to represent known contributors or all potential contributors to the observed chemicals in the ground water. Ranking scores were not developed during this process, since much of the data typically used (for example, by the USEPA) for ranking a particular site were not available at this phase of study.

The listing of facilities was developed in the following step-wise manner:

1. Information gathered during the documents search was compiled to develop a summary of regional and local hydrogeology, and a listing and grouping of chemicals observed in ground water within the study area.

2. a) A reconnaissance was performed at study area sites identified through a review of zoning information and available aerial photographs. During site reconnaissance, chemical and or waste handling practices were observed, where feasible.

   b) Based on the results of the site reconnaissance and a review of regulated substances lists, an initial listing of facilities was developed. A total of approximately 995 facilities were initially listed.

   c) Field observations during site reconnaissance were used to classify the initial list into a group of facilities for which investigative activities in Phase II will include additional records searches and requests for questionnaire responses. Examples of such field observations may include: evidence of drum storage; stained ground in the vicinity of drum storage or maintenance areas; and active disposal or previously documented spills of wastes in non-designated disposal areas or unlisted disposal facilities.

3. A questionnaire was developed and sent to the initial list of approximately 995 facilities to assess chemical handling and disposal practices, and existing reporting procedures. A review of the responses was performed, and the results were compared with the field observations, and environmental citation files, to further group the list of facilities. From the first group of selected facilities, a second group was selected for which Phase II activities would include detailed site inspections, additional records searches, and requests for questionnaire responses, if none had previously been received.

4. The facility's proximity to areas of observed chemicals in the ground water was reviewed to assess its hydrogeologic potential for contribution to observed chemicals. In addition, field observations, recent ground water and soil data, and reported chemical uses were reviewed along with input from ADEQ staff to further classify the list into a third group of facilities for which Phase II investigative activities will include physical testing, detailed site inspections, additional records searches, and requests for questionnaire responses, if none had previously been received. The list of facilities and respective investigative activities planned for Phase II of this study are included in Appendix A. A more detailed discussion of Phase I activities leading to the recommending of Phase II activities at listed facilities is presented in the following sections.

5.1.1 Literature and Records Search

A literature and records search was used to compile background information on the East Washington Study Area. The reviewed information was used early in the process to eliminate areas such as residential zones and include previously identified sources of chemicals, as well as to investigate potential chemical migration routes, and to assess the types of groupings of observed chemicals in the ground water. The following information was utilized:

- LAND USE: Zoning information was used to define commercial and industrial land uses. City and county zoning descriptions were used to classify the study area into areas based on the type of zoned land use (see Summary Report, Kleinfelder, 1988 and Section 4.2.1 of this report).

- STUDY AREA CONDITIONS: Information on geology, hydrogeology, and ground water quality was assembled through a review of available reports and historical data. The sources of this information are discussed in Section 3 and in the Summary Report (Kleinfelder, 1988). This information was used to estimate potential chemical migration routes, and to list and group the chemicals historically observed in the ground water.

- CHEMICAL USERS: Files obtained from Federal, State and local government agencies were reviewed for the location and types of chemicals known to be used by industries within the study area, or for any known chemical waste generators. The results of the review were compared with ground water quality data to identify facilities which appeared to be either: a) upgradient (based on regional ground water migration), or b) using chemicals observed in the ground water. Additionally, compliance files were reviewed to investigate the past disposal history and use of observed chemicals, as well as to identify the types of chemicals involved in previously documented chemical releases.

- AERIAL PHOTOGRAPH REVIEW: A review of available aerial photographs (Section 4.2.2) identified several land uses which suggest either chemical storage and use, or potential waste disposal. A compilation of the aerial photograph review is presented in Appendix A of the Summary Report (Kleinfelder, 1988), along with copies of the 1986 photographs on which observations from historic photographs have also been noted. The areas identified as having a strong potential for past land uses conducive to chemical releases were plotted on the base maps, and identified using zoning and parcel information. Some of these locations were then chosen for soil sampling based on apparent stained soil, the presence of storage tanks, debris, spoil piles, landfills, or other suspect land uses (Soil Sampling Plan, Kleinfelder, 1988).

5.1.2 Site Reconnaissance

A site reconnaissance resulted in a listing of facilities and readily observable information on chemical storage, handling and disposal practices. Stained ground around chemical storage areas, drum storage, and other practices were noted if observed during the site reconnaissance. The general housekeeping practices were observed, and facilities with practices that may contribute to spills were considered for further investigation.

5.1.3 Questionnaire Responses and Compliance

A questionnaire was sent to those current owner/operators of facilities (approximately 995) identified as a result of the literature and records search, and the site reconnaissance. Responses to the questionnaire were reviewed regarding the types of chemicals handled at the facility and the reporting procedures pertaining to the handling and disposal of the chemicals. A non-response to the questionnaire did not, by itself, adversely affect the evaluation of a facility. Approximately 280 responses were received.

Following this review, RCRA, CERCLA, ADEQ, and local agency compliance files were investigated to identify those facilities with past histories of compliance problems. Particular attention was given to the types of chemicals involved and the reported handling or disposal measures. Facilities were classified as needing additional records searches and/or detailed site inspections if: 1) the questionnaire response did not correlate to compliance information; or 2) a questionnaire response had not been returned for a facility with a reported compliance violation, or 3) the questionnaire response indicated that a facility utilized one or more of the observed chemicals in the ground water.

5.1.4 Proximity to Observed Chemicals in the Ground Water

Available ground water quality data were compiled, and a listing of observed chemicals and their distribution were developed (Plates 1 and 2 and Section 4.4).

Facilities were reviewed for their proximity to areas where chemicals have been observed in the ground water. Facilities that were previously classified as needing additional record searches and detailed site inspections and generally appeared to be regionally upgradient of, overlying, or adjacent to, areas of observed chemicals in the ground water were classified as also needing physical testing.

In addition, several facilities were classified as needing physical testing based on site reconnaissance information, the results of recent ground water and soil analyses (Section 4.4 and 4.5), and/or discussions with ADEQ staff.

DRAFT

5.2 Continuing Evaluation of Facilities

The majority of chemicals of concern in the ground water are synthetic chemical compounds. Thus, the apparent source of these compounds is the activity of humans. In general, comparing the distribution of the chemicals with land uses indicates that the potential sources are typically located in areas that are zoned for light and heavy industrial use; although commercial uses are also present such as facilities with underground fuel storage tanks. The majority of the chemicals of concern encountered are industrial solvents, degreasing agents, and fuels typically utilized in the manufacturing or fabrication of metal and metal products, electronics and coatings, or are associated with bulk storage and equipment maintenance and use. This phase of investigation has been performed to develop a list of facilities for subsequent investigative activities. Although industrial or commercial enterprises involved in the manufacturing, distribution, use, or disposal of these chemicals were not exclusively investigated, the majority of the listed facilities are associated with these industries.

The facility listing process has involved several steps (as previously discussed) with input from various types of information. As explained in Section 5.1, facilities on the list are classified according to the investigative activities planned for Phase II. A goal of Phase II is to determine the extent (if any) that a facility has or may have contributed to the observed chemicals in the ground water.

DRAFT

6 CONCLUSIONS

6.1 Chemical Releases into the Ground Water

This section presents conclusions based on available data obtained during the study, and the correlation of these data with respect to: 1) the hydrogeologic characteristics of the Salt River Basin; and 2) EPA Maximum Contaminant Levels (MCLs) promulgated under the Safe Drinking Water Act. Draft Arizona Department of Health Services (ADHS) interim criteria for public drinking water supply were also used in evaluating the data. The conclusions are:

- Concentrations of chemical constituents in excess of established MCLs or ADHS action level guidelines have been observed in the East Washington Area, Phoenix, Arizona. The organic constituents include:

Chemicals (acronym)	MCL*	AAL*
trichloroethene (TCE)	5.0	5.0
tetrachloroethene (PCE)	NE	1.0
1,1-dichloroethene (1,1-DCE)	7.0	7.0
trans-1,2-dichloroethene (trans-1,2-DCE)	NE	70
1,1,1-trichloroethane (TCA)	200	200
1,1,2,2-tetrachlorethane (PCA)	NE	0.50
vinyl chloride	2.0	2.0
benzene	5.0	5.0
ethylbenzene	NE	680
chlorobenzene	NE	60
toluene	NE	2000
xylenes	NE	440
methylene chloride	NE	4.7
chloroform	100(a)	3.0(b)
carbon tetrachloride	5.0	5.0

* all units are in ug/L
NE = none established
(a) for total trihalomethanes
(b) when source is not a by-product of chlorination

- Based on historic data and samples collected and analyzed as part of this study, six : in the East Washington Study Area have been identified in which concentratio: VOCs in the ground water exceeded MCLs or AALs. These locations, as depicte Plate 1, include:

  1. 48th Street and McDowell Road
  2. 40th Street and the Salt River Channel
  3. 24th Street and Van Buren Street
  4. 20th Street and Mojave Street
  5. 16th Street and Jackson Street
  6. Central Avenue and Washington Street

  Section 4.4 discusses these general geographic locations at which VOCs were obs above MCLs or AALs. **The geographic locations are given for ease of refe purposes only and are not to be interpreted as "plumes". Several of these geogr locations may be part of a single plume, however, there are insufficient da positively link them together at this time.** A more accurate estimate of the distrib of the chemicals in the ground water is planned for Phase II of this study.

  The organic chemicals most commonly detected above MCLs or AALs at these were: trichloroethene (TCE), tetrachloroethene (PCE), trans-1,2-dichloroethene (t 1,2-DCE), 1,1-dichloroethene (1,1,-DCE), benzene, vinyl chloride, and chloroform addition, 0.9 feet of floating product (fuel hydrocarbons, 230,000 ug/L) was measur Well (A-1-3)10aa (Sun Motor Exchange) while sampling wells as part of this study.

6.2 Continuing Evaluation of Facilities

During this study a list of facilities within the study area was developed from available sources and field reconnaissance. As this study progressed, several steps were tak determine the appropriate investigative activities to be carried out during Phase II of this s These steps (as discussed in Section 5) included: literature and records searches. reconnaissance; the distribution of a questionnaire to and processing of responses facilities on the initial list; and evaluation of proximity to observed chemicals in the gr water. This Phase I study resulted in the development of a listing of facilities for conti evaluation to determine their potential for contributing to the observed chemicals in the gr

water. The list of facilities, along with the investigative activities planned for each, is given in Appendix A.

6.3 Potential Effects of Ground Water Degradation

6.3.1 Potential Impacts on Water Users

The primary uses of ground water within the study area are irrigation, cooling, and industrial. Although wells in the area are not generally used for municipal supply, migration of the observed chemicals could possibly impact the future use of the ground water. It is also possible that any private domestic wells located downgradient could be affected.

The following table provides a list of the municipal wells that could potentially be affected by the migration of chemicals observed in ground water in the East Washington Study Area. Even though there are no municipal wells within the East Washington Study Area, several municipal wells appear to be located downgradient.

TABLE 6-1

POTENTIALLY AFFECTED MUNICIPAL WELLS

Well Number	Owner	Owner Designation
(A-1-2)2bcc	City of Phoenix	Falcon Park (inactive)
(A-1-3)6dca	City of Phoenix	University Park (inactive)
(A-1-3)18bad	City of Phoenix	Alkire Park (inactive)

Available pumping schedules for City of Phoenix and SRP wells within the East Washington Study Area were obtained. These records indicated that the City of Phoenix wells, as well as the SRP wells along the Grand Canal in the northeastern portion of the East Washington Study Area, are generally considered to be inactive. The SRP wells are typically pumped for a period of approximately 24 hours per year to ensure proper working order. Therefore, these wells do not significantly change ground water flow patterns within the East Washington Study Area.

6.3.2 General Health Effects of Chemicals

An analysis to identify human health risks associated with potential exposure to chemicals found in the East Washington Study Area was conducted by ADEQ as part of the scoring for WQARF eligibility. Federal regulations and State guidelines were reviewed relative to maximum allowable concentrations of individual chemicals found in public water supplies. The chemicals identified in the ground water above applicable standards include: volatile organic compounds (VOCs), barium, iron, manganese, sulfate, and nitrate. Of these chemicals, seven are probable or known human carcinogens. Concentrations of these seven chemicals exceed concentrations estimated to produce a one in one million risk of cancer. These risk estimates are highly conservative in that they are derived using techniques outlined by EPA (1986), which assume that for each day over a lifetime, a 70 kg person consumes 2 liters of water containing the maximum observed concentration of the carcinogen. Numerous volatile organic compounds have been observed in ground water samples obtained from wells in the East Washington Study Area. Measured levels of fifteen organic chemicals exceeded Federal regulations and draft State (ADHS) guidelines.

The primary route of exposure (if any exist) to the chemicals is ingestion through drinking of ground water. Other possible exposure routes are inhalation of vapor and mist, and dermal exposure through contact of the water with the skin. Inhalation effects associated with exposure to the chemicals in the water have previously been documented, and are associated with confined space use of the water, as in a shower or laundry room.

6.4 Limitations of Collected Information

The results of this study are based on the available background information, responses to a questionnaire, comments on the draft Phase I Report, and the scope of work commensurate with available funding. No inference as to the completeness of the available information is made; nor is it meant to be inferred that the field effort was exhaustive. The level of effort expended on field reconnaissance and sampling was defined by the project's Scope of Work and budgetary allowances.

DRAFT

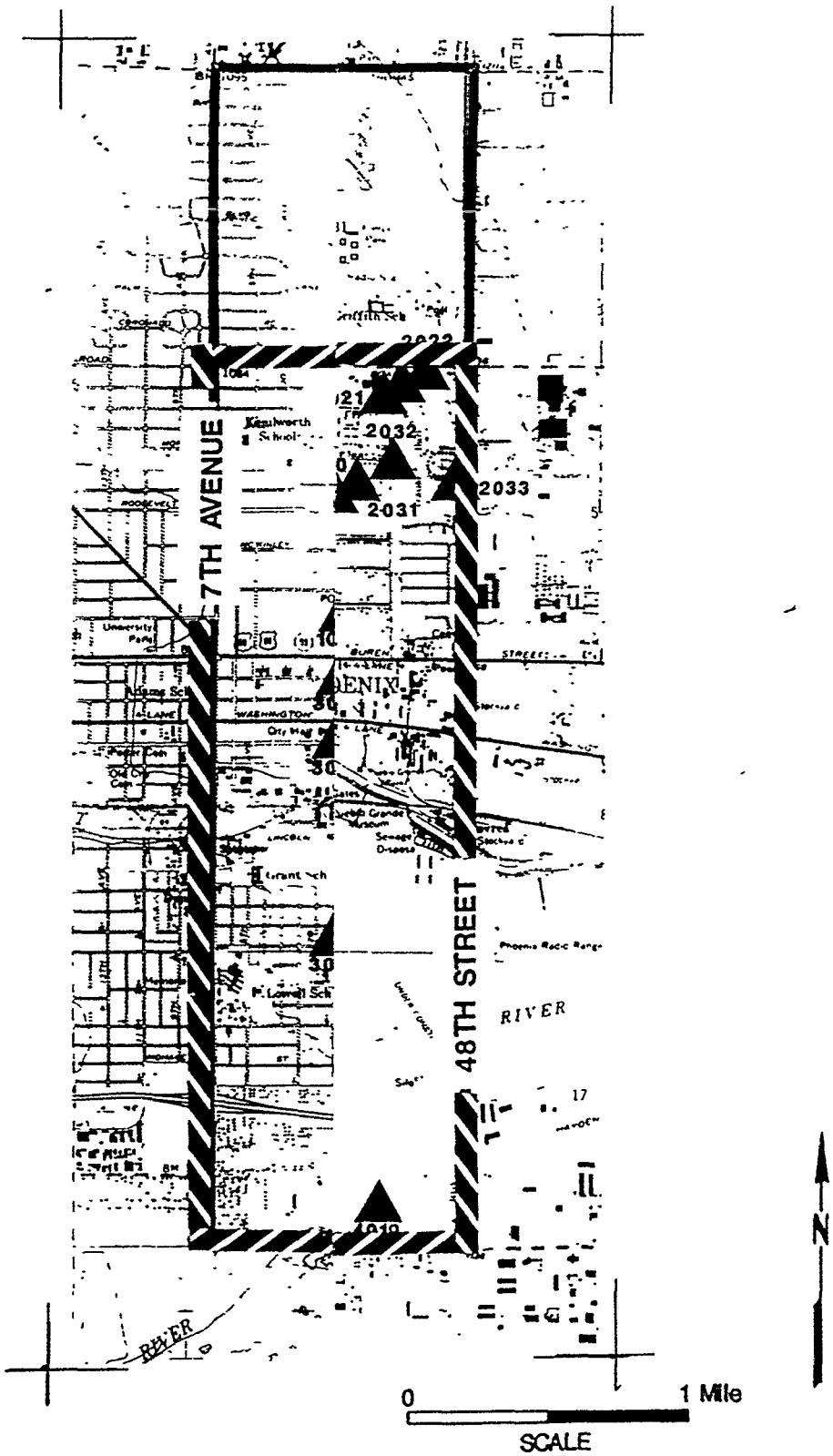
7 RECOMMENDATIONS

7.1 Redefine Study Area Boundaries

Based on the accumulated data from this Phase I investigation it is recommended that the study area boundaries be adjusted. The recommended boundaries, as shown on Figure 5, will allow ADEQ to concentrate efforts for the Phase II investigations within this reduced area where VOCs have been observed in the ground water at concentrations above MCLs or AALs.

7.2 Continuation of Investigations

The actual sources of VOCs in the ground water have not been conclusively identified. In a continuing effort to determine the sources additional investigative activities should be planned for a number of facilities. Accordingly, Phase II investigative activities should include: reissuing of the questionnaire; detailed record searches; detailed site inspections; and physical testing of ground water and soils. Phase II should begin by reissuing the questionnaire, with appropriate follow-up to ensure proper response from those facilities that did not respond to the questionnaire sent out during Phase I. Based, in part, on the information in the responses, detailed record searches should be conducted at selected facilities to determine if site inspections or physical testing is warranted. At a number of facilities sufficient information has been gathered during Phase I to justify detailed site inspections. These inspections should also include meetings between ADEQ and the current operators/owners of the facilities. The results of these activities would determine whether or not sampling of the ground water or soils at or near the facility would be justified.



ADEQ Task Assignment K-3
East Washington Study Area
Phoenix, Arizona

REVISED STUDY AREA BOUNDARY

FIGURE 5

DRAFT

KLEINFELDER

Project Number 52-1020-01

June 1989

DRAFT

7.3 Involvement of Facilities

7.3.1 Site Characterization

Site characterization activities should occur at those facilities where site inspections and detailed records searches indicate a high likelihood that the facility contributed to the chemicals observed in the ground water. Initial site characterization might include sampling of soils collected at intervals from the surface to the water table, and the installation of ground water monitoring wells. Preliminary results would be evaluated to determine if a more thorough characterization of the site is necessary. This site characterization should be carried out in conformance with appropriate RCRA, CERCLA and ADEQ guidelines. The resulting information will assist in understanding what chemicals were released from the facility and their current distribution.

7.3.2 Remediation

Based on results of site characterization and a quantified estimate of released chemicals into the ground water, an appropriate remedial action would be designed and implemented. Remedial action may include, but may not be limited to; in-situ biodegradation; pumping, treatment, and reinjection of the ground water; removal, treatment, and disposal of affected soil; or installation of appropriate treatment facilities on downgradient public drinking water supply wells.

7.4 Refine Estimate of Distribution of Chemicals in the Ground Water

This phase of study was limited in that much of the data accumulated were historical and regional. As a consequence, the reported existence and extent of observed chemicals are only approximate, and additional study is required to more thoroughly define their nature and extent. Additional activities would include more extensive and concurrent sampling of existing wells in the area. Also, installation and sampling of additional monitoring wells may be required, so that deficiencies in data might be eliminated or minimized.

DRAFT

7.5 Monitoring

Frequent monitoring of ground water quality in the study area is recommended. This will aid in understanding the path and rate of migration of currently observed chemicals. A dedicated monitoring network designed specifically for this area should be established and sampled on a quarterly basis. This monitoring network may consist of both new and existing wells. Any new monitoring wells should be designed in accordance with current professional standards for monitoring well construction and ADWR guidelines.

DRAFT

8 LIMITATIONS

The data, discussions, conclusions, and recommendations generated from this phase of activities are based on the following:

- quality and completeness of well records and analytical data obtained and collected for this study
- information provided by contacts at the listed agencies and personal communication during site contacts
- the observations of field personnel
- published guidelines for Maximum Contaminant Levels provided by EPA and draft ADHS Action Level guidelines.

It is possible that variations in the soil or ground water conditions could exist beyond the points addressed in this investigation and within the study area. Also, changes in the ground water conditions could occur in the future due to variations in rainfall, temperature, and local and regional water usage, to name some of the more significant factors.

The services performed by *Kleinfelder* have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in Arizona. No other warranty, expressed or implied, is made.

DRAFT

9 REFERENCES

Arizona Department of Environmental Quality, March, 1987, Draft RI Report WP53 (Motorola).

Arizona Department of Environmental Quality, January, 1988, Arizona CERCLA Investigation and Data System - zipACIDs List.

Arizona Department of Environmental Quality, 1988, Compliance Files on Waste Generators.

Arizona Department of Environmental Quality, 1988, Dry Well List.

Arizona Department of Environmental Quality, 1986, Fortieth Street (Bradley) Landfill Site Inspection Report, by C. Graf.

Arizona Department of Environmental Quality, 1988, List of Underground Storage Tanks (UST) in the State of Arizona.

Arizona Department of Environmental Quality, Hydrology Division, January, 1986, Water Quality Data for Wells in the Eastlake Park.

Arizona Department of Environmental Quality, 1988, RCRA Permits.

Arizona Department of Environmental Quality, April 1988, RCRA Database.

Arizona Department of Environmental Quality, Hydrology Division, August, 1986, Eastlake Park Preliminary Data.

Arizona Department of Environmental Quality, Hydrology Division, February, 1988, Preliminary Data on Deer-O Paints.

DRAFT

Arizona Department of Environmental Quality, Office of Emergency Response and Environmental Analysis, August, 1985, Eastlake Park Site Inspection Report.

Arizona Department of Health Services, Office of Emergency Response and Environmental Analysis, January, 1986, Fortieth Street (Bradley) Landfill Site Inspection Report.

Arizona Department of Health Services, 1979, Arizona Surface Impoundment Assessment.

Arizona Department of Health Services, Eastlake Park Site Inspection by Chuck Graf, 1985.

Arizona Department of Water Resources, 1984, Phoenix Active Management Area, Management Plan, First Management Period: 1980-1990.

Arizona Department of Water Resources, 1986, Maps Showing Groundwater Conditions in the West Salt River, East Salt River, Lake Pleasant, Carefree and Fountian Hills Sub-Basins of the Phoenix Active Management Area, Maricopa, Pinal and Yavapai Counties, Arizona -- 1983.

Bales, Jim, 1985, Environmental Geology of the Tempe Quadrangle, Maricopa County, Arizona: Part II. Masters Thesis, Arizona State University.

Brown, J.G. and D.R. Pool, 1988, Hydrogeology of the Western Part of the Salt River Valley Area, Maricopa County, Arizona, USGS, WRI 88 - unpublished.

Cooley, M.E., 1973, Map Showing Distribution and Estimated Thickness of Alluvial Deposits in the Phoenix Area, Arizona. USGS Map: I-845-C.

Dames and Moore, 1987, Draft Remedial Investigation/Feasibility Study-Motorola 52nd Street Facility.

Daniel, D.L., 1981, Maps Showing Total Dissolved Solids Content of Groundwater in Arizona, Arizona Department Water Resources.

Engineering Science, 1986, Field Work Plan for the FMC-Phoenix Plant.

Engineering Science, 1986, Field Work Plan for the FMC-Phoenix Plant.

Engineering Science, January, 1988, Remedial Investigation Report for the Papago Mil Reservation, Phoenix, Arizona.

Green, C.R. and W.D. Seller, 1964, Arizona Climate. University of Arizona Press, Tucson.

Groundwater Technology, 1987, Additional Investigation of Maricopa County Equipr Services Facility at the Southwest Corner of 1st Avenue and Jackson Street, Phoenix, Arizo.

Kam, W., H.H. Schumann, L.R. Kister, and F.E. Arteaga, 1966, Basic Groundwater Dat Western Salt River Valley Maricopa County, Arizona, US Geological Survey.

Kister, L.R., 1974, Dissolved-Solids Content of Groundwater in the Phoenix Area, Ari USGS Map: I-845-G.

Kleinfelder, 1988, Final Ground Water Sampling Plan, Task Assignment K-3, Eastlake Area, Phoenix, Arizona, prepared for Arizona Department of Environmental Quality.

Kleinfelder, 1988, Final Soil Sampling Plan, Task Assignment K-3, Eastlake Park A Phoenix, Arizona, prepared for Arizona Department of Environmental Quality .

Kleinfelder, 1988, Final Summary Report, Task Assignment K-3, Eastlake Park Area, Pho Arizona, prepared for Arizona Department of Environmental Quality.

Kleinfelder, 1988, Final Workplan, Task Assignment K-3, Eastlake Park Area, Pho Arizona, prepared for Arizona Department of Environmental Quality.

Laney, R.L. and M.E. Hahn, 1986, Hydrogeology of the Eastern Part of the Salt River V Area, Maricopa and Pinal Counties, Arizona. USGS OF Report: 86-4147.

Laney, R.L., R.H. Raymond, and C.C. Winikka, 1978, Maps Showing Water-Level Decl Land Subsidence, and Earth Fissures in South Central Arizona, USGS OF Report: 78-83.

DRAFT

Maricopa County, 1988, List of "Wildcat" Landfills.

Moore, Richard T. and R.J. Varga, 1976, Maps Showing Non-metallic Mineral Deposits in the Phoenix Area, Arizona. USGS Map: I-845-J.

Oppenheimer, J.M., and J.S. Sumner, 1981, Depth to Bedrock Map of Southern Arizona, in Basin Range Province, Arizona, Claudia Stone and J.P. Jenney, eds., Arizona Geological Society Digest, V. 13, pp.111-115.

Osterkamp, W.R., 1973, Map Showing Depth to Water in Wells in the Phoenix Area, Arizona, 1972, USGS Map: I-845-D.

Osterkamp, W.R. and P.P. Ross, 1976, Map Showing Distribution of Recoverable Groundwater in the Phoenix Area, Arizona, USGS Map: I-845-K.

Osterkamp, W.R., 1974, Chemical Quality of Groundwater for Public Supply in the Phoenix Area, Arizona, USGS Map: I-845-F.

Reeter, R.W. and W.H. Remick, 1986, Maps Showing Groundwater Conditions in the West Salt River, East Salt River, Lake Pleasant, Carefree, and Fountain Hills Sub-Basins of Phoenix Active Management Area, Maricopa, Pinal, and Yavapai Counties, Arizona-1983.

Salt River Project, 1988, Water Quality, Hydrology, Hydrogeology, Water Well Data.

Schulten, Cathy S., 1979, Environmental Geology of the Tempe Quadrangle, Maricopa County, Arizona: Part I. Masters Thesis, Arizona State University.

Schumann, H.H, 1974, Land Subsidence and Earth Fissures in Alluvial Deposits in the Phoenix Area, Arizona. USGS, Map: I-845-H.

Scott, Allard and Bohannan, Inc., 1987, Sun Motor Exchange, 2214 E. Washington St., Phoenix, Arizona.

Sellers, W.D. and R.H. Hill, 1974, Arizona Climate 1931-1972, University of Arizona Press, Tucson.

DRAFT

The Arizona Republic/The Phoenix Gazette, December, 1986. Lab Test Results of Two Wells.

Thomsen, B.W. and S. Baldys, III, 1985, Groundwater Conditions in and Near the Gila River Indian Reservation, South-Central Arizona, USGS OF Report: 85-4073.

Turner, R.M., 1974, Map Showing Vegetation in the Phoenix Area, Arizona. USGS Map: I-845-I.

US Bureau of Land Management, US Department of Agriculture, and Arizona Water Commission, 1973, Map of Land Status in the Phoenix Area, Arizona. 1973, USGS Map: I-845-A.

US Bureau of Reclamation and US Department of Agriculture, 1973, Arability Map of the Phoenix Area, Arizona. USGS, Map: I-845-E.

US Bureau of Reclamation, 1977, Geology and Groundwater Resources Report, Maricopa and Pinal Counties, Arizona: U.S. Bureau of Reclamation duplicated report, 105p., appendix.

US Department Agriculture, 1977, Soil Survey of Maricopa County, Arizona, Central Part.

US Department Agriculture, 1974, Soil Survey Eastern Maricopa and Northern Pinal Counties Area, Arizona.

USEPA Data Management Team (San Francisco), February, 1985, Report of Evaluation of Case No. 3324, Eastlake Park, Arizona.

USEPA, Office of Enforcement, May, 1980, Remote Sensing Investigation Solid/Liquid Waste Disposal Sites, Phoenix, Tucson, Yuma, Arizona and Southern Regions of Arizona Volume 1, EPA-330/1-80-002-1.

USEPA-Drinking Water Branch, September 21, 1987, Region 9 EPA Drinking Water Standards and Health Advisory Table.

US Geological Survey, 1986, Annual Summary of Groundwater Conditions in Arizona, Spring, 1984 to Spring, 1985, OF Report: 86-422w.

DRAFT

US Geological Survey, US Department of Agriculture, and Arizona Water Commission, 1973, Map of Irrigated Land in the Phoenix Area, Arizona, USGS Map: I-845-B.

US Geological Survey, 1988, Basic Data and Drilling Chip Logs, from US Geological Survey Files.

DRAFT

APPENDIX A

Facilities List

This appendix contains the list of facilities for which further investigative activities are planned. The specific activities planned for each facility are also indicated.

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
7th Ave. Landfill	7th Ave. & Lower Buckeye Rd. Phoenix, Arizona 85007	City of Phoenix, Public Works 101 S. Central Ave., Ste. 500 Phoenix, Arizona 85004				X
11th St. Landfill	11th St. & Gibson Ln. Phoenix, Arizona 85034	Ameron Pipe Co. 2325 S. 7th St. Phoenix, Arizona 85034				X
14th St. Landfill	14th St. & Magnolia St. Phoenix, Arizona 85034	City of Phoenix, Public Works 101 S. Central Ave., Ste. 500 Phoenix, Arizona 85004				X
16th St. (Del Rio) Landfill	7th to 16th St. & Salt River	City of Phoenix, Public Works 101, S. Central Ave., Ste. 500 Phoenix, Arizona 85004			X	
40th St. (Bradley) Landfill	4346 E. Magnolia Phoenix, Arizona 85034	Bexon Equipment & Mining Corp. 2425 S. 40th St. Phoenix, Arizona 85034	X	X	X	
44th St. & Washington St. Group	4444 E. Washington St. Phoenix, Arizona 85034	Previous Owners: McGraw-Edison Company				X
A Bar A Engraving Co.	820 N. 4th St. Phoenix, Arizona 85004					X
A Bar A Printing	820A N. 4th St. Phoenix, Arizona 85004					X
A & B Tools Co.	3311 E. Washington St. Phoenix, Arizona 85034					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
A & C Battery Distributors	2422 E. McDowell Rd Phoenix, Arizona 85008					X
A & H Supply Co.	1702 E. Jackson St. Phoenix, Arizona 85034				X	X
A & M Alternator Service	2419 E. Jackson St. Phoenix, Arizona 85034					X
AA National Metals	Grant St. Phoenix, Arizona 85004					X
ABC Welding School	2117 E. Buckeye Rd. Phoenix, Arizona 85034					X
ABCO Transformers of Phoenix	3143 E. Roosevelt St. Phoenix, Arizona 85034					X
Able Air Conditioning & Heating Corp.	2325 N. 16th St. Phoenix, Arizona 85006					X
ABS	4313 E. Magnolia St. Phoenix, Arizona 85034					X
ACC Valley Industrial Supply	26 E. Pima St. Phoenix, Arizona 85004					X
Access Freeway Auto	1132 E. Maricopa Frwy. Phoenix, Arizona 85006					X
Action Alarm, Inc.	3005 E. McDowell Rd. Phoenix, Arizona 85008					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Ad Hoc Metal Fabrication Inc.	26 E. Mohave St. Phoenix, Arizona 85004					X
Adams Construction	4006 E. Air Ln. Phoenix, Arizona 85034					X
Advance Mold & Engineering	2003 N. 16th St. Phoenix, Arizona 85006					X
After Five Refrigeration & Heating	2017 N. Dayton St. Phoenix, Arizona 85006					X
Airport Limousine Service	2400 E. Sky Harbor Blvd. Phoenix, Arizona 85034					X
Akers Asphalt & Seal Coating	1351 N. 44th St. Phoenix, Arizona 85008					X
Alert Plumbing & Supply Co.	1910 E. Washington St. Phoenix, Arizona 85034					X
Alex & Sons Body and Paint Shop	1134 E. Maricopa Fwy. Phoenix, Arizona 85034					X
Allied Fleet Products	261 E. University Dr. Phoenix, Arizona 85004					X
Allstate Transmission Repair	433 W. Van Buren St. Phoenix, Arizona 85003					X
Almon Distributors Inc.	300 S. 24th St. Phoenix, Arizona 85004					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Alphagraphics	201 N. Central Ave. Phoenix, Arizona 85004					X
Alphagraphics	34 W. Adams St. Phoenix, Arizona 85003					X
America West Airlines Inc.	3980 E. Sky Harbor Blvd. Phoenix, Arizona 85034	America West 4000 Sky Harbor Blvd. Phoenix, Arizona 85034				
American Airlines Inc.	3400 Sky Harbor Blvd. Phoenix, Arizona 85034	American Airlines, Inc. 4200 American Blvd. Fortworth, Texas 76155				
American Cleaning Systems	1745 E. Jackson St. Phoenix, Arizona 85034					X
American Parts System Inc.	2324 E. University Dr. Phoenix, Arizona 85034					X
American Type & Photo	2440 S. 24th St. Phoenix, Arizona 85034					X
Ameron	2325 S. 7th St. Phoenix, Arizona 85034	Ameron same address				X
Anchor Garage	406 N. 16th St. Phoenix, Arizona 85004					X
Anderson Automotive	3124 E. Washington St. Phoenix, Arizona 85034					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Andrews Electrical Repair	758 E. McDowell Rd. Phoenix, Arizona 85006					X
Anteka	2323 E. University Dr. Phoenix, Arizona 85034					X
Apache Electric & Electronics	313 W. Apache St. Phoenix, Arizona 85003					X
Apache Reclamation	313 W. Apache St. Phoenix, Arizona 85003					X
Apollo TV Services	2709 N. 23rd St. Phoenix, Arizona 85006					X
Appliance Service Center	714 S. Central Ave. Phoenix, Arizona 85034					X
Arinda Aircraft	2645 E. Buckeye Rd. Phoenix, Arizona 85034					X
Aristocrat Lithographers	2204 E. Magnolia St. Phoenix, Arizona 85034	Aristocrat Lithographers 3030 S. Park Drive Tempe, Arizona 85282				X
Arizona Air National Guard 161st Air Refueling Group	2001 S. 32nd St. Phoenix, Arizona 85034-6098		X	X	X	
Arizona Auto Parts	2315 E. Washington St. Phoenix, Arizona 85034					X
Arizona Battery Warehouse	1009 S. 16th St. Phoenix, Arizona 85034					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Arizona Farmer Ranchman	2214 N. Central Ave. Phoenix, Arizona 85004					X
Arizona Fire Burglar Dispatch	2819 N 24th St. Phoenix, Arizona 85008					X
Arizona Jet Inc.	2730 E. Sky Harbor Blvd. Phoenix, Arizona 85034					X
Arizona Machinery Co.	225 N. 1st St. Phoenix, Arizona 85004	Arizona Machinery Co. 225 N. 1st St. Phoenix, Arizona 85326				X
Arizona Metallizing Precision	2610 E. Washington St. Phoenix, Arizona 85034					X
Arizona Paint and Equipment	1400 N. 32nd St. Phoenix, Arizona 85008					X
Arizona Pest Control	1724 S. 1st Ave. Phoenix, Arizona 85034					X
Arizona Plating & Anodizing Co.	618 S. Central Ave. Phoenix, Arizona 85009	David and Dorothy Kipnis same address		X	X	
Arizona Portland Cement	1202 E. Hadley St. Phoenix, Arizona 85034	APC 2400 N. Central Ave. Phoenix, Arizona 85004				X
Arizona Poly Tech Corp.	1105 32nd St. Phoenix, Arizona 85034					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Arizona Propeller Shop	3340 E. Washington St. Phoenix, Arizona 85034			X	X	X
Arizona Public Service	411 N. Central Ave. Phoenix, Arizona 85004	Arizona Public Service P.O. Box 53999 Phoenix, Arizona 85072-3999			X	
Arizona Public Service	502 S. 2nd Ave. Phoenix, Arizona 85003	Arizona Public Service P.O. Box 53999 Phoenix, Arizona 85072-3999			X	
Arizona Real Estate Press	824 E. Washington St. Phoenix, Arizona 85034					X
Arizona Scrap Iron & Metal Co.	433 S. 7th Ave. Phoenix, Arizona 85007					X
Arizona Tanklines, Inc.	4150 E. Magnolia St. Phoenix, Arizona 85034					X
Arizona Tool Products	4102 E. Air Lane Phoenix, Arizona 85034					X
Arizona Wholesale Supply Co.	2020 E. University Dr. Phoenix, Arizona 85034	Arizona Wholesale Supply Co. same address				X
Armenta Printing	1517 E. Washington St. Phoenix, Arizona 85034					X
Arnolds Appliance Co.	2328 E. McDowell Rd. Phoenix, Arizona 85008					X

DRAFT

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Arrow Lifschultz Fast Freight	601 W. Jefferson St. Phoenix, Arizona 85003					X
Art's Auto Service	3119 E. Thomas Rd. Phoenix, Arizona 85018	David Migdal 6701 N. 16th Dr. Phoenix, Arizona 85015		X	X	
Arvin Air Industries	500 S. 15th St. Phoenix, Arizona 85034	Arvin Industies, Inc. 1531 13th St. Columbus, Ind. 47202	X	X	X	
ASAP Print Shop	303 W. McDowell Rd. Phoenix, Arizona 85003					X
Astranetics Manufacturing Co.	3222 E. Jackson St. Phoenix, Arizona 85034					X
Auto Shop	612 N. 1st St. Phoenix, Arizona 85004					X
Atomic Auto Wrecking	758 E. Buckeye Rd. Phoenix, Arizona 85034					X
Automatic Transmission	4120 E. Washington St. Phoenix, Arizona 85034					X
Automatic Transmission	2000 E. Van Buren St. Phoenix, Arizona 85006					X
Avis Rent-A-Car	1440 S. 23rd St. Phoenix, Arizona 85034	Avis Rent-A-Car Sys., Inc. 900 Old Country Rd. Garden City, New York 11530			X	

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Avis Rent-A-Car Systems Inc.	3400 Sky Harbor Blvd. Phoenix, Arizona 85009	Avis Rent-A-Car Sys., Inc. 900 Old Country Rd. Garden City, New York 11530			X	
Axle Transmission of Arizona, Inc.,	1401 S. Central Ave. Phoenix, Arizona 85004	Axle Transmission of Arizona, Inc. same address			X	
B S & W Energy Corp.	725 S. 12th Pl. Phoenix, Arizona 85043	B S & W Energy Corp. 5119 N. 19th Ave., Ste. K Phoenix, Arizona 85015	X	X	X	X
B B & U	10th Pl. Phoenix, Arizona 85034					X
B & K Industries	2442 E. Jackson St. Phoenix, Arizona 85034					X
Bagdad Plastics Co.	625 S. 5th St. Phoenix, Arizona 85004			X	X	X
Bakeshore Equipment	1646 E. University Dr. Phoenix, Arizona 85034					X
Banner Plumbing & Heating	115 S. 22nd St. Phoenix, Arizona 85034	Banner Plumbing same address				X
Basic Metals	4100 E. Madison St. Phoenix, Arizona 85034					X
Bastin Industries	2405 S. 20th St. Phoenix, Arizona 85034					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Bavarian Motors Ltd.	2247 N. 16th St. Phoenix, Arizona 85006					X
Bearing Belt and Chain	729 E. Buckeye Rd. Phoenix, Arizona 85034					X
Belfiore & Associates	2214 N. Central Ave. Phoenix, Arizona 85004					X
Bennett's Photo Service	2801 N. 24th St. Phoenix, Arizona 85008					X
Best Cleaners	1515 N. 7th Ave. Phoenix, Arizona 85003				X	X
Bills Welding & Wrought Iron	2430 E. McDowell Rd. Phoenix, Arizona 85008					X
Bishop Printing	1605 E. Garfield St. Phoenix, Arizona 85006					X
Bob's Transfer, Inc.	111 E. Maricopa Fwy. Phoenix, Arizona 85004					X
Bonds Burglar Alarms	2627 N. 7th Ave. Phoenix, Arizona 85007					X
Boyd Equipment	4020 E. Washington St. Phoenix, Arizona 85034					X
Brown Olds Corp.	2823 N. 48th St. Phoenix, Arizona 85008					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Budget Printing	2801 N. 7th Ave. Phoenix, Arizona 85003					X
C & H Transportation Co.	406 W. Watkins St. Phoenix, Arizona 85036	C & H Transportation Co. 9757 Military Pkwy Dallas, Texas 75227				X
C S & W Contractors Inc.	3845 E. University Dr. Phoenix, Arizona 85034					X
C & W Auto Parts	1902 E. Jefferson St. Phoenix, Arizona 85034					X
C.C.I. Division	4561 E. McDowell Rd. Phoenix, Arizona 85008					X
CTC	2326 E. Magnolia St. Phoenix, Arizona 85034					X
Cactus Transmission	4737 E. McDowell Rd. Phoenix, Arizona 85008					X
Cahill Desert Products	490 E. Pima St. Phoenix, Arizona 85004				X	X
Calmat Co. of Arizona	1801 E. University Dr. Phoenix, Arizona 85034	Calmat Co. of Arizona same address				X
Canyon Industries	734 E. Southern Pacific Dr. Phoenix, Arizona 85034					X
Canyon State Electric	4343 E. Magnolia St. Phoenix, Arizona 85034					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Canyon State Fabrication & Machine Co.	4627 E. University Dr. Phoenix, Arizona 85034					X
Canyon State Material	512 E. Buckeye Rd. Phoenix, Arizona 85004					X
Capital Electronics Supply	1307 N. Central Ave. Phoenix, Arizona 85004					X
Capital Plumbing	320 E. Pima St. Phoenix, Arizona 85004					X
Capitol Engineering Co.	724 E. Southern Pacific Dr. Phoenix, Arizona 85034				X	
Capitol Machine Co.	21 S. 32nd St. Phoenix, Arizona 85034					X
Car Care Mobile Auto	1617 N. 32nd St. Phoenix, Arizona 85008					X
Carling Brewery	150 S. 12th St. Phoenix, Arizona 85034	Heilman Brewing Co. P.O. Box 459 La Crosse, WI 54601				X
Castle Metals	2303 E. Magnolia St. Phoenix, Arizona 85034					X
Central Ave. Landfill	301 W. Watkins St. Phoenix, Arizona 85034	William R. Peck P.O. Box 8007 Phoenix, Arizona 85066		X	X	

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Central Business Systems	2111 E. Magnolia St. Phoenix, Arizona 85034					X
Central Paints	901 S. Central Ave. Phoenix, Arizona 85034					X
Central Sale Co.	902 S. Central Ave. Phoenix, Arizona 85034					X
Certified Industries	4102 E. Air Ln. Phoenix, Arizona 85034					X
Chambers, Inc.	313 S. 36th St. Phoenix, Arizona 85034	Chambers, Inc. same address				X
Checker Cab	8th Pl. & Sherman St. Phoenix, Arizona 85034					X
Chemilex	2717 E. McDowell Rd. Phoenix, Arizona 85008					X
Chemonics Industries (Canyon Industries)	922 E. Southern Pacific Railroad Phoenix, Arizona 85034	Erly Industries, Inc. P.O. Box 21568 Phoenix, Arizona 85036			X	
Chemonics Lab Division	734-A Southern Pacific Dr. Phoenix, Arizona 85034	same as above			X	
Christian Electric Corp.	2402 N. 27th St. Phoenix, Arizona 85008					X
Chukar, Inc.	2224 E. Washington St. Phoenix, Arizona 85034					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Cimarron Materials Inc.	901 S. 12th St. Phoenix, Arizona 85034	Snowbird Investments 901 S. 12th St. Phoenix, Arizona 85034			X	X
Classy Cleaners	N. Central Ave. Phoenix, Arizona 85008					X
Clay Brake & Wheel Alignment	219 E. Roosevelt St. Phoenix, Arizona 85004					X
Coleman's Air Conditioning & Heating	119 S. 42nd St. Phoenix, Arizona 85034	Coleman Plumbing & Heating 2410 S. 19th Pl. Phoenix, Arizona 85034				X
Colletti Trucking	1402 E. Buckeye Rd. Phoenix, Arizona 85034					X
Collins Metal Finishing	37 S. 42nd Pl. Phoenix, Arizona 85034				X	X
Combined Network	2600 N. Central Ave. Phoenix, Arizona 85004					X
Commercial Carriers	733 E. Southern Pacific Dr. Phoenix, Arizona 85034					X
Complete Builders & Maint.	1802 S. Central Ave. Phoenix, Arizona 85004					X
Concept Publishing	2250 N. 16th St. Phoenix, Arizona 85006					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Confidential Copy Service	11 W. Jefferson St. Phoenix, Arizona 85003					X
Connor Engineering & Tech. Inc.	2602 S. 24th St. Phoenix, Arizona 85034					X
Consolidated Electric Distributors	130 S. 29th St. Phoenix, Arizona 85034					X
Consolidated Technologies Corporation	2326 E. Magnolia St. Phoenix, Arizona 85034					X
Construction Rentals & Supply	218 W. Watkins St. Phoenix, Arizona 85003					X
Consumer Air & Heating	2443 E. McDowell Rd. Phoenix, Arizona 85034					X
Consumer Plumbing & Supply Co.	2848 E. Washington St. Phoenix, Arizona 85034					X
Continental Airlines	3400 E. Sky Harbor Airport Phoenix, Arizona 85034	Continental Airlines 3400 Sky Harbor Blvd. Phoenix, Arizona 85034				X
Contractors West Inc.	2801 N. 32nd St. Phoenix, Arizona 85008					X
Co-op	1821 E. Jackson St. Phoenix, Arizona 85034				X	X
Copperstate Auto Products	212 S. 18th St. Phoenix, Arizona 85034					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Copperstate Manufacturing	550 S. Central Ave. Phoenix, Arizona 85004					X
Corley's Carburetor & Supplies	760 E. Fillmore St. Phoenix, Arizona 85006					X
County Pest Control	2518 E. Madison St. Phoenix, Arizona 85034					X
Crest Steel Corp.	4543 E. University Dr. Phoenix, Arizona 85036	Crest Steel Corp. 24724 Wilmington Ave. Carson, California 90745				X
Crow Automotive	3429 E. Van Buren St. Phoenix, Arizona 85008					X
Cudahy Foods Co.	4601 E. Van Buren St. Phoenix, Arizona 85008					X
Custom Circuits	2424 S. 24th St. Phoenix, Arizona 85034		X	X	X	X
Custom Color Co.	117 S. 36th St. Phoenix, Arizona 85034					X
Custom Roofing Co.	320 S. 40 Pl. Phoenix, Arizona 85034					X
Cutter Aviation, Inc.	2750 E. Sky Harbor Blvd. Phoenix, Arizona 85034	Cutter Aviation P.O. Box 20306 Phoenix, Arizona 85036			X	

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Cyprus Specialty Steel Co.	1500 S. 7th St. Phoenix, Arizona 85034				X	X
D. Q. Furniture	1500 S. 7th St. Phoenix, Arizona 85004				X	X
D & C Cleaners & Laundry	201 N. Central Ave. Phoenix, Arizona 85004					X
D'Velco Manufacturing of Arizona	401 S. 36th St. Phoenix, Arizona 85034				X	X
Dallas Smith Engineering Corp.	1102 E. Tonto St. Phoenix, Arizona 85034					X
Davis Eaton Inc.	1111 N. Central Ave. Phoenix, Arizona 85004					X
Dayton Custom Reloading	2401 N. 32nd St. Phoenix, Arizona 85008					
Deer-O-Paints & Chemicals	2431 E. Van Buren St. Phoenix, Arizona 85008			X	X	
Del Rio (16th St.) Landfill	16th & Elwood St. Phoenix, Arizona 85034	City of Phoenix 135 N. 2nd Ave. Phoenix, Arizona 85003			X	
Delcoid Co.	2949 N. 28th St. Phoenix, Arizona 85008					X
Deluxe Roofing Co.	1838 E. Yale St. Phoenix, Arizona 85006					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Denny's Auto Paint	1929 S. Central Ave. Phoenix, Arizona 85008					X
Desert Specialists	1020 S. 5th St. Phoenix, Arizona 85004				X	X
Designware	2328 E. Van Buren St. Phoenix, Arizona 85006					X
Diamond Match Co.	733 S. 3rd Ave. Phoenix, Arizona 85003					X
Diamond Wire & Cable	2107 E. Magnolia St. Phoenix, Arizona 85034					X
Dick Lee Plumbing	2520 N. 16th St. Phoenix, Arizona 85006					X
Doehrman Company	1432 E. Van Buren St. Phoenix, Arizona 85006					X
Downtown Laundry and Dry Cleaning	308 N. 2nd Ave. Phoenix, Arizona 85003					X
Downtown Printing Service	11 W. Jefferson St. Phoenix, Arizona 85003					X
Driveline Service	4143 E. Washington St. Phoenix, Arizona 85034					X
Dunn & Company	101 N. 7th Ave. Phoenix, Arizona 85007					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
DynAir Tech.	3737 E. Bonanza Way Phoenix, Arizona 85034	IFC Aviation Inc. 1313 Dolly Madison Blvd. McLean, VA 22101				X
Dynamic Associates	2517 N. 7th St. Phoenix, Arizona 85006					X
Earl Scheib Auto Painting	705 E. Washington St. Phoenix, Arizona 85034	1745 E. Van Buren Phoenix, Arizona 85006				X
East McDowell Automotive	2248 E. McDowell Rd. Phoenix, Arizona 85006					X
Eastern Elec. Apparatus Repair Co.	1825 E. Jefferson St. Phoenix, Arizona 85034				X	
Eastside Auto Detail	3540 E. Van Buren St. Phoenix, Arizona 85008					X
Economy Body Shop	1214 E. Van Buren St. Phoenix, Arizona 85006					X
Ed Holderness Supplies Inc.	1432 E. Buckeye Rd. Phoenix, Arizona 85036	Ed Holderness Supplies P.O. Box 21106 Phoenix, Arizona 85036				X
El Sol News, Inc.	1422 E. Apache St. Phoenix, Arizona 85034	El Sol News, Inc. 8686 N. Central Ave. Phoenix, Arizona 85020				X
Electrical Equipment Co.	202 S. 29th St. Phoenix, Arizona 85034					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Electro Components	1643 E. McDowell Rd. Phoenix, Arizona 85006					X
Electronic Graphics	2623 S. 21st St. Phoenix, Arizona 85034					X
Electronics Instrumentation	111 E. McDowell Rd. Phoenix, Arizona 85004					X
Engine Pro	501 N. 1st St. Phoenix, Arizona 85004					X
Ernestos B Auto	101 N. 16th St. Phoenix, Arizona 85006					X
Essex Garage	2002 E. Van Buren St. Phoenix, Arizona 85006					X
Estes Landfill	40th St. & Salt River Phoenix, Arizona 85034	City of Phoenix 135 N. 2nd Ave. Phoenix, Arizona 85003			X	X
Exciters of Arizona	1231 E. Maricopa Frwy. Phoenix, Arizona 85034					X
Executive Detail	1691 N. Central Ave. Phoenix, Arizona 85003					X
Fabian Auto Service	311 N. 11th St. Phoenix, Arizona 85006					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Faulther Brothers Roofing	3232 E. Cambridge Ave. Phoenix, Arizona 85008					X
Fengs Machinery Engineering	1001 N. Central Ave. Phoenix, Arizona 85004					X
Fifth Ave. Sheet Metal	2118 S. 5th Ave. Phoenix, Arizona 85003					X
Finishline Industries	1922 E. Buchanan St. Phoenix, Arizona 85034				X	
Firestik Antenna Co.	2614 E. Adams St. Phoenix, Arizona 85034					X
FMC-Phoenix Plant	1450 E. Buckeye Rd. Phoenix, Arizona 85034	FMC Corp. Box 2386 Fresno, California 93745			X	
Fowlers Welding	1802 E. Palm Ln. Phoenix, Arizona 85034					X
Frank Gorman Co.	2711 N. 24th St. Phoenix, Arizona 85004					X
Franks Transfer Inc.	126 W. Forest Grove Ave. Phoenix, Arizona 85041					X
Frazee-Deer-O Paint	2131 E. Jackson St. Phoenix, Arizona 85034	See Deer-O-Paints			X	
Frontier Airlines	3200 E. Sky Harbor Blvd. Phoenix, Arizona 85034					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Fruehauf Div.	902 S. 7th St. Phoenix, Arizona 85034	Fruehauf Div. same address				X
G & H Auto Parts	1515 S. 16th St. Phoenix, Arizona 85034					X
G.T.E. Sprint Communications	401 W. Harrison St. Phoenix, Arizona 85003					X
Garbage Service Co. Landfill	40th S. & Riverbottom Phoenix, Arizona 85034					X
Garrett Airline Services Div.	2202 E. University Dr. Phoenix, Arizona 85034	Allied-Signal Aerospace Co. 2525 W. 190th St. Torrance, California			X	
Garrett General Aviaton	2635 S. 24th St. Phoenix, Arizona 85034				X	
Garrett Engine Div. (formally Garrett Turbine Engine Co.)	111 S. 34th St. Phoenix, Arizona 85034				X	
Gateway Community College	621 N. 7th Ave. Phoenix, Arizona 85003					X
GCI Network Services	2401 N. 24th St. Phoenix, Arizona 85008					X
Gemcolor Litho	712 E. Roosevelt St. Phoenix, Arizona 85006					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Gemcolor Reproductions	730 E. Washington St. Phoenix, Arizona 85034					X
Gencom Inc.	365 N. 6th Ave. Phoenix, Arizona 85004					X
General Electric Co. Service	1733 E. McDowell Rd. Phoenix, Arizona 85006					X
General Machine Works	1813 E. Buckeye Rd. Phoenix, Arizona 85034					X
George Thompson Co.	915 S. Central Ave. Phoenix, Arizona 85004					X
Gilbert Pump & Equipment	4532 E. Washington St. Phoenix, Arizona 85034	Gilbert Pump & Equipment same address				X
Gilmore Manufacturing	2437 E. Jackson St. Phoenix, Arizona 85034					X
Girard Automotive Inc.	2830 N. 3rd St. Phoenix, Arizona 85004					X
Gold Bond Bldg. Products Phoenix Plant	1414 E. Hadley St. Phoenix, Arizona 85034				X	
Grace Co.	1617 E. Monte Vista Rd. Phoenix, Arizona 85006					X
Granada Printing Co.	4035 E. McDowell Rd. Phoenix, Arizona 85008					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Grand Canyon Color Lab	110 N. Central Ave. Phoenix, Arizona 85004					X
Graphic Images	2214 N. Central Ave. Phoenix, Arizona 85004					X
Graphic Impression	2615 N. 7th St. Phoenix, Arizona 85006					X
Greco Plumbing	2538 E. McDowell Rd. Phoenix, Arizona 85008					X
Greigo Roofing Contractors	1146 E. Polk St. Phoenix, Arizona 85034					X
Grey Transfer & Storage	109 E. Maricopa Fwy. Phoenix, Arizona 85004					X
Grime Fighters, Inc.	1818 N. 21st Pl. Phoenix, Arizona 85006					X
GSR Metals Inc.	31 S. 42 Pl. Phoenix, Arizona 85034					X
H & S Air Conditioning	2145 E. Van Buren St. Phoenix, Arizona 85006					X
Hammonds Refrigeration	1840 E. Broadmoor Ct. Phoenix, Arizona 85006					X
Handy & Harman Elect. Mat. Corp.	2113 E. Mohave St. Phoenix, Arizona 85034	Handy & Harmon same address			X	

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Harris Printing	803 E. Washington St. Phoenix, Arizona 85034					X
Hawkius & Campbell	800 N. 4th St. Phoenix, Arizona 85004					X
Hays Roofing & Supply Inc.	747 E Buckeye Rd. Phoenix, Arizona 85034	J.R. & Lois Hays 8027 N. 58th Ave. Glendale, Arizona 85302			X	
HDI Inc.	312 E. Pima St. Phoenix, Arizona 85004					X
Hennesy Pump & Supply Co.	4428 E. Washington St. Phoenix, Arizona 85034					X
Hertz Corp.	1215 S. 27th St. Phoenix, Arizona 85034	Hertz Corp. same address				X
Hi Tech Communication Service	1934 E. McDowell Rd. Phoenix, Arizona 85006					X
Hirise Enterprises, Inc.	1323 S. 6 St. Phoenix, Arizona 85004					X
HJH Chemical, Inc.	2229 E. Magnolia St. Phoenix, Arizona 85034	Victoria Company 50 N. 41st Ave. Phoenix, Arizona 85009				X
Holstead Sanitary Landfill	3445 S. 24th St. Phoenix, Arizona 85034					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Honman Wright Co.	2626 E. Washington St. Phoenix, Arizona 85034					X
Howard Brothers Automotive	386 E. Virginia Ave. Phoenix, Arizona 85004					X
Hydrodynamics Industries	310 E. Pima St. Phoenix, Arizona 85004					X
Ideal Cleaners & Hatters	1128 E. Buckeye Rd. Phoenix, Arizona 85034					X
Imler Plumbing Co.	1114 N. 14th St. Phoenix, Arizona 85006					X
Imperial Litho Graphics	210 S. 4th St. Phoenix, Arizona 85004					X
Industrial Sewing Machine	1919 E. McDowell Rd. Phoenix, Arizona 85006					X
Inter Tel Incorporated	1800 N. Central Ave. Phoenix, Arizona 85004	Inter Tel Incorporated 6505 W. Chandler Blvd. Chandler, Arizona 85224				X
International Minute Press	541 E. McDowell Rd. Phoenix, Arizona 85004					X
International Plumbing Supply	3960 E. Air Ln. Phoenix, Arizona 85034					X
Interstate Parts & Machine	1321 S. Central Ave. Phoenix, Arizona 85003					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
ITT Cannon - Phoenix ISC Div.	2801 Air Ln. Phoenix, Arizona 85034				X	
Jack Elliot's Garage	1201 N 7th St. Phoenix, Arizona 85006					X
Jacks Automotive Service	2723 E. McDowell Rd. Phoenix, Arizona 85034	Jack Elliot 320 N. 39th Ave. Phoenix, Arizona 85009				X
Jacren Manufacturing	2526 E. Madison St. Phoenix, Arizona 85034					X
James & Janis Colclough Jr.	1601 E. Washington St. Phoenix, Arizona 85034	James & Janis Colclough 1811 W. Avalon Phoenix, Arizona 85015				X
Jepsen Southwest, Inc.	111 E. Maricopa Freeway Phoenix, Arizona 85004	Jepson Southwest, Inc. same address				X
Jerry's Generator Service	919 S. Central Ave. Phoenix, Arizona 85004					X
Joe E. Smith - Mat'l Storage	4004 E. Washington St. Phoenix, Arizona 85034					X
Johnson & Sons Plumbing	602 S. 3rd St. Phoenix, Arizona 85004					X
Johnson Construction Co.	4311 E. Madison St. Phoenix, Arizona 85034					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
JWJ Contracting Co., Inc.	4525 E. University Dr. Phoenix, Arizona 85034	JWJ Contracting Co., Inc. same address				X
Kaiser Holzbau, Inc.	602 S. 16th St. Phoenix, Arizona 85034	Tiernay Properties, Inc. P.O. Box 20644 Phoenix, Arizona 85036			X	
Karlson Machine Works, Inc.	605 E. Grant St. Phoenix, Arizona 85004	Karlson Machine Works, Inc. same address			X	X
Karlson Machine Works Inc.	743 S. 7th St. Phoenix, Arizona 85002	Karlson Machine Works Inc. 605 E. Grant St. Phoenix, Arizona 85004			X	X
Karlson Machine Works Inc.	701 S. 7th St. Phoenix, Arizona 85004	Karlson Machine Works Inc. 605 E. Grant St. Phoenix, Arizona 85004			X	X
Kaufmann Tool	3040 E. Madison St. Phoenix, Arizona 85034					X
Keebler Company	2250 S. 7th St. Phoenix, Arizona 85034	Greyhound Realty Group Greyhound Tower Phoenix, Arizona 85077				X
Ken's Automotive Service	3502 E McDowell Rd. Phoenix, Arizona 85008					X
Kevin Woodenberg	1524 S. Central Ave. Phoenix, Arizona	Kevin Woodenberg 4332 E. Turquoise Phoenix, Arizona 85028				X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Keystone Machine Co.	1835 S. 20th St. Phoenix, Arizona 85034	Keystone Machine Co. 5025 S. 33rd St. Phoenix, Arizona 85040				X
Kirk Butler	4250 E. Madison St. Phoenix, Arizona 85034					X
Kitchell Corporation	1006 S. 24th St. Phoenix, Arizona 85034	Kitchell Corporation same address				X
Kline Phoenix Advertising	2207 N. 7th St. Phoenix, Arizona 85006					X
Koppes Fine Photography	1741 E. McDowell Rd. Phoenix, Arizona 85006					X
Korber Air Conditioning	1841 E. Washington St. Phoenix, Arizona 85034					X
LaMode Cleaners	2618 N. 16th St. Phoenix, Arizona 85006					X
Landis Aerial Surveys Inc.	810 N. 2nd St. Phoenix, Arizona 85004					X
Lane Trophy Manufacturing	1118 S. Central Ave. Phoenix, Arizona 85004				X	X
Lara Caster & Truck Corp.	610 N. 7th St. Phoenix, Arizona 85006					X
Laundry Bag	2610 E. McDowell Rd. Phoenix, Arizona 85008					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Lee's Electric Motor	2227 N. 2nd St. Phoenix, Arizona 85004					X
Lee's Radiator Shop	1521 E. Van Buren St. Phoenix, Arizona 85006					X
Leonard Arthur - Mach. Shop	4020 E. Washington St. Phoenix, Arizona 85034					X
Les Benton Studio	1317 N. Central Ave. Phoenix, Arizona 85004					X
Liberty Electric Co.	1830 E. Madison St. Phoenix, Arizona 85034					X
Lincoln Laser	234 E. Mohave St. Phoenix, Arizona 85004			X	X	X
Linden Enterprises	1027 N. Central Ave. Phoenix, Arizona 85003					X
Lockheed Air Terminal	3000 Sky Harbor Blvd. E Phoenix, Arizona 85034					X
Lockheed Air Terminal	4200 E. Air Ln. Phoenix, Arizona 85034	Az. Fueling Fac. Corp. 4200 E. Air Ln. Phoenix, Arizona 85034				X
Looft Design Group	215 E. McKinley St. Phoenix, Arizona 85004					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Lynch Bros. Mfg., Co.	126 S. 42nd Pl. Phoenix, Arizona 85034	Jerry P. Lynch, Jr. Charles R. Brown same address			X	
Lynn Morrow	21 W. Georgia Ave. Phoenix, Arizona 85003					X
M & M Lift Trucks	100 N. 16th St. Phoenix, Arizona 85006					X
Machine Tech.	327 S. 27th St. Phoenix, Arizona 85034	Machine Tech. 1031 S. Steward St. Mesa, Arizona 85202				X
MALS/RAIL Phoenix	2641 E. Buckeye Rd. Phoenix, Arizona 85034	AFS DOT Federal Aviation 2641 E. Buckeye Rd. Phoenix, Arizona 85034				X
Mangino Auto	330 E. Van Buren St. Phoenix, Arizona 85004					X
Mangino's Radiator	330 E. Van Buren St. Phoenix, Arizona 85004					X
Maricopa County Community College	3910 E. Washington St. Also: 108 N. 40th St. Phoenix, Arizona 85034					X
Maricopa County-Equipment Services	48th St. & Washington St. Phoenix, Arizona 85008 and 101 W. Jackson St. Phoenix, Arizona 85008	Maricopa County-Equip. 3325 W. Durango St. Phoenix, Arizona 85009			X	

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Markow Photography, Inc.	2222 E. McDowell Rd. Phoenix, Arizona 85006					X
Marlam Industries	843 Hamond Ln. Phoenix, Arizona 85004					X
Martinez Colonial	1702 S. 16th St. Phoenix, Arizona 85034					X
Master Builders	2406 S. 24th St. Phoenix, Arizona 85034					X
Materials Improvement West	1815 N. 25th Dr. Phoenix, Arizona 85008					X
Mayelwell & Hartzell, Inc.	120 S. 29th St. Phoenix, Arizona 85008					X
McCoy's Laundry & Cleaners	1624 E. Washington St. Phoenix, Arizona 85034					X
McCullough - Zuniga	2106 E. Washington St. Phoenix, Arizona 85034					X
McGraw Edison Service	4444 E. Washington St. Phoenix, Arizona 85034					X
Mech Tronics Corp.	2515 E. Buckeye Rd. Phoenix, Arizona 85034				X	X
Medlin Electric Co.	105 S 30th St. Phoenix, Arizona 85034					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Melton Radiator Co.	725 S. Central Ave. Phoenix, Arizona 85004					X
Messenger Bank Printers	2619 S. 21st St. Phoenix, Arizona 85034	Messenger Bank Printers 111 S. 41st Ave. Phoenix, Arizona 85009				X
Messenger Corp.	2623 S. 21st St. Phoenix, Arizona 85034	same as above				X
Metal Form Manufacturing	2639 E. Adams St. Phoenix, Arizona 85034					X
Metro Machine Company	2202 E. Buchanan St. Phoenix, Arizona 85034					X
Mickelson Mold	2115 S. 16th St. Phoenix, Arizona 85034	Mickelson & Ray P.O. Box 8736 Scottsdale, Arizona 85252				X
Miller Offset Press	1609 E. Monte Vista Rd. Phoenix, Arizona 85006					X
Minute Man Tank Lines	4030 E. Magnolia St. Phoenix, Arizona 85034				X	X
Mission Uniform Service	621 S. First Ave. Phoenix, Arizona	Mission Uniform Service 1606 S. 1st Ave. Phoenix, Arizona 85003				X
Mission Uniform Service	1606 S. 1st Ave. Phoenix, Arizona 85003	same as above				X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Mister Printer	2827 N. Central Ave. Phoenix, Arizona					X
MM Sundt Construction Co.	2630 S. 20th Pl. Phoenix, Arizona 85026	MM Sundt Construction Co. 3949 E. Irvington Rd. Tucson, Arizona 85714				X
Modern Communications Systems	333 E. McDowell Rd. Phoenix, Arizona 85004					X
Moise Automotive	2503 E. McDowell Rd. Phoenix, Arizona 85008					X
Morgan Agency	3411 E. Corona Ave. Phoenix, Arizona 85040					X
Morneau Typographers	330 N. 3rd Ave. Phoenix, Arizona 85003					X
Mufco Auto Repair Shop	1600 E. Washington St. Phoenix, Arizona 85034					X
National Metals Co.	443 E. Buckeye Rd. Phoenix, Arizona 85004	National Metals Co. 320 S. 19th Ave. Phoenix, Arizona 85009	X	X	X	X
National Sixty Minute Photo	2821 N. Central Ave. Phoenix, Arizona 85004					X
National Transmission Center	N. Central Ave. Phoenix, Arizona 85003					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Nelson Communications Inc.	3301 E. Washington St. Phoenix, Arizona 85034					X
Nelson Engineering Co., Inc.	4020 E. Air Ln. Phoenix, Arizona 85034					X
Network Sciences, Inc.	339 W. Van Buren St. Phoenix, Arizona 85003					X
New Times	111 W. Monroe St. Phoenix, Arizona 85003					X
New Times	1201 E. Jefferson St. Phoenix, Arizona 85006					X
Ninedee Corporation	960 S. Central Ave. Phoenix, Arizona 85004					X
Noral Enterprises LTD	2221 E. Washington St. Phoenix, Arizona 85034	Noral Enterprises LTD same address				X
Norris Cooling & Heating	1721 N. 33 Pl. Phoenix, Arizona 85008					X
Northwest Motor Welding	1933 E. Washington St. Phoenix, Arizona 85034					X
Nova Machine & Tool Inc.	1219 S. 23rd St. Phoenix, Arizona 85034					X
Omnitec Data Corp.	2405 S. 20th St. Phoenix, Arizona 85034					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Oryx Press	2214 N. Central Ave. Phoenix, Arizona 85004					X
Other Muffler Company	2245 E. McDowell Rd. Phoenix, Arizona 85006					X
Overseas Auto	345 N. 7th Ave. Phoenix, Arizona 85034					X
Pacheco Paint & Body Shop	960 E. Van Buren St. Phoenix, Arizona 85006					X
Pacific Air Equipment	2622 S. 21st St. Phoenix, Arizona 85034					X
Pacific Motor Trucking	881 S. 11th St. Phoenix, Arizona 85034					X
Pacific Southwest Airlines	3200 E. Sky Harbor Blvd. Phoenix, Arizona 85034					X
Packaging & Fastening	1008 E. Belmont Ave. Phoenix, Arizona 85006					X
Palms Photo	1515 N. Central Ave. Phoenix, Arizona 85004					X
Papago Plating Co., Inc.	2312 E. Washington Phoenix, Arizona 85034	B & G Investments same address			X	
Passport Photography	23 N. 2nd Ave. Phoenix, Arizona 85003					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Payne Photographic	23 N. 2nd Ave. Phoenix, Arizona 85004					X
Pearson Engineering	352 E. Virginia Ave. Phoenix, Arizona 85004					X
Peerless Television	1942 E. Roosevelt St. Phoenix, Arizona 85006					X
Penzoil	215 E. Watkins St. Phoenix, Arizona 85004					X
Phoenix ASR-8	2641 E. Buckeye Rd. Phoenix, Arizona 85034	AFS DOT Federal Aviation 2641 E. Buckeye Rd. Phoenix, Arizona 85034				X
Phoenix, (City of) Aviation	1832 E. Buckeye Rd. Phoenix, Arizona 85034	City of Phoenix Aviation Dept. 3400 Sky Harbor Blvd. Phoenix, Arizona 85034			X	
Phoenix, (City of) Aviation	1901 S 16th St. Phoenix, Arizona 85034	City of Phoenix Aviation Dept. 3400 Sky Harbor Blvd. Phoenix, Arizona 85034			X	
Phoenix, (City of) Aviation	3400 Sky Harbor Blvd. Phoenix, Arizona 85034	City of Phoenix Aviation Dept. 3400 Sky Harbor Blvd. Phoenix, Arizona 85034			X	
Phoenix, (City of) Aviation	601 S. 16th St. Phoenix, Arizona 85034	City of Phoenix Aviation Dept. 3400 Sky Harbor Blvd. Phoenix, Arizona 85034			X	

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Phoenix, (City of) Aviation	830 S. 23rd St. Phoenix, Arizona 85034	City of Phoenix Aviation Dept. 3400 Sky Harbor Blvd. Phoenix, Arizona 85034			X	
Phoenix Depot	13th & Harrison Phoenix, Arizona 85036	Southern Pacific Trans. One Market St. San Francisco, California 94105				X
Phoenix Dist. Co.	33 S 28th St. Phoenix, Arizona 85034	Sun Sales 33 S. 28th St. Phoenix, Arizona 85034				X
Phoenix Fine Printing	2835 N. 24th St. Phoenix, Arizona 85008					X
Phoenix Glide/Slope	2641 E. Buckeye Rd. Phoenix, Arizona 85034	AFS DOT Federal Aviation 2641 E. Buckeye Rd. Phoenix, Arizona 85034				X
Phoenix Machine Co.	131 S. 42nd Pl. Phoenix, Arizona 85034					X
Phoenix Newspapers, Inc.	120 E. Van Buren Phoenix, Arizona 85004				X	
Phoenix Plastics, Inc.	215 S. 23rd St. Phoenix, Arizona 85034					X
Phoenix School of Welding	603 S. 1st Ave. Phoenix, Arizona 85003					X
Phoenix Sky Harbor Int. Airport	3400 E. Sky Harbor Blvd. Phoenix, Arizona 85034	City of Phoenix (Aviation Dept.) same address			X	

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Phoenix Tracon	2400 E. Sky Harbor Phoenix, Arizona 85034	AFS DOT Federal Aviation 2641 E. Buckeye Rd. Phoenix, Arizona 85034				X
Phoenix Transformer Co.	1818 E. Madison St. Phoenix, Arizona 85034				X	
Phototron Co.	2 N. 30th St. Phoenix, Arizona					X
PHX. Electric Supply Co.	3002 E. Washington St. Phoenix, Arizona 85034					X
PHX/ATCT	2641 E. Buckeye Rd. Phoenix, Arizona 85034	AFS DOT Federal Aviation 2641 E. Buckeye Rd. Phoenix, Arizona 85034				X
PHX/LOC	2641 E. Buckeye Rd. Phoenix, Arizona 85034	AFS DOT Federal Aviation 2641 E. Buckeye Rd. Phoenix, Arizona 85034				X
PIP Printing	1323 N. Central Ave. Phoenix, Arizona 85003					X
Pit Stop Garage & Repair	1635 E. Washington St. Phoenix, Arizona 85034					X
Point Engraving Co.	1546 E. McKinley St. Phoenix, Arizona 85006					X
Ponder Sign Company	623 E. Adams St. Phoenix, Arizona 85034					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Ponte Engraving Co.	1546 E. McKinley St. Phoenix, Arizona 85006					X
Postal Instant Press	1520 N. Central Ave. Phoenix, Arizona 85004					X
PPG Industries Inc.	261 E. University Dr. Phoenix, Arizona 85004					X
Pre Stress Building	1835 E. University Dr. Phoenix, Arizona 85034	Calmat Co. of Arizona 1801 E. University Dr. Phoenix, Arizona 85034				X
Pre-Cast Mfg. Co.	301 W. Broadway Rd. Phoenix, Arizona 85041	Pre-Cast Mfg. Co. same address				X
Precision Mechanical	1610 N. 41 Pl. Phoenix, Arizona 85008				X	X
Precision Grinding	1411 E. Hadley Phoenix, Arizona 85034				X	
Pressure Systems Industries	4211 E. Washington St. Phoenix, Arizona 85034					X
Pride Expeditors	3919 E. Air Ln. Phoenix, Arizona 85034					X
Printing Dynamics	2314 N. 32nd St. Phoenix, Arizona 85008					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Producers Cotton Oil Co.	4637 E. Washington St. Phoenix, Arizona 85001	Producers Cotton Oil Co. 3727 W. Baseline #24 Tempe, Arizona 85283				X
PSA/US AIR	Sky Harbor Phoenix, Arizona 85034					X
Quality Printed Circuits Corp.	1829 S. Central Ave. Phoenix, Arizona 85004	Quality Printed Circuits Corp. same address		X	X	
Quezcada Auto Repair	201 E. Mohave St. Phoenix, Arizona 85004					X
Racom Services Corp.	14 S. 41st Pl. Phoenix, Arizona 85034					X
Rainbow Roofing	2428 S. 19 Pl. Phoenix, Arizona 85034					X
Ransom Import Auto	331 N. 16th St. Phoenix, Arizona 85006					X
Ray Long, Ltd.	242 E. University Dr. Phoenix, Arizona 85004					X
Ray West Store	1509 S. 16th St. Phoenix, Arizona 85034					X
Redding Group	2214 N. Central Ave. Phoenix, Arizona 85004	Redding Group 305 S. 2nd Ave. Phoenix, Arizona 85003				X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Regal Printing & Graphics	1401 N. Central Ave. Phoenix, Arizona 85004					X
Reiff Printing Inc.	345 W. Van Buren St. Phoenix, Arizona 85003					X
Reliance Steel & Aluminum Co.	1109 E. Jackson St. Phoenix, Arizona 85034	Reliance Steel & Aluminum 929 E. Jackson St. Phoenix, Arizona 85034		X	X	X
Republic Automotive Inc.	3230 E. Washington St. Phoenix, Arizona 85034					X
Richard's Auto Clinic	4945 E. McDowell Rd. Phoenix, Arizona 85034					X
Rinchem - 15th Ave.	2402 S. 15th Ave. Phoenix, Arizona 85007					X
Rodeway Paving Co.	2302 N. 36th St. Phoenix, Arizona 85008					X
Romero's Christian Auto Care	1147 E. Mojave Phoenix, Arizona 85034					X
Roosevelt Cleaners	309 E. Roosevelt St. Phoenix, Arizona 85034					X
Rotary Offset Printers	2810 S. 24th St. Phoenix, Arizona 85034					X
RPS Products of Arizona	3230 E. Washington St. Phoenix, Arizona 85034					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
RTR-1 Sky Harbor	Airport Phoenix, Arizona 85034	AFS DOT Federal Aviation 2641 E. Buckeye Rd. Phoenix, Arizona 85034				X
RTR-2 Phoenix Sky Harbor	2641 E. Buckeye Rd. Phoenix, Arizona 85034	AFS DOT Federal Aviation 2641 E. Buckeye Rd. Phoenix, Arizona 85034				X
RTR-3 Phoenix Sky Harbor	2641 E. Buckeye Rd. Phoenix, Arizona 85034	AFS DOT Federal Aviation 2641 E. Buckeye Rd. Phoenix, Arizona 85034				X
Ruan	4150 E. Magnolia St. Phoenix, Arizona 85034				X	X
Runbeck Graphic	2323 N. 3rd St. Phoenix, Arizona 85004					X
S & S Automotive	2621 N. 24th St. Phoenix, Arizona 85008					X
S & S Bindery	115 S. 23rd St. Phoenix, Arizona 85034					X
Saban's Rent-a-Car & Truck	2934 E. McDowell Rd. Phoenix, Arizona 85008					X
Sanchez Auto	406 N. 16th St. Phoenix, Arizona 85006					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Sanchez & Son Printing	816 E. Washington St. Phoenix, Arizona 85034					X
SASCOA Electronics	1808 N. Central Ave. Phoenix, Arizona 85004					X
Seaman Electric Inc.	119 N. 30th St. Phoenix, Arizona 85008					X
Seepage Control Inc.	908 10th St. Phoenix, Arizona 85034					X
Sky Harbor Airport Airline Maintenance Bldg.	Sky Harbor Airport Phoenix, Arizona 85034				X	X
Smith Pipe & Steel	405 S. 7th St. Phoenix, Arizona 85034					X
Southern Pacific Railway	13th St. & Harrison Phoenix, Arizona 85034	Southern Pacific Transportation One Market St. San Francisco, California 94105		X	X	X
Southwest Four Wheel Dr.	2448 E. McDowell Rd. Phoenix, Arizona 85008					X
Southwest Industrial Sales	1714 E. Buchanan St. Phoenix, Arizona 85034					X
Southwestern Litho	710 N. 1st St. Phoenix, Arizona 85004					X
Spectra Chem Lab	101 W. Mohave St. Phoenix, Arizona 85003					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Spray Systems of Arizona	1317 S. Central Ave. Phoenix, Arizona 85004					X
SRP	1616 E. Lincoln Phoenix, Arizona 85034				X	
Star Motors	1333 E. Van Buren St. Phoenix, Arizona 85006					X
State Industrial Repair Co.	201 W. Hilton Phoenix, Arizona 85003					X
Statewide RKW Trucking Co.	1540 E. Encinas Ln. Phoenix, Arizona					X
Statewide Trans	638 S. 11th St. Phoenix, Arizona 85034					X
Staton Engineering	1812 E. Mohave St. Phoenix, Arizona 85034					X
Sterus Auto Accessories	515 S. 1st St. Phoenix, Arizona 85004					X
Stewart Concrete Pipe, Inc.	4230 E. Madison St. Phoenix, Arizona 85034	Stewart Concrete Pipe, Inc. same address				X
Stewart Walker Co.	2426 S. 7th St. Phoenix, Arizona 85034					X
Storr Radiator	130 W. Taylor Phoenix, Arizona 85003					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Stuart Radiator Co.	211 E. Buchanan St. Phoenix, Arizona 85004					X
Sublett Electric	1246 E. Jefferson St. Phoenix, Arizona 85034					X
Sun Devil Motors	202 W. Van Buren St. Phoenix, Arizona 85003					X
Sun Motor Exchange	2214 E. Washington St. Phoenix, Arizona 85034				X	X
Sun Publishing Co.	2645 E. Washington St. Phoenix, Arizona 85034					X
Sun Ray Chemical Co.	115 W. Jackson St. Phoenix, Arizona 85003					X
Sun Valley Newspaper	92? E. Jackson St. Phoenix, Arizona 85034					X
Sundown Automotive	2337 N. 7th Ave. Phoenix, Arizona 85007	Sundown Auto. 1559 1/2 N.W. Grand Ave. Phoenix, Arizona 85007				X
Sunstate Equipment Corp.	4146 E. Washington St. Phoenix, Arizona 85034	Sunstate Equip. Corp. same address				X
Surface Impoundment (POND)	29th St. W. of Gibson Ln. Phoenix, Arizona 85034					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Sylva Machinery Co., Inc.	3928 Air Ln. Phoenix, Arizona 85034					X
T & G Sheet Metal Co.	2302 E. Washington St. Phoenix, Arizona 85034					X
Take Five	2417 N. 36th Pl. Phoenix, Arizona 85008					X
Tanner Company Yard	20th St. & Mohave St. Phoenix, Arizona 85034	Tanner Co. 701 N. 44th St. Phoenix, Arizona 85008			X	X
Taylor's Air Conditioning	2725 N. Potrero Rd. Phoenix, Arizona 85008					X
Technamics Corp.	18 S. 41st St. Phoenix, Arizona 85034	Technamics Corp. same address			X	
Teds Automotive Engineering	502 S. 20th St. Phoenix, Arizona 85034					X
Tele Tech Electronics	2824 N. 16th St. Phoenix, Arizona 85034					X
Termite Man	272 McDowell Rd. Phoenix, Arizona 85034					X
Termite Mullen Pest Control	402 E. Buchanan St. Phoenix, Arizona 85004					X
Tesco Truck Equipment	2441 S. 40th St. Phoenix, Arizona 85034					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Thirty Sixth Street Auto	3602 E. McDowell Rd. Phoenix, Arizona 85034					X
Thorson Supply Co. Inc.	1712 S. Central Ave. Phoenix, Arizona 85034					X
Three C Auto Parts	4551 E. University Dr. Phoenix, Arizona 85034					X
Tibor Signs	314 N. 48th St. Phoenix, Arizona 85008					X
Tiernay Turbines Inc	1301 E. Jackson St. Phoenix, Arizona 85034	Tiernay Turbines same address	X	X	X	
Tom's Auto Body	1327 E. Buckeye Rd. Phoenix, Arizona 85034					X
Tony & Ken's Auto Detailing	1149 E. Van Buren St. Phoenix, Arizona 85006					X
Toolcraft of Phoenix, Inc.	4141 E. Madison St. Phoenix, Arizona 85034					X
Towsley's Auto Clinic	1613 N. 40th St. Phoenix, Arizona 85008					X
Trailer Town Service	3302 E. Van Buren St. Phoenix, Arizona 85008					X
Trans World Airlines, Inc.	3200 Sky Harbor Blvd. Phoenix, Arizona 85034				X	

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Trans World Airlines, Inc.	1357 S. 27th St. Phoenix, Arizona 85034				X	
Transco	3910 E. Air Ln. Phoenix, Arizona 85034					X
Tri Auto Parts Co.	818 S. Central Ave. Phoenix, Arizona 85004					X
Turco Products Division	365 N. 6th Ave. Phoenix, Arizona 85003	Turco Products Division 3507 N. Central Phoenix, Arizona 85004				X
Twenty Six Hundred Equip Co.	2602 E. McDowell Rd. Phoenix, Arizona 85008					X
Ultimate Detail	504 N. 2nd St. Phoenix, Arizona 85004					X
Unique Signs & Graphics	2343 E. Washington St. Phoenix, Arizona 85034					X
United Airlines	3200 E. Sky Harbor Blvd. Phoenix, Arizona 85034					X
Universal Cleaning Systems	621 N. 6th Ave. Phoenix, Arizona 85003					X
Unknown	8th Pl. & Sherman St. Phoenix, Arizona 85034				X	X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Unknown	2211 S. 3rd Dr. Phoenix, Arizona 85003				X	X
Unknown	14th St. & Monroe St. Phoenix, Arizona 85006				X	X
Unknown	803 N. 7th St. Phoenix, Arizona 85004				X	X
Unknown	Palm from 1st Ave. to Central Ave. Phoenix, Arizona 85003				X	X
Unknown	215 S. 14th St. Phoenix, Arizona 85034				X	X
Unknown	2424 S. 15th St. Phoenix, Arizona 85034				X	X
Valley Detail	331 N. 16h St. Phoenix, Arizona 85006					X
Valley Precision Inc.	4300 E. Magnolia St. Phoenix, Arizona 85034					X
Valley Printing Equipment	914 N. 7th St. Phoenix, Arizona 85006					X
Valley Spring Service	2543 E. Washington St. Phoenix, Arizona 85034					X
Van Dyk Research Corp.	2941 E. Washington St. Phoenix, Arizona 85034					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Van Waters & Rogers Inc.	50 S. 45th St. Phoenix, Arizona 85043					X
Viking Enterprises	4125 E. Madison St. Phoenix, Arizona 85034					X
Villas Paint & Body Shop	501 E. Buckeye Rd. Phoenix, Arizona 85004					X
VO Contracting Co.m Inc.	218 E. Watkins St. Phoenix, Arizona 85004					X
W.U.I Service Corp.	100 W. Washington St. Phoenix, Arizona 85003					X
W. W. Grainger, Inc.	4420 E. Washington St. Phoenix, Arizona 85034					X
Watkins & Ware	4225 E. McDowell Rd. Phoenix, Arizona 85034					X
Wayfare Trucking	501 W. Jackson St. Phoenix, Arizona 85003					X
Wayne Oxygen Co., Inc.	2615 S. 40th St. Phoenix, Arizona 85034			X	X	
Wayne Willbanks	30 S. 41st Pl. Phoenix, Arizona 85034					X
Wayne's Arizona Auto Wrecking	2121 S. 16th St. Phoenix, Arizona 85034					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
WCCO Distributors Inc.	2933 E. McDowell Rd. Phoenix, Arizona 85034					X
Weather Check Insulation	1906 E. Buchanan St. Phoenix, Arizona 85034					X
Weldon Auto Upholstery	1125 E. Van Buren St. Phoenix, Arizona 85006					X
Welsh & Son Contracting	1020 S. 16th St. Phoenix, Arizona 85034					X
West Inc.	2801 N. 32nd St. Phoenix, Arizona 85008					X
West State Chemical	2430 S. 20th St. Phoenix, Arizona 85034	West State Chemical 1219 S. 23rd St. Phoenix, Arizona 85034				X
Western Automatic Machine Co.	1601 E. Madison St. Phoenix, Arizona 85034	Continental Materials Corp. 325 N. Wells, 9th Floor Chicago, IL	X	X	X	X
Western Exterminator Co.	618 N. 24th St. Phoenix, Arizona 85008	Western Extermintor Co. 1732 Kaiser Ave. Irvine, California 92714				X
Western Truck	2400 S. 14th St. Phoenix, Arizona 85034					X
Weston	Palm & 1st Ave. Phoenix, Arizona 85003					X

DRAFT

K-3 List of Facilities

May 1989

Name	Address	Owner	Planned Activities: Physical Testing	Site Inspection	Records Search	Questionnaire Response
Wheeler Construction Inc.	1635 E. University Dr. Phoenix, Arizona 85034	Wheeler Construction Inc. 716 E. Rose Garden Lane Deer Valley, Arizona 85080				X
Whitten Printers	1005 S. 5th St. Phoenix, Arizona 85004					X
Wholesale Auto Supply Inc.	1027 E. Washington St. Phoenix, Arizona 85034					X
Wickes Co.	2430 E. McDowell Rd. Phoenix, Arizona 85008					X
Wien Air Alaska, Inc	3400 E. Sky Harbor Blvd. Phoenix, Arizona 85034					X
Wiretron Inc.	1800 E. Jackson St. Phoenix, Arizona 85034					X
Wizzard Supergraphics Etc.	39 W. Vernon Ave. Phoenix, Arizona 85003					X

DRAFT

DRAFT

APPENDIX B

Sample Questionnaire

This appendix contains a sample of the questionnaire sent out as a part of this phase of investigation.

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Rose Mofford, Governor
GERALD H. TELETZKE, PH.D., DIRECTOR

June 30, 1988

Dear Sir or Madame:

The Arizona Department of Environmental Quality requests your assistance in gathering information on present and past businesses which use, treat, store, or dispose of hazardous materials, mixtures containing hazardous materials, and/or hazardous waste. The attached questionnaire is being issued under the authority of Arizona Revised Statutes S49-287.K., which requires that hazardous materials users furnish information related to hazardous substances.

Please complete the questionnaire and return it to the following address within twenty-one calendar days.

Arizona Department of Environmental Quality
2005 N. Central Avenue
Suite 400
Phoenix, Arizona 85004

Attention: Eastlake Park Project Manager

The Department is conducting this survey as part of the Eastlake Park Project supported by the Water Quality Assurance Revolving Fund. The area under study consists of approximately 24 square miles in southeastern Phoenix, bounded by Thomas Road on the North, 48th Street on the East, a line even with Lower Buckeye Road on the South, and 7th Avenue on the West. Volatile organic compounds have been detected in groundwater at various locations throughout this area of Phoenix.

A hazardous material may be broadly defined as any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment. A hazardous material includes, but is not limited to, a hazardous substance, hazardous waste, and any material for which there is a reasonable basis for believing it would be injurious to human health and safety, or harmful to the environment if released. To assist you in determining whether you are dealing with hazardous materials, attachment A has been included which provides a list of hazardous wastes for reference. If you are in doubt as to whether a material is hazardous, please include that material when completing the attached questionnaire. Even though you may not use, treat, store, or dispose of a hazardous material or waste, you should still complete and return the attached questionnaire so that our records are accurate and current.

Thank you for your cooperation. If you have questions you may call me at (602) 257-6899.

Sincerely,

Donald E. Atkinson, Project Manager
Remedial Projects Unit

The Department of Environmental Quality is An Equal Opportunity Affirmative Action Employer

ATTN: DONALD E. ATKINSON, PROJECT MANAGER

EASTLAKE PARK AREA
HAZARDOUS MATERIALS QUESTIONNAIRE

1. Company name _____

   Company representative/contact _____

   Street address _____

   City, zip code _____

   Phone number _____

   Business license number _____

   Principal business activity _____

   Standard Industrial Code _____

   Number of employees _____

   Property Parcel Number _____

2. What specific activities are carried out at your facility?

   _____

   _____

   _____

3. Are you the owner of the property? [ ] Yes [ ] No

   If no, please provide the following:

   A. Name of owner(s): _____

   B. Address of owner(s): _____

   C. Telephone number(s): _____

4. How long has the company been at this location? _____

5. Name and business of previous occupant?

   _____

   _____

6. Does your business, at the location above, currently:

   generate [ ], transport [ ], treat [ ], store [ ], or dispose [ ]

   of hazardous materials, mixtures containing hazardous materials, or hazardous wastes? (Please check all that apply.)

7. Has your business ever:

   generated [ ],transported [ ], treated [ ], stored [ ], or disposed of [ ]

   hazardous materials, mixtures containing hazardous materials, or hazardous waste? (Please check all that apply.)

8. Has the company ever had a chemical, solvent and/or hazardous substance spill, leak or release at this location? [ ] Yes [ ] No

   If yes, please provide the following:

   A. Chemical name of substance spilled:_____

   B. Quanity spilled:_____ [ ] gallons [ ] pounds

   C. Date of spill:_____

   D. Type of cleanup, if applicable:_____

   E. Regulatory agency involved:_____

9. Please indicate if your business has any of the following:

   [ ] Industrial wastewater discharge permit, No._____

   [ ] Underground storage tank notification to ADEQ

   [ ] Environmental Protection Agency,
   Generator Identification No._____

   [ ] Air Pollution Control Permit, number of permit_____

10. Has your facility been on the sewer system since beginning of occupancy?

    [ ] Yes [ ] No - If no, when was your facility connected to the sewer system?

    _____

11. If your facility is currently on the sewer system are there any restrictions or pretreatment requirements? [ ] No [ ] Yes - If yes, please specify-

    _____

    _____

12. If your facility currently is not or in the past was not connected to the sewer, how is or was the facility's wastewater disposed of?

_____

13. Which of the following are located within the boundaries of your property? (Please check all that apply.) Please estimate the amount and type of material disposed of to each of the checked items; attach any design or construction data you have for the facilities indicated. Also, please attach copies of analyses of any solid or liquid samples from these facilities on your property, and similar facilities located adjacent to your property.

[ ] Wells _____
If yes, Provide State Well ID or Registration #_____

[ ] Surface impoundments (evaporation ponds, storage ponds, etc.)

_____

[ ] Leach fields _____

[ ] Sumps _____

[ ] Underground storage tanks _____

[ ] Above-ground storage tanks (including drums) _____

[ ] Drainage ditch running off the property _____

14. If available, attach your most recent annual report.

15. Provide any other information you may have regarding the use, storage or disposal of wastes, chemicals or hazardous substances at any other facilities in the Eastlake Park Area. Please be as specific as possible including names, addresses, locations, dates, quantity, and identity of substances involved.

_____

_____

_____

16. For each hazardous material or mixture containing hazardous materials, used in the past or currently used at your facility, and for any hazardous waste generated at your facility, please provide all of the information requested in the following matrix. Two sheets have been provided. Please attach copies if more space is required. Please include appropriate units, i.e. gallons, pounds, etc.

HAZARDOUS MATERIALS

Common Name						
Chemical Name						
CAS Number						
Indicate if pure, or concentration if mixture						
Typical amount used per year						
Type and size of storage or containment						
Method and amount of disposal						
Normal use of the substance						
Dates of use						

HAZARDOUS MATERIALS

Common Name						
Chemical Name						
CAS Number						
Indicate if pure, or concentration if mixture						
Typical amount used per year						
Type and size of storage or containment						
Method and amount of disposal						
Normal use of the substance						
Dates of use						

ATTACHMENT A

LIST OF HAZARDOUS WASTES

FROM

40CFR 261.3

Hazardous wastes from non-specific sources

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
Generic:		
F001	The following spent halogenated solvents used in degreasing: Tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F002	The following spent halogenated solvents: Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F003	The following spent non-halogenated solvents: Xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing, before use, one or more of the above non-halogenated solvents, and, a total of ten percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(I)*
F004	The following spent non-halogenated solvents: Cresols and cresylic acid, and nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F005	The following spent non-halogenated solvents: Toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(I,T)
F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) Sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.	(T)
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum	(T)
F007	Spent cyanide plating bath solutions from electroplating operations	(R, T)
F008	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process	(R, T)
F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.	(R, T)
F010	Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process.	(R, T)
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.	(R, T)
F012	Quenching waste water treatment sludges from metal heat treating operations where cyanides are used in the process.	(T)
F024	Wastes, including but not limited to, distillation residues, heavy ends, tars, and reactor clean-out wastes from the production of chlorinated aliphatic hydrocarbons, having carbon content from one to five, utilizing free radical catalyzed processes. [This listing does not include light ends, spent filters and filter aids, spent dessicants, wastewater, wastewater treatment sludges, spent catalysts, and wastes listed in § 261.32.].	(T)
F020	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- or tetrachlorophenol, or of intermediates used to produce their pesticide derivatives. (This listing does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.).	(H)
F021	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of pentachlorophenol, or of intermediates used to produce its derivatives.	(H)
F022	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzenes under alkaline conditions.	(H)
F023	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- and tetrachlorophenols. (This listing does not include wastes from equipment used only for the production or use of Hexachlorophene from highly purified 2,4,5-trichlorophenol.).	(H)
F026	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzene under alkaline conditions.	(H)
F027	Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols. (This listing does not include formulations containing Hexachlorophene sythesized from prepurified 2,4,5-trichlorophenol as the sole component.).	(H)
F028	Residues resulting from the incineration or thermal treatment of soil contaminated with EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027.	(T)

*(I,T) should be used to specify mixtures containing ignitable and toxic constituents.

Hazardous wastes from specific sources

Industry and EPA hazardous waste No	Hazardous waste	Hazard code
Wood preservation K001	Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol	(T)
Inorganic pigments		
K002	Wastewater treatment sludge from the production of chrome yellow and orange pigments	(T)
K003	Wastewater treatment sludge from the production of molybdate orange pigments	(T)
K004	Wastewater treatment sludge from the production of zinc yellow pigments	(T)
K005	Wastewater treatment sludge from the production of chrome green pigments	(T)
K006	Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated)	(T)
K007	Wastewater treatment sludge from the production of iron blue pigments	(T)
K008	Oven residue from the production of chrome oxide green pigments	(T)
Organic chemicals		
K009	Distillation bottoms from the production of acetaldehyde from ethylene	(T)
K010	Distillation side cuts from the production of acetaldehyde from ethylene	(T)
K011	Bottom stream from the wastewater stripper in the production of acrylonitrile	(R T)
K013	Bottom stream from the acetonitrile column in the production of acrylonitrile	(R T)
K014	Bottoms from the acetonitrile purification column in the production of acrylonitrile	(T)
K015	Still bottoms from the distillation of benzyl chloride	(T)
K016	Heavy ends or distillation residues from the production of carbon tetrachloride	(T)
K017	Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin	(T)
K018	Heavy ends from the fractionation column in ethyl chloride production	(T)
K019	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production	(T)
K020	Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production	(T)
K021	Aqueous spent antimony catalyst waste from fluoromethanes production	(T)
K022	Distillation bottom tars from the production of phenol/acetone from cumene	(T)
K023	Distillation light ends from the production of phthalic anhydride from naphthalene	(T)
K024	Distillation bottoms from the production of phthalic anhydride from naphthalene	(T)
K093	Distillation light ends from the production of phthalic anhydride from ortho xylene	(T)
K094	Distillation bottoms from the production of phthalic anhydride from ortho-xylene	(T)
K025	Distillation bottoms from the production of nitrobenzene by the nitration of benzene	(T)
K026	Stripping still tails from the production of methy ethyl pyridines	(T)
K027	Centrifuge and distillation residues from toluene diisocyanate production	(R T)
K028	Spent catalyst from the hydrochlorinator reactor in the production of 1 1 1-trichlor oethane	(T)
K029	Waste from the product steam stripper in the production of 1 1 1 trichloroethane	(T)
K095	Distillation bottoms from the production of 1 1 1 trichloroethane	(T)
K096	Heavy ends from the heavy ends column from the production of 1 1 1 trichloroeth ane	(T)
K030	Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene	(T)
K083	Distillation bottoms from aniline production	(T)
K103	Process residues from aniline extraction from the production of aniline	(T)
K104	Combined wastewater streams generated from nitrobenzene/aniline production	(T)
K085	Distillation or fractionation column bottoms from the production of chlorobenzenes	(T)
K105	Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes	(T)
K111	Product washwaters from the production of dinitrotoluene via nitration of toluene	(C T)
K112	Reaction by-product water from the drying column in the production of toluenedia mine via hydrogenation of dinitrotoluene	(T)
K113	Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	(T)
K114	Vicinals from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	(T)
K115	Heavy ends from the purification of toluenediamine in the production of toluenedia mine via hydrogenation of dinitrotoluene	(T)
K116	Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine	(T)
K117	Wastewater from the reactor vent gas scrubber in the production of ethylene dibromide via bromination of ethene	(T)
K118	Spent adsorbent solids from purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene	(T)
K136	Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene	(T)
Inorganic chemicals		
K071	Brine purification muds from the mercury cell process in chlorine production where separately prepurified brine is not used	(T)
K073	Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production	(T)
K106	Wastewater treatment sludge from the mercury cell process in chlorine production	(T)
Pesticides		
K031	By-product salts generated in the production of MSMA and cacodylic acid	(T)
K032	Wastewater treatment sludge from the production of chlordane	(T)
K033	Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane	(T)
K034	Filter solids from the filtration of hexachlorocyclopentadiene in the production of chlordane	(T)
K097	Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane	(T)
K035	Wastewater treatment sludges generated in the production of creosote	(T)
K036	Still bottoms from toluene reclamation distillation in the production of disulfoton	(T)
K037	Wastewater treatment sludges from the production of disulfoton	(T)
K038	Wastewater from the washing and stripping of phorate production	(T)

Industry and EPA hazardous waste No	Hazardous waste	Hazard code
K039	Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate	(T)
K040	Wastewater treatment sludge from the production of phorate	(T)
K041	Wastewater treatment sludge from the production of toxaphene	(T)
K098	Untreated process wastewater from the production of toxaphene	(T)
K042	Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2 4 5 T	(T)
K043	2 6-Dichlorophenol waste from the production of 2 4 D	(T)
K099	Untreated wastewater from the production of 2 4-D	(T)
K123	Process wastewater (including supernates filtrates and washwaters) from the production of ethylenebisdithiocarbamic acid and its salt.	(T)
K124	Reactor vent scrubber water from the production of ethylenebisdithiocarbamic acid and its salts	(C T)
K125	Filtration evaporation and centrifugation solids from the production of ethylenebis dithiocarbamic acid and its salts	(T)
K126	Baghouse dust and floor sweepings in milling and packaging operations from the production or formulation of ethylenebisdithiocarbamic acid and its salts	(T)
Explosives		
K044	Wastewater treatment sludges from the manufacturing and processing of explosives	(R)
K045	Spent carbon from the treatment of wastewater containing explosives	(R)
K046	Wastewater treatment sludges from the manufacturing formulation and loading of lead based initiating compounds	(T)
K047	Pink/red water from TNT operations	(R)
Petroleum refining		
K048	Dissolved air flotation (DAF) float from the petroleum refining industry	(T)
K049	Slop oil emulsion solids from the petroleum refining industry	(T)
K050	Heat exchanger bundle cleaning sludge from the petroleum refining industry	(T)
K051	API separator sludge from the petroleum refining industry	(T)
K052	Tank bottoms (leaded) from the petroleum refining industry	(T)
Iron and steel		
K061	Emission control dust/sludge from the primary production of steel in electric furnaces	(T)
K062	Spent pickle liquor generated by steel finishing operations of facilities within the iron and steel industry (SIC Codes 331 and 332)	(C T)
Secondary lead		
K069	Emission control dust/sludge from secondary lead smelting	(T)
K100	Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting	(T)
Veterinary pharmaceuticals		
K084	Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo arsenic compounds	(T)
K101	Distillation tar residues from the distillation of aniline based compounds in the production of veterinary pharmaceuticals from arsenic or organo arsenic compounds	(T)
K102	Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)
Ink formulation K086	Solvent washes and sludges caustic washes and sludges or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments driers soaps and stabilizers containing chromium and lead	(T)
Coking		
K060	Ammonia still lime sludge from coking operations	(T)
K087	Decanter tank tar sludge from coking operations	(T)

Discarded commercial chemical products, off-specification species, container residues, and spill residues thereof (acute)

Hazardous waste No	Chemical abstracts No	Substance
P023	107-20-0	Acetaldehyde, chloro-
P002	591-08-2	Acetamide, N-(aminothioxomethyl)-
P057	640-19-7	Acetamide, 2-fluoro-
P058	62-74-8	Acetic acid, fluoro-, sodium salt
P066	16752-77-5	Acetimidic acid, N-[(methylcarbamoyl)oxy]thio-, methyl ester
P002	591-08-2	1-Acetyl-2-thiourea
P003	107-02-8	Acrolein
P070	116-06-3	Aldicarb
P004	309-00-2	Aldrin
P005	107-18-6	Allyl alcohol
P006	20859-73-8	Aluminum phosphide (R,T)
P007	2763-96-4	5-(Aminomethyl)-3-isoxazolol
P008	504-24-5	4-alpha-Aminopyridine
P009	131-74-8	Ammonium picrate (R)
P119	7803-55-6	Ammonium vanadate
P010	7778-39-4	Arsenic acid
P012	1327-53-3	Arsenic oxide As_2O_3
P011	1303-28-2	Arsenic oxide As_2O_5
P011	1303-28-2	Arsenic pentoxide
P012	1327-53-3	Arsenic trioxide
P038	692-42-2	Arsine, diethyl
P036	696-28-6	Arsonous dichloride, phenyl-
P054	151-56-4	Aziridine
P013	542-62-1	Barium cyanide
P024	106-47-8	Benzenamine, 4-chloro-
P077	100-01-6	Benzenamine, 4-nitro-
P028	100-44-7	Benzene, (chloromethyl)-
P042	51-43-4	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-, (R)-
P046	122-09-8	Benzeneethanamine, alpha,alpha-dimethyl-
P014	108-98-5	Benzenethiol
P001	[1] 81-81-2	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, and salts
P028	100-44-7	Benzyl chloride
P015	7440-41-7	Beryllium dust
P016	542-88-1	Bis(chloromethyl) ether
P017	598-31-2	Bromoacetone
P018	357-57-3	Brucine
P021	592-01-8	Calcium cyanide
P022	75-15-0	Carbon bisulfide
P022	75-15-0	Carbon disulfide
P095	75-44-5	Carbonic dichloride
P023	107-20-0	Chloroacetaldehyde
P024	106-47-8	p-Chloroaniline
P029	544-92-3	Copper cyanide
P030		Cyanides (soluble cyanide salts), not otherwise specified
P031	460-19-5	Cyanogen
P033	506-77-4	Cyanogen chloride
P034	131-89-5	2-Cyclohexyl-4,6-dinitrophenol
P036	696-28-6	Dichlorophenylarsine
P037	60-57-1	Dieldrin
P038	692-42-2	Diethylarsine
P041	311-45-5	Diethyl-p-nitrophenyl phosphate
P040	297-97-2	O,O-Diethyl O-pyrazinyl phosphorothioate
P043	55-91-4	Diisopropyl fluorophosphate (DFP)
P004	309-00-2	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4abeta,5alpha,8alpha,8abeta)-
P060	465-73-6	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4abeta,5beta,8beta,8abeta)-
P037	60-57-1	2,7:3,6-Dimethanonaphth[2,3b]oxirane, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2aalpha,3beta,6beta,6aalpha,7beta,7aalpha)-
P051	72-20-8	2,7:3,6-Dimethanonaphth[2,3b]oxirane, octahydro-, (1aalpha,2beta,2abeta,3alpha,6alpha,6abeta,7beta,7aalpha)-
P044	60-51-5	Dimethoate
P045	39196-18-4	3,3-Dimethyl-1-(methylthio)-2-butanone, O-[(methylamino)carbonyl] oxime
P046	122-09-8	alpha, alpha-Dimethylphenethylamine
P047	[1] 534-52-1	4,6-Dinitro-o-cresol and salts
P048	51-28-5	2,4-Dinitrophenol
P020	88-85-7	Dinoseb
P085	152-16-9	Diphosphoramide, octamethyl-
P039	298-04-4	Disulfoton
P049	541-53-7	2,4-Dithiobiuret
P050	115-29-7	Endosulfan
P088	145-73-3	Endothal
P051	72-20-8	Endrin
P042	51-43-4	Epinephrine
P101	107-12-0	Ethyl cyanide
P054	151-56-4	Ethylenimine
P097	52-85-7	Famphur
P056	7782-41-4	Fluorine
P057	640-19-7	Fluoroacetamide
P058	62-74-8	Fluoroacetic acid, sodium salt
P065	628-86-4	Fulminic acid, mercury(2+)salt (R,T)
P059	76-44-8	Heptachlor
P062	757-58-4	Hexaethyltetraphosphate
P116	79-19-6	Hydrazinecarbothioamide
P068	60-34-4	Hydrazine, methyl-
P063	74-90-8	Hydrocyanic acid
P063	74-90-8	Hydrogen cyanide
P096	7803-51-2	Hydrogen phosphide
P064	624-83-9	Isocyanic acid, methyl ester
P060	465-73-6	Isodrin
P007	2763-96-4	3(2H)-Isoxazolone, 5-(aminomethyl)-
P092	62-38-4	Mercury, (acetato-O)phenyl-
P065	628-86-4	Mercury fulminate (R,T)
P082	62-75-9	Methanamine, N-methyl-N-nitroso-
P016	542-88-1	Methane, oxybis[chloro-

Hazardous waste No	Chemical abstracts No	Substance
P112	509-14-8	Methane, tetranitro- (R)
P118	75-70-7	Methanethiol trichloro-
P050	115-29-7	6 9 Methano-2 4 3 benzodioxathiepen 6 7 8 9 10 10 hexachloro- 1 5 5a 6 9 9a hexahydro- 3-oxide
P059	76-44-8	4,7-Methano-1H indene, 1 4 5 6 7 8 8 heptachloro-3a 4 7 7a tetrahydro
P066	16752-77-5	Methomyl
P067	75-55-8	2 Methylaziridine
P068	60-34-4	Methyl hydrazine
P064	624-83-9	Methyl isocyanate
P069	75-86-5	2 Methyllactonitrile
P071	298-00-0	Methyl parathion
P072	86-88-4	alpha-Naphthylthiourea
P073	13463-39-3	Nickel carbonyl
P073	13463-39-3	Nickel carbonyl, (T-4)-
P075	[1] 54-11-5	Nicotine and salts
P076	10102-43-9	Nitric oxide
P077	100-01-6	p-Nitroaniline
P078	10102-44-0	Nitrogen dioxide
P076	10102-43-9	Nitrogen oxide NO
P078	10102-44-0	Nitrogen oxide NO_2
P081	55-63-0	Nitroglycerine (R)
P082	62-75-9	N-Nitrosodimethylamine
P084	4549-40-0	N-Nitrosomethylvinylamine
P074	557-19-7	Nickel cyanide
P085	152-16-9	Octamethylpyrophosphoramide
P087	20816-12-0	Osmium oxide
P087	20816-12-0	Osmium tetroxide
P088	145-73-3	7-Oxabicyclo[2 2 1]heptane-2 3-dicarboxylic acid
P089	56-38-2	Parathion
P034	131-89-5	Phenol, 2-cyclohexyl 4 6-dinitro-
P048	51-28-5	Phenol, 2,4-dinitro-
P047	[1] 534-52-1	Phenol, 2-methyl-4 6-dinitro- and salts
P020	88-85-7	Phenol, 2-(1-methylpropyl)-4 6-dinitro-
P009	131-74-8	Phenol, 2,4,6-trinitro- ammonium salt (R)
P092	62-38-4	Phenylmercury acetate
P093	103-85-5	Phenylthiourea
P094	298-02-2	Phorate
P095	75-44-5	Phosgene
P096	7803-51-2	Phosphine
P041	311-45-5	Phosphonic acid diethyl 4 nitrophenyl ester
P039	298-04-4	Phosphorodithioic acid O O-diethyl S [2 (ethylthio)ethyl] ester
P094	298-02-2	Phosphorodithioic acid O O-diethyl S-[(ethylthio)methyl] ester
P044	60-51-5	Phosphorodithioic acid O O-dimethyl S[2-(methylamino)-2-oxoethyl] ester
P043	55-91-4	Phosphorofluoric acid bis(1-methylethyl)- ester
P089	56-38-2	Phosphorothioic acid O O-diethyl O (4 nitrophenyl) ester
P040	297-97-2	Phosphorothioic acid O O diethyl O pyrazinyl ester
P097	52-85-7	Phosphorothioic acid O [4 [(dimethylamino)sulfonyl]phenyl] O O dimethyl ester
P071	298-00-0	Phosphorothioic acid O O dimethyl O (4 nitrophenyl) ester
P110	78-00-2	Plumbane, tetraethyl
P098	151-50-8	Potassium cyanide
P099	506-61-6	Potassium silver cyanide
P070	116-06-3	Propanal, 2 methyl 2 (methylthio) O [(methylamino)carbonyl]oxime
P101	107-12-0	Propanenitrile
P027	542-76-7	Propanenitrile, 3-chloro-
P069	75-86-5	Propanenitrile 2-hydroxy-2-methyl
P081	55-63-0	1,2,3 Propanetriol trinitrate (R)
P017	598-31-2	2-Propanone, 1-bromo-
P102	107-19-7	Propargyl alcohol
P003	107-02-8	2 Propenal
P005	107-18-6	2-Propen-1-ol
P067	75-55-8	1,2-Propylenimine
P102	591-08-2	2 Propyn-1-ol
P008	504-24-5	Pyridinamine
P075	[1] 54-11-5	Pyridine (S) 3 (1-methyl 2 pyrrolidinyl)-, and salts
P111	107-49-3	Pyrophosphoric acid tetraethyl ester
P103	630-10-4	Selenourea
P104	506-64 9	Silver cyanide
P105	26628-22-8	Sodium azide
P106	143-33-9	Sodium cyanide
P107	1314-96-1	Strontium sulfide
P108	[1] 57-24-9	Strychnidin-10-one and salts
P018	357-57-3	Strychnidin-10-one 2 3-dimethoxy-
P108	[1] 57-24-9	Strychnine and salts
P115	10031-59-1	Sulfuric acid, thallium(I) salt
P109	3689-24-5	Tetraethyldithiopyrophosphate
P110	78-00-2	Tetraethyl lead
P111	107-49-3	Tetraethylpyrophosphate
P112	509-14-8	Tetranitromethane (R)
P062	757-58-4	Tetraphosphonic acid hexaethyl ester
P113	1314-32-5	Thallic oxide
P113	1314-32-5	Thallium(III) oxide
P114	12039-52-0	Thallium(I) selenite
P115	10031-59-1	Thallium(I) sulfate
P109	3689-24-5	Thiodiphosphonic acid tetraethyl ester
P045	39196-18-4	Thiofanox
P049	541-53-7	Thioimidodicarbonic diamide
P014	108-98-5	Thiophenol
P116	79-19-6	Thiosemicarbazide
P026	5344-82-1	Thiourea, (2-chlorophenyl)-
P072	86-88-4	Thiourea, 1-naphthalenyl-
P093	103-85-5	Thiourea, phenyl-
P123	8001-35-2	Toxaphene
P118	75-70-7	Trichloromethanethiol
P119	7803-55-6	Vanadic acid ammonium salt
P120	1314-62-1	Vanadium(V) oxide
P084	4549-40-0	Vinylamine, N methyl N nitroso-
P001	81-81-2	Warfarin
P121	557-21-1	Zinc cyanide
P122	1314-84-7	Zinc phosphide (R T)

[1] CAS Number given for parent compound only

Discarded commercial chemical products, off-specification species, container residues, and spill residues thereof (toxic)

Hazardous waste No.	Chemical abstracts No	Substance
U001	75-07-0	Acetaldehyde (I)
U034	75-87-6	Acetaldehyde, trichloro-
U187	62-44-2	Acetamide, N-(4-ethoxyphenyl)-
U005	53-96-3	Acetamide, N-9H-fluoren-2-yl
U112	141-78-6	Acetic acid, ethyl ester (I)
U144	301-04-2	Acetic acid, lead salt
U214	563-68-8	Acetic acid, thallium (1+) salt
U232	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-
U002	67-64-1	Acetone (I)
U003	75-05-8	Acetonitrile (I,T)
U004	98-86-2	Acetophenone
U005	53-96-3	2-Acetylaminofluorene
U006	75-36-5	Acetyl chloride (C,R,T)
U007	79-06-1	Acrylamide
U008	79-10-7	Acrylic acid (I)
U009	107-13-1	Acrylonitrile
U011	61-82-5	Amitrole
U012	62-53-3	Aniline (I,T)
U014	492-80-8	Auramine
U015	115-02-6	Azaserine
U010	50-07-7	Azirino(2',3':3,4)pyrrolo(1,2-a)indole-4,7-dione, 6-amino-8-[((aminocarbonyl)oxy)methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-
U157	56-49-5	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-
U016	225-51-4	3,4-Benzacridine
U017	98-87-3	Benzal chloride
U192	23950-58-5	Benzamide, 3,5-dichloro-N-(1,1-diethyl-2-propynyl)-
U018	56-55-3	Benz[a]anthracene
U094	57-97-6	Benz[a]anthracene, 7,12-dimethyl-
U012	62-53-3	Benzenamine (I,T)
U014	492-80-8	Benzenamine, 4,4'-carbonimidoylbis[N,N-dimethyl-
U049	3165-93-3	Benzenamine, 4-chloro-2-methyl-
U093	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-
U328	95-53-4	Benzenamine, 2-methyl-
U353	106-49-0	Benzenamine, 4-methyl-
U158	101-14-4	Benzenamine, 4,4'-methylenebis[2-chloro-
U222	636-21-5	Benzenamine, 2-methyl-, hydrochloride
U181	99-55-8	Benzenamine, 2-methyl-5-nitro-
U019	71-43-2	Benzene
U038	510-15-6	Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy, ethyl ester
U030	101-55-3	Benzene, 1-bromo-4-phenoxy-
U035	305-03-3	Benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-
U037	108-90-7	Benzene, chloro-
U221	25376-45-8	Benzenediamine, ar-methyl-
U028	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexy) ester
U069	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester
U088	84-66-2	1,2-Benzenedicarboxylic acid, diethyl ester
U102	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester
U107	117-84-0	1,2-Benzenedicarboxylic acid, di-n-octyl ester
U070	95-50-1	Benzene, 1,2-dichloro-
U071	541-73-1	Benzene, 1,3-dichloro-
U072	106-46-7	Benzene, 1,4-dichloro-
U060	72-54-8	Benzene, 1, 1'-(2,2-dichloroethylidene)bis[4-chloro-
U017	98-87-3	Benzene, (dichloromethyl)-
U223	26471-62-5	Benzene, 1,3-diisocyanatomethyl- (R,T)
U239	1330-20-7	Benzene, dimethyl- (I,T)
U201	108-46-3	1,3-Benzenediol
U127	118-74-1	Benzene, hexachloro-
U056	110-82-7	Benzene, hexahydro- (I)
U220	108-88-3	Benzene, methyl-
U105	121-14-2	Benzene, 1-methyl-2,4-dinitro-
U106	606-20-2	Benzene, 2-methyl-1,3-dinitro-
U055	98-82-8	Benzene, (1-methylethyl)- (I)
U169	98-95-3	Benzene, nitro- (I,T)
U183	608-93-5	Benzene, pentachloro-
U185	82-68-8	Benzene, pentachloronitro-
U020	98-09-9	Benzenesulfonic acid chloride (C,R)
U020	98-09-9	Benzenesulfonyl chloride (C,R)
U207	95-94-3	Benzene, 1,2,4,5-tetrachloro-
U061	50-29-3	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-
U247	72-43-5	Benzene, 1,1'-(2,2,2-trichloroethylidene)[4-methoxy-
U023	98-07-7	Benzene, (trichloromethyl)- (C,R,T)
U234	99-35-4	Benzene, 1,3,5-trinitro- (R,T)
U021	92-87-5	Benzidine
U202	181-07-2	1,2-Benzisothiazol-3-(2H)-one, 1,1-dioxide and salts
U203	94-59-7	1,3-Benzodioxole, 5-(2-propenyl)-
U141	120-58-1	1,3-Benzodioxole, 5-(1-propenyl)-
U090	94-58-6	1,3-Benzodioxole, 5-propyl-
U064	189-55-9	Benzo[rst]pentaphene
U022	50-32-8	Benzo[a]pyrene
U197	106-51-4	p-Benzoquinone
U023	98-07-7	Benzotrichloride (C,R,T)
U085	1464-53-5	2,2'-Bioxirane (I,T)
U021	92-87-5	[1,1'-Biphenyl]-4,4'-diamine
U073	91-94-1	[1,1 Biphenyl]-4,4'-diamine, 3,3'-dichloro-
U091	119-90-4	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-
U095	119-93-7	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-
U027	39638-32-9	Bis(2-chloroisopropyl) ether
U024	111-91-1	Bis(2-chloromethoxy) ethane
U028	117-81-7	Bis(2-ethylhexyl) phthalate.
U225	75-25-2	Bromoform
U030	101-55-3	4-Bromophenyl phenyl ether
U128	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-

Hazardous waste No	Chemical abstracts No	Substance
U172	924-16-3	1-Butanamine, N-butyl-N-nitroso-
U031	71-36-3	1-Butanol (I)
U159	78-93-3	2-Butanone (I,T)
U160	1338-23-4	2-Butanone peroxide (R,T)
U053	4170-30-3	2-Butenal
U074	764-41-0	2-Butene, 1,4-dichloro- (I,T)
U143	303-34-4	2-Butenoic acid, 2 methyl-, 7-[[2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy)methyl]-2,3,5,7a-tetrahydro-1-pyrrolizin-1-yl ester, [1S-[1alpha(Z),7(2S, 3R), 7aalpha]]-
U031	71-36-3	n-Butyl alcohol (I)
U136	75-60-5	Cacodylic acid
U032	13765-19-0	Calcium chromate
U238	51-79-6	Carbamic acid, ethyl ester
U178	615-53-2	Carbamic acid, methylnitroso-, ethyl ester
U097	79-44-7	Carbamic chloride, dimethyl-
U114	[1] 111-54-6	Carbamodithioic acid, 1,2-ethanediylbis-,salts and esters
U062	2303-16-4	Carbamothioic acid, bis(1-methylethyl)-S-(2,3-dichloro-2-propenyl) ester
U215	6533-73-9	Carbonic acid, dithallium(1+) salt
U033	353-50-4	Carbonic difluoride
U156	79-22-1	Carbonochloridic acid, methyl ester (I,T)
U033	353-50-4	Carbon oxyfluoride (R,T)
U211	56-23-5	Carbon tetrachloride
U034	75-87-6	Chloral
U035	305-03-3	Chlorambucil
U036	12789-03-6	Chlordane
U026	494-03-1	Chlornaphazine
U037	108-90-7	Chlorobenzene
U039	59-50-7	p-Chloro-m-cresol
U041	106-89-8	1-Chloro-2,3-epoxypropane
U042	110-75-8	2-Chloroethyl vinyl ether
U044	67-66-3	Chloroform
U046	107-30-2	Chloromethyl methyl ether
U047	91-58-7	beta-Chloronaphthalene
U048	95-57-8	o-Chlorophenol
U049	3165-93-3	4-Chloro-o-toluidine, hydrochloride
U032	13765-19-0	Chromic acid, calcium salt
U050	218-01-9	Chrysene
U051	8021-39-4	Creosote
U052	1319-77-3	Cresols (Cresylic acid)
U053	4170-30-3	Crotonaldehyde
U055	98-82-8	Cumene (I)
U246	506-68-3	Cyanogen bromide
U197	106-51-4	2,5-Cyclohexadiene-1, 4-dione
U056	110-82-7	Cyclohexane (I)
U057	108-94-1	Cyclohexanone (I)
U130	77-47-4	1,3-Cyclopentadiene, 1 2 3 4 5,5-hexachloro-
U058	50-18-0	Cyclophosphamide
U240	[1] 94-75-7	2,4-D, salts and esters
U059	20830-81-3	Daunomycin
U060	72-54-8	DDD
U061	50-29-3	DDT
U062	2303-16-4	Diallate
U063	53-70-3	Dibenz[a,h]anthracene
U064	189-55-9	Dibenzo[a,i]pyrene
U066	96-12-8	1,2-Dibromo-3-chloropropane
U069	84-74-2	Dibutyl phthalate
U070	95-50-1	o-Dichlorobenzene
U071	541-73-1	m-Dichlorobenzene
U072	106-46-7	p-Dichlorobenzene
U073	91-94-1	3,3'-Dichlorobenzidine
U074	764-41-0	1,4-Dichloro-2-butene (I,T)
U075	75-71-8	Dichlorodifluoromethane
U078	75-35-4	1,1-Dichloroethylene
U079	156-60-5	1,2-Dichloroethylene
U025	111-44-1	Dichloroethyl ether
U081	120-83-2	2,4-Dichlorophenol
U082	87-65-0	2,6-Dichlorophenol
U240	[1] 94-75-7	2,4-Dichlorophenoxyacetic acid, salts and esters
U083	78-87-5	1,2-Dichloropropane
U084	542-75-6	1,3-Dichloropropene
U085	1464-53-5	1,2 3,4-Diepoxybutane (I,T)
U108	123-91-1	1,4-Diethyleneoxide
U086	1615-80-1	N,N-Diethylhydrazine
U087	3288-58-2	O,O-Diethyl-S-methyl-dithiophosphate
U088	84-66-2	Diethyl phthalate
U089	56-53-1	Diethylstilbestrol
U090	94-58-6	Dihydrosafrole
U091	119-90-4	3,3'-Dimethoxybenzidine
U092	124-40-3	Dimethylamine (I)
U093	60-11-7	Dimethylaminoazobenzene
U094	57-97-6	7,12-Dimethylbenz[a]anthracene
U095	119-93-7	3,3'-Dimethylbenzidine
U096	80-15-9	alpha alpha-Dimethylbenzylhydroperoxide (R)
U097	79-44-7	Dimethylcarbamoyl chloride
U098	57-14-7	1,1-Dimethylhydrazine
U099	540-73-8	1,2-Dimethylhydrazine
U101	105-67-9	2,4-Dimethylphenol
U102	131-11-3	Dimethyl phthalate
U103	77-78-1	Dimethyl sulfate
U105	121-14-2	2,4-Dinitrotoluene
U106	606-20-2	2,6-Dinitrotoluene
U107	117-84-0	Di-n-octyl phthalate

Hazardous waste No	Chemical abstracts No	Substance
U108	123-91-1	1,4-Dioxane
U109	122-66-7	1,2-Diphenylhydrazine
U110	142-84-7	Dipropylamine (I)
U111	621-64-7	Di-n-propylnitrosamine
U001	75-07-0	Ethanal (I)
U174	55-18-5	Ethanamine, N-ethyl-N-nitroso-
U155	91-80-5	1,2-Ethanediamine, N,N-dimethyl-N'-2 pyridinyl-N'-(2 thienylmethyl)-
U067	106-93-4	Ethane, 1,2-dibromo-
U076	75-34-3	Ethane, 1,1-dichloro-
U077	107-06-2	Ethane, 1,2-dichloro-
U131	67-72-1	Ethane, hexachloro-
U024	111-91-1	Ethane, 1,1'-[methylenebis(oxy)]bis[2 chloro-
U117	60-29-7	Ethane, 1,1'-oxybis- (I)
U025	111-44-4	Ethane, 1,1'-oxybis[2-chloro-
U184	76-01-7	Ethane, pentachloro-
U208	630-20-6	Ethane, 1,1,1,2-tetrachloro-
U209	79-34-5	Ethane, 1,1,2,2-tetrachloro-
U218	62-55-5	Ethanethioamide
U227	110-80-5	Ethanol, 2-ethoxy-
U359	79-00-5	Ethane, 1,1,2-trichloro-
U173	1116-54-7	Ethanol, 2,2'-(nitrosoimino)bis-
U004	98-86-2	Ethanone, 1-phenyl-
U043	75-01-4	Ethene, chloro-
U042	110-75-8	Ethene, (2-chloroethoxy)-
U078	75-35-4	Ethene, 1,1-dichloro-
U079	156-60-5	Ethene, 1,2-dichloro-, (E)-
U210	127-18-4	Ethene, tetrachloro
U228	79-01-6	Ethene, trichloro
U112	141-78-6	Ethyl acetate (I)
U113	140-88-5	Ethyl acrylate (I)
U238	51-79-6	Ethyl carbamate
U038	510-15-6	Ethyl 4,4'-dichlorobenzilate
U114	111-54-6	Ethylenebisdithiocarbamic acid, salts and esters
U067	106-93-4	Ethylene dibromide
U077	107-06-2	Ethylene dichloride
U359	110-80-5	Ethylene glycol monoethyl ether
U115	75-21-8	Ethylene oxide (I,T)
U116	96-45-7	Ethylene thiourea
U117	60-29-7	Ethyl ether (I)
U076	75-34-3	Ethylidene dichloride
U118	97-63-2	Ethyl methacrylate
U119	62-50-0	Ethylmethanesulfonate
U120	206-44-0	Fluoranthene
U122	50-00-0	Formaldehyde
U123	64-18-6	Formic acid (C,T)
U124	110-00-9	Furan (I)
U125	98-01-1	2-Furancarboxaldehyde (I)
U147	108-31-6	2,5-Furandione
U213	109-99-9	Furan, tetrahydro- (I)
U125	98-01-1	Furfural (I)
U124	110-00-9	Furfuran (I)
U206	18883-66-4	D-Glucopyranose, 2-deoxy-2(3-methyl 3 nitrosoureido)
U126	765-34-4	Glycidylaldehyde
U163	70-25-7	Guanidine, N-methyl-N'-nitro-N-nitroso-
U127	118-74-1	Hexachlorobenzene
U128	87-68-3	Hexachlorobutadiene
U129	58-88-9	Hexachlorocyclohexane (gamma isomer)
U130	77-47-4	Hexachlorocyclopentadiene
U131	67-72-1	Hexachloroethane
U132	70-30-4	Hexachlorophene
U243	1888-71-7	Hexachloropropene
U133	302-01-2	Hydrazine (R,T)
U086	1615-80-1	Hydrazine, 1,2-diethyl-
U098	57-14-7	Hydrazine, 1,1-dimethyl-
U099	540-73-8	Hydrazine, 1,2-dimethyl-
U109	122-66-7	Hydrazine, 1,2-diphenyl-
U134	7664-39-3	Hydrofluoric acid (C,T)
U134	7664-39-3	Hydrogen fluoride (C,T)
U135	7783-06-4	Hydrogen sulfide
U096	80-15-9	Hydroperoxide, 1-methyl-1-phenylethyl- (R)
U136	75-60-5	Hydroxydimethylarsine oxide
U116	96-45-7	2-Imidazolidinethione
U137	193-39-5	Indeno[1,2,3cd]pyrene
U139	9004-66-4	Iron dextran
U190	85-44-9	1,3-Isobenzofurandione
U140	78-83-1	Isobutyl alcohol (I,T)
U141	120-58-1	Isosafrole
U142	143-50-0	Kepone
U143	303-34-4	Lasiocarpine
U144	301-04-2	Lead acetate
U146	1335-32-6	Lead, bis(acetato-O)tetrahydroxytri-
U145	7446-27-7	Lead phosphate
U146	1335-32-6	Lead subacetate
U129	58-89-9	Lindane
U147	108-31-6	Maleic anhydride
U148	123-33-1	Maleic hydrazide
U149	109-77-3	Malononitrile
U150	148-82-3	Melphalan
U151	7439-97-6	Mercury
U152	126-98-7	Methacrylonitrile (I,T)
U092	124-40-3	Methanamine, N-methyl- (I)

Hazardous waste No.	Chemical abstracts No	Substance
U029	74-83-9	Methane, bromo-
U045	74-87-3	Methane, chloro- (I,T)
U046	107-30-2	Methane, chloromethoxy-
U068	74-95-3	Methane, dibromo-
U080	75-09-2	Methane, dichloro-
U075	75-71-8	Methane, dichlorodifluoro-
U138	74-88-4	Methane, iodo-
U119	62-50-0	Methanesulfonic acid, ethyl ester
U211	56-23-5	Methane, tetrachloro-
U153	74-93-1	Methanethiol (I,T)
U225	75-25-2	Methane, tribromo-
U044	67-66-3	Methane, trichloro-
U121	75-69-4	Methane, trichlorofluoro-
U123	64-18-6	Methanoic acid (C,T)
U154	67-56-1	Methanol (I)
U155	91-80-5	Methapyrilene
U142	143-50-0	1,3,4-Metheno-2H-cyclobuta[cd]pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-
U247	72-43-5	Methoxychlor
U154	67-56-1	Methyl alcohol (I)
U029	74-83-9	Methyl bromide
U186	504-60-9	1-Methylbutadiene (I)
U045	74-87-3	Methyl chloride (I,T)
U156	79-22-1	Methylchlorocarbonate (I,T)
U226	71-55-6	Methylchloroform
U157	56-49-5	3-Methylcholanthrene
U158	101-14-4	4,4'-Methylenebis(2-chloroaniline)
U068	74-95-3	Methylene bromide
U080	75-09-2	Methylene chloride
U159	78-93-3	Methyl ethyl ketone (MEK) (I,T)
U160	1338-23-4	Methyl ethyl ketone peroxide (R,T)
U138	74-88-4	Methyl iodide
U161	108-10-1	Methyl isobutyl ketone (I)
U162	80-62-6	Methyl methacrylate (I,T)
U163	70-25-7	N-Methyl-N'-nitro-N-nitrosoguanidine
U161	108-10-1	4-Methyl-2-pentanone (I)
U164	56-04-2	Methylthiouracil
U010	50-07-7	Mitomycin C
U059	20830-81-3	5,12-Naphthacenedione, (8S-cis)-8-acetyl-10-[(3-amino-2,3,6-trideoxy)-alpha-L-lyxo-hexopyranosyl)oxy]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-
U165	91-20-3	Naphthalene
U047	91-58-7	Naphthalene, 2-chloro-
U166	130-15-4	1,4-Naphthalenedione
U236	72-57-1	2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'dimethyl-[1,1'biphenyl]-4,4'-diyl)]-bis(azo)bis(5-amino-4-hydroxy)-, tetrasodium salt
U166	130-15-4	1,4-Naphthoquinone
U167	134-32-7	alpha-Naphthylamine
U168	91-59-8	beta-Naphthylamine
U026	494-03-1	2-Naphthylamine, N,N'-bis(2-chloromethyl)-
U167	134-32-7	1-Naphthylenamine
U168	91-59-8	2-Naphthylenamine
U217	10102-45-1	Nitric acid, thallium(1+) salt
U169	98-95-3	Nitrobenzene (I,T)
U170	100-02-7	p-Nitrophenol
U171	79-46-9	2-Nitropropane (I,T)
U172	924-16-3	N-Nitrosodi-n-butylamine
U173	1116-54-7	N-Nitrosodiethanolamine
U174	55-18-5	N-Nitrosodiethylamine
U176	759-73-9	N-Nitroso-N-ethylurea
U177	684-93-5	N-Nitroso-N-methylurea
U178	615-53-2	N-Nitroso-N-methylurethane
U179	100-75-4	N-Nitrosopiperidine
U180	930-55-2	N-Nitrosopyrrolidine
U181	99-55-8	5-Nitro-o-toluidine
U193	1120-71-4	1,2-Oxathiolane, 2,2-dioxide
U058	50-18-0	2H-1,3,2-Oxazaphosphorin-2-amine, N,N-bis(2-chloroethyl)tetrahydro-, 2-oxide
U115	75-21-8	Oxirane (I,T)
U126	765-34-4	Oxiranecarboxyaldehyde
U041	106-89-8	Oxirane, (chloromethyl)-
U182	123-63-7	Paraldehyde
U183	608-93-5	Pentachlorobenzene
U184	76-01-7	Pentachloroethane
U185	82-68-8	Pentachloronitrobenzene (PCNB)
U242	87-86-5	Pentachlorophenol
U186	504-60-9	1,3-Pentadiene (I)
U187	62-44-2	Phenacetin
U188	108-95-2	Phenol
U048	95-57-8	Phenol, 2-chloro-
U039	59-50-7	Phenol, 4-chloro-3-methyl-
U081	120-83-2	Phenol, 2,4-dichloro-
U082	87-65-0	Phenol, 2,6-dichloro-
U089	56-53-1	Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-, (E)-
U101	105-67-9	Phenol, 2,4-dimethyl-
U052	1319-77-3	Phenol, methyl-
U132	70-30-4	Phenol, 2,2'-methylenebis[3,4,6-trichloro-
U170	100-02-7	Phenol, 4-nitro-
U242	87-86-5	Phenol, pentachloro-
U212	58-90-2	Phenol, 2,3,4,6-tetrachloro-
U230	95-94-4	Phenol, 2,4,5-trichloro-
U231	88-06-2	Phenol, 2,4,6-trichloro-
U150	148-82-3	L-Phenylalanine, 4-[bis(2-chloroethyl)amino]-
U145	7446-27-7	Phosphonic acid, lead salt
U087	3288-58-2	Phosphorodithioic acid, O,O-diethyl-, S-methyl-, ester
U189	108-95-2	Phosphorous sulfide (R)

Hazardous waste No	Chemical abstracts No	Substance
U190	85-44-9	Phthalic anhydride
U191	109-06-8	2-Picoline
U179	100-75-4	Piperidine, 1-nitroso-
U192	23950-58-5	Pronamide
U194	107-10-8	1-Propanamine (I,T)
U111	621-64-7	1-Propanamine, N-nitroso-N-propyl-
U110	142-84-7	1-Propanamine, N-propyl- (I)
U066	96-12-8	Propane, 1,2-dibromo-3-chloro-
U149	109-77-3	Propanedinitrile
U171	79-46-9	Propane, 2-nitro- (I,T)
U027	39638-32-9	Propane, 2,2 -oxybis[2-chloro-
U193	1120-71-4	1,3-Propane sultone
U235	126-72-7	1-Propanol, 2,3-dibromo-, phosphate (3 1)
U140	78-83-1	1-Propanol, 2-methyl- (I,T)
U002	67-64-1	2-Propanone (I)
U084	542-75-6	1-Propene, 1,3-dichloro-
U152	126-98-7	2-Propenenitrile, 2-methyl- (I,T)
U007	79-06-1	2-Propenamide
U243	1888-71-7	1-Propene, hexachloro-
U009	107-13-1	2-Propenenitrile
U008	79-10-7	2-Propenoic acid (I)
U113	140-88-5	2-Propenoic acid, ethyl ester (I)
U118	97-63-2	2-Propenoic acid, 2-methyl-, ethyl ester
U162	80-66-2	2-Propenoic acid, 2-methyl-, methyl ester (I,T)
U233	93-72-1	Propionic acid, 2-(2,4,5-trichlorophenoxy)-
U194	107-10-8	n-Propylamine (I,T)
U083	78-87-5	Propylene dichloride
U148	123-33-1	3,6-Pyridazinedione, 1,2-dihydro-
U196	110-86-1	Pyridine
U191	109-06-8	Pyridine, 2-methyl-
U237	66-75-1	2,4(1H,3H)-Pyrimidinedione, 5-[bis(2-chloroethyl)amino]-
U164	56-04-2	4-(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-
U180	930-55-2	Pyrrolidine, 1-nitroso-
U200	50-55-5	Reserpine
U201	108-46-3	Resorcinol
U202	81-07-2	Saccharin and salts
U203	94-59-7	Safrole
U204	7783-00-8	Selenious acid
U204	7783-00-8	Selenium dioxide
U205	7446-34-6	Selenium sulfide (R,T)
U015	115-02-6	L-Serine, diazoacetate (ester)
U233	93-72-1	Silvex
U206	18883-66-4	Streptozotocin
U103	77-78-1	Sulfuric acid dimethyl ester
U189	1314-80-3	Sulfur phosphide (R)
U232	93-76-5	2,4 5-T
U207	95-94-3	1,2,4,5-Tetrachlorobenzene
U208	630-20-6	1,1,1,2-Tetrachloroethane
U209	79-34-5	1,1,2,2-Tetrachloroethane
U210	127-18-4	Tetrachloroethylene
U212	58-90-2	2,3,4,6-Tetrachlorophenol
U213	109-99-9	Tetrahydrofuran (I)
U214	15843-14-8	Thallium(I) acetate
U215	6533-73-9	Thallium(I) carbonate
U216	7791-12-0	Thallium chloride
U217	10102-45-1	Thallium(I) nitrate
U218	62-55-5	Thioacetamide
U153	74-93-1	Thiomethanol (I,T)
U244	137-26-8	Thioperoxydicarbonic diamide, tetramethyl-
U219	62-56-6	Thiourea
U244	137-26-8	Thiuram
U220	108-88-3	Toluene
U221	25376-45-8	Toluenediamine
U223	26471-62-5	Toluene diisocyanate (R,T)
U328	95-53-4	o-Toluidine
U353	106-49-0	p-Toluidine
U222	636-21-5	o-Toluidine hydrochloride
U011	61-82-5	1H-1,2,4-Triazol-3-amine
U226	71-55-6	1,1,1-Trichloroethane
U227	79-00-5	1,1,2-Trichloroethane
U228	79-01-6	Trichloroethylene
U121	75-69-4	Trichloromonofluoromethane
U230	95-95-4	2,4,5-Trichlorophenol
U231	88-06-2	2,4,6-Trichlorophenol
U234	99-35-4	sym-Trinitrobenzene (R,T)
U182	123-63-7	1 3,5-Trioxane, 2,4 6-trimethyl-
U235	126-72-7	Tris (2,3-dibromopropyl) phosphate
U236	72-57-1	Trypan blue
U237	66-75-1	Uracil mustard
U176	759-73-9	Urea, N-ethyl-N-nitroso-
U177	684-93-5	Urea, N-methyl-N-nitroso-
U043	75-01-4	Vinyl chloride
U248	81-81-2	Warfarin, when present at concentrations of 0 3% or less
U239	1330-20-7	Xylene (I)
U200	50-55-5	Yohimban-16-carboxylic acid 11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-, methyl ester
U249	1314-84-7	Zinc phosphide, when present at concentrations of 10% or less

[1] CAS Number given for parent compound only

DRAFT

APPENDIX C

Laboratory Data Sheets

This appendix contains the laboratory data sheets for the ground water and soils analyses conducted as a part of this phase of investigation.

DRAFT

KEY TO APPENDIX C

ATI I.D.	Matrix	Test	Client I.D.	Soil Sampling Location or Legal Well Designation	ENVIS Number
808054		Gen/metals	Quality Control (Lab)		
808054		VOCs	Reagent Blank (Lab)		
80805401	Water	Gen/VOCs/metals	3035A	(A-1-3)16ccb	3035
80805402	Water	VOCs	Trip Blank		
808055		VOCs	Quality Control (Lab)		
808055		VOCs	Reagent Blank (Lab)		
80805501	Water	VOCs	3051	(A-1-3)10aa	3051
808061		Gen/metals	Quality Control (Lab)		
808061		VOCs	Reagent Blank (Lab)		
80806101	Water	Gen/VOCs/metals	3016	(A-1-3)8cdd	3016
80806102	Water	Gen/VOCs/metals	2013	(A-1-3)2aab	2013
80806103	Water	Gen/VOCs/metals	3020	(A-1-3)9ddc	3020
80806104	Water	VOCs	9882	Sampling Equipment Rinsate	
808085		Gen/VOCs/metals	Quality Control (Lab)		
808085		Gen/VOCs/metals	Reagent Blank (Lab)		
80808501	Water	Gen/VOCs/metals	3012A	(A-1-3)8bda	3012A
80808502	Water	VOCs	Trip Blank		
80808503	Water	Gen/VOCs/metals	3012B	(A-1-3)8bda	3012B
80808504	Water	VOCs	9012A	Duplicate of 3012A	
80808505	Water	Gen/VOCs/metals	3035B	(A-1-3)16ccb	3035B
808094		Metals	Quality Control (Lab)		
808094		VOCs	Reagent Blank (Lab)		
80809401	Soil	VOCs	S-15-04	Mission Uniform and Linen	
80809402	Soil	VOCs	S-17-03	Cahill Desert Products	
80809403	Soil	VOCs	S-25-03	Henes Stamping, Inc.	
80809404	Soil	Metals	S-25-02	Henes Stamping, Inc.	
80809405	Soil	Metals	S-27-02	Ameron	
80809406	Soil	VOCs	S-28-03	Dupicate of Cahill Desert Products	
808130		Metals	Quality Control (Lab)		
808130		VOCs	Reagent Blank (Lab)		
80813001	Soil	VOCs	S-15-03	Hays Roofing (Sample Location #18) mislabled sample bottle and	
80813002	Soil	VOCs	S-16-03	Interstate Parts & Machine Co.	
80813003	Soil	VOCs	S-19-03	Apache Electric & Electronics	
80813004	Soil	Metals	S-19-02	Apache Electric & Electronics	
80813005	Soil	VOCs	S-29-03	Duplicate of Hays Roofing	

DRAFT

KEY TO APPENDIX C (continued)

ATI I.D./	Matrix	Test	Client I.D.	Soil Sampling Location or Legal Well Designation
808135		Gen/Metals	Quality Control (Lab)	
808135		VOCs	Reagent Blank (Lab)	
80813501	Soil	VOCs	S-01-02	Western Automatic Machine Co.
80813502	Soil	VOCs	S-04-03	Metal Products
80813503	Soil	Metals	S-04-02	Metal Products
80813504	Soil	VOCs	S-07-03	Kaiser Holtzbau
80813505	Soil	VOCs	S-9A-00	Southern Pacific Railroad Yard
80813506	Soil	VOCs	S-9B-00	Southern Pacific Railroad Yard
80813507	Soil	VOCs	S-10-02	B S & W Energy Corp
80813508	Soil	Metals	S-10-01	B S & W Energy Corp
80813509	Soil	Metals	S-07-02	Kaiser Holtzbau
80813510	Soil	VOCs	S-22-01	Sky Harbor International Airport
80813511	Soil	VOCs	S-23-00	Sky Harbor International Airport
80813512	Soil	VOCs	S-30-00	Background (Central/S.Mtn)
80813513	Soil	VOCs	S-31-01	Duplicate of Sky Harbor
80813514	Soil	VOCs	S-32-00	Background (Central/Broadway)
80813515	Soil	VOCs	S-33-03	Duplicate of Kaiser Holtzbau
80813516	Soil	Metals	S-33-02	Duplicate of Sky Harbor
80813517	Soil	VOCs	S-34-00	Background (Kachina & Equestrian Trail)
80813518	Water	Gen/VOCs/metals	9999	Sky Harbor Airport (runoff from paved a
808144		VOCs	Reagent Blank (Lab)	
80814401	Soil	VOCs	S-11-03	Precision Grinding
80814402	Soil	VOCs	S-35-03	Dupicate of Precision Grinding
80814403	Soil	VOCs	S-36-00	Background (36th St and Palm Cyn)

Soil I.D. Number: S-34-01

S = Soil
34 = Site Number as stated in respective sampling plan
01 = respective depth at which sample was taken

Client I.D. = Sample I.D. number assigned by sampling personnel
"Gen" = General Minerals Analysis
"VOCs" = Volatile Organic Compounds Analysis
"Metals" = EP Toxicity Metals Analysis

DRAFT

AnalyticalTechnologies, Inc. 2113 S. 48th Street Suite 107 Tempe, AZ 85282 (602) 438-1530

SEPTEMBER 1, 1988

KLEINFELDER
4920 E. McDOWELL
SUITE 101
PHOENIX, AZ 85008

Accession: 808054

Date Received: 8/9/88

Attention: RON TURNER

Project: 52-1020-01

Elizabeth Proffitt
Project Manager

Robert V. Woods
Laboratory Manager

RVW/clf

Note: Samples will be disposed of within 30 days unless otherwise notified.

Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

DRAFT

AnalyticalTechnologies, Inc

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

DATE RECEIVED : 08/09/88
REPORT DATE : 09/02/88

ATI I.D. : 808054

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	3035	AQUEOUS	08/09/88
02	TRIP BLANK	AQUEOUS	08/09/88

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	2

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

DRAFT

Analytical Technologies, Inc

GENERAL CHEMISTRY RESULTS

ATI I.D. : 808054

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

DATE RECEIVED : 08/09/88
REPORT DATE : 09/02/88

PARAMETER	UNITS	01
CARBONATE	MG/L	<1
BICARBONATE	MG/L	266
HYDROXIDE	MG/L	<1
TOTAL ALKALINITY (AS CACO3)	MG/L	266
CHLORIDE	MG/L	138.2
CONDUCTIVITY, (UMHOS/CM)		996
FLUORIDE	MG/L	0.31
NITRATE AS NITROGEN	MG/L	0.20
PH	UNITS	7.7
SULFATE	MG/L	51
TOTAL DISSOLVED SOLIDS	MG/L	554

Analytical Technologies, Inc

DRAFT

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

ATI I.D. : 808054

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CARBONATE	MG/L	80805401	NA	NA	NA	NA	NA	NA
BICARBONATE	MG/L		266	264	1	NA	NA	NA
HYDROXIDE	MG/L		NA	NA	NA	NA	NA	NA
TOTAL ALKALINITY	MG/L		266	264	1	NA	NA	NA
CHLORIDE	MG/L	80809901	193.2	195.6	1	1248	1000	105
CONDUCTIVITY(UMHOMS/CM		80805401	996	945	5	NA	NA	NA
FLUORIDE	MG/L	80806601	0.77	0.78	1	1.71	1.00	94
NITRATE AS NITROGEN	MG/L	80802002	0.56	0.60	7	NA	NA	NA
PH	UNITS	80805401	7.7	7.7	0	NA	NA	NA
SULFATE	MG/L	80803701	2680	2810	5	22,400	20,000	99
TOTAL DISSOLVED SOLIDS	MG/L	80802601	1166	1152	1	NA	NA	NA

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc

DRAFT

METALS RESULTS

ATI I.D. : 808054

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

DATE RECEIVED : 08/09/88
REPORT DATE : 09/02/88

PARAMETER	UNITS	01
SILVER	MG/L	<0.010
ARSENIC	MG/L	<0.03
BARIUM	MG/L	<0.01
CALCIUM	MG/L	30
CADMIUM	MG/L	<0.02
CHROMIUM	MG/L	<0.02
COPPER	MG/L	0.124
IRON	MG/L	<0.030
HARDNESS	MG/L	141
MERCURY	MG/L	<0.0002
POTASSIUM	MG/L	4.5
MAGNESIUM	MG/L	16.0
MANGANESE	MG/L	0.141
SODIUM	MG/L	141
LEAD	MG/L	<0.24
SELENIUM	MG/L	<0.01
ZINC	MG/L	<0.010

Analytical Technologies, Inc

DRAFT

METALS - QUALITY CONTROL

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

ATI I.D. : 808054

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER	MG/L	80806003	<0.010	<0.010	NA	0.996	1.000	100
ARSENIC	MG/L	80805401	<0.01	0.01	NA	10.0	10.0	100
BARIUM	MG/L	80899807	<0.01	<0.01	NA	1.90	2.0	95
CALCIUM	MG/L	80806003	35	35	0	91	50.00	112
CADMIUM	MG/L	80899807	0.02	0.02	0	1.83	2.0	91
CHROMIUM	MG/L	80803001	0.05	0.05	0	1.98	2.000	97
COPPER	MG/L	80806006	0.011	0.012	9	1.054	1.000	104
IRON	MG/L	80803001	<0.030	<0.030	NA	1.746	2.000	87
MERCURY	MG/L	80803001	<0.0002	<0.0002	N/A	0.0046	0.0050	92
POTASSIUM	MG/L	80805906	2.3	2.4	4	21.6	20.00	97
MAGNESIUM	MG/L	80805906	12.2	12.4	2	29.4	20.00	86
MANGANESE	MG/L	80803001	<0.010	<0.010	NA	1.946	2.000	97
SODIUM	MG/L	80805906	29.3	29.5	0.7	64.3	40.00	88
LEAD	MG/L	80899807	<0.24	<0.24	NA	2.12	2.0	106
SELENIUM	MG/L	80899807	<0.01	<0.01	NA	0.070	0.078	90
ZINC	MG/L	80802001	0.011	0.010	10	0.563	0.500	110

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

AnalyticalTechnologies, Inc

GAS CHROMATOGRAPHY - RESULTS

DRAFT

ATI I.D. : 80805401

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/09/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/09/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: N/A
CLIENT I.D.	: 3035	DATE ANALYZED	: 08/15/88
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
TRANS-1,2-DICHLOROETHENE	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<2.0
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	<0.5

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	98
TRIFLUOROTOLUENE (%)	115

AnalyticalTechnologies, Inc

GAS CHROMATOGRAPHY - RESULTS

DRAFT

ATI I.D. : 80805402

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/09/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/09/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 08/15/88
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
TRANS-1,2-DICHLOROETHENE	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<2.0
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	<0.5

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	102
TRIFLUOROTOLUENE (%)	124

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT	: KLEINFELDER	ATI I.D.	: 808054
PROJECT #	: 52-1020-01	DATE EXTRACTED	: 08/15/88
PROJECT NAME	: (NONE)	DATE ANALYZED	: 08/15/88
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	1.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
TRANS-1,2-DICHLOROETHENE	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	47
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<2.0
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	<0.5

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	101
TRIFLUOROTOLUENE (%)	125

Analytical Technologies, Inc.
San Diego • Phoenix • Seattle

Chain of Custody

DATE 8/9/88 PAGE 1 OF 1

PROJ. MGR. RON TURNER
COMPANY KLEINFELDER
ADDRESS 4920 E McDOWELL #101

SAMPLERS (SIGNATURE) Mark Eklund (PHONE NO.)

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240	PESTICIDES/PCB 608/8080	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418	8021		PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8)	SWDA-INORGANICS PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE				NUMBER OF CONTAINERS
3035	8/9	0900		1							X				X				X	X					7
~~3035A~~	~~8/9~~	~~0900~~																							
TRIP BLANK	8/8			2																					

PROJECT INFORMATION	SAMPLE RECEIPT	
PROJECT: 52-1020-01	TOTAL NO. OF CONTAINERS	7
PO NO.	CHAIN OF CUSTODY SEALS	N
	REC'D GOOD CONDITION/COLD	Y
SHIPPING ID. NO.	CONFORMS TO RECORD	Y
VIA:	LAB NO 808054	

INVOICE TO:

RELINQUISHED BY	RELINQUISHED BY
(Signature) Mark Eklund (Time) 1700	(Signature) (Time)
(Printed Name) MARK EKLUND (Date) 8/9/88	(Printed Name) (Date)
(Company)	(Company)
RECEIVED BY	RECEIVED BY (LABORATORY)
(Signature) (Time)	(Signature) Ralph Berrit (Time) 1790
(Printed Name) (Date)	(Printed Name) RALPH BERRIT 8/9/88
(Company)	ATI
	ANALYTICAL TECHNOLOGIES, INC

SPECIAL INSTRUCTIONS/COMMENTS:
ANY QUESTIONS CALL RON TURNER AT KLEINFELDER 231-0992
Doc Kon -> not Prim/Sec but Ca [illegible]

DRAFT

SAN DIEGO (619) 458-9141 • PHOENIX (602) 438-1530 • SEATTLE (206) 228-8335 DISTRIBUTION: WHITE, CANARY - ANALYTICAL TECHNOLOGIES INC • PINK - ORIGINATOR

Analytical Technologies, Inc

DRAFT

AUGUST 23, 1988

KLEINFELDER & ASSOCIATES
4920 E. McDOWELL RD.
SUITE 101
PHOENIX, AZ 85008

Accession: 808055

Date Received: 8/9/88

Attention: RON TURNER

Project: 52-1020-01

Elizabeth Proffitt
Project Manager

Robert V. Woods
Laboratory Manager

RVW/jlf

Note: Samples will be disposed of within 30 days unless otherwise notified.

DRAFT

AnalyticalTechnologies, Inc

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

DATE RECEIVED : 08/09/88
REPORT DATE : 08/23/88

ATI I.D. : 808055

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	3051	AQUEOUS	08/09/88

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	1

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc

GAS CHROMATOGRAPHY - RESULTS

DRAFT

ATI I.D. : 80805501

TEST : FUEL HYDROCARBONS/BTX (MODIFIED EPA METHOD 8015)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/09/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/09/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 8/15/88
CLIENT I.D.	: 3051	DATE ANALYZED	: 08/17/88
SAMPLE MATRIX	: AQUEOUS	UNITS	: MG/L
		DILUTION FACTOR	: 1000

COMPOUNDS	RESULTS
BENZENE	<200
TOLUENE	<200
ETHYLBENZENE	<200
XYLENE	<200
FUEL HYDROCARBONS	230,000
HYDROCARBON RANGE	C6-C24
HYDROCARBONS QUANTITATED USING	DIESEL/GAS

Analytical Technologies, Inc.

DRAFT

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : FUEL HYDROCARBONS/BTX (MODIFIED EPA METHOD 8015)

		ATI I.D.	: 808055
CLIENT	: KLEINFELDER	DATE EXTRACTED	: 08/15/88
PROJECT #	: 52-1020-01	DATE ANALYZED	: 08/17/88
PROJECT NAME	: (NONE)	UNITS	: MG/L
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
BENZENE	<0.2
TOLUENE	<0.2
ETHYLBENZENE	<0.2
XYLENE	<0.2
FUEL HYDROCARBONS	<1
HYDROCARBON RANGE	-
HYDROCARBONS QUANTITATED USING	-

Analytical Technologies, Inc

DRAFT

QUALITY CONTROL DATA

ATI I.D. : 808055

TEST : FUEL HYDROCARBONS/BTX (MODIFIED EPA METHOD 8015)

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

REF. I.D. : 80899803
DATE ANALYZED : 08/17/88
SAMPLE MATRIX : AQUEOUS
UNITS : MG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	ND	22.6	23.8	105	28.2	125	17
TOLUENE	ND	21.6	22.4	104	22.1	102	1
ETHYLBENZENE	ND	22.3	18.9	85	18.8	84	1
XYLENES	ND	42.7	37.2	87	38.0	89	2
FUEL HYDROCARBONS	ND	40.7	40.7	100	35.6	87	13

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

AnalyticalTechnologies, Inc.
San Diego • Phoenix • Seattle

Chain of Custody

DATE 8/9/88 PAGE 1 OF 1

PROJ. MGR. RON TURNER
COMPANY KLEINFELDER
ADDRESS 4920 E. MCDOWELL #101

SAMPLERS (SIGNATURE) Mark Ekl (PHONE NO.)

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240	PESTICIDES/PCB 608/8080	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418	8015 MODIFIED		PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8)	SWDA-INORGANICS PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE				NUMBER OF CONTAINERS
3051	8/9	14:45	H2O												✓										2

PROJECT INFORMATION	SAMPLE RECEIPT	
PROJECT: 52-1020-01	TOTAL NO. OF CONTAINERS	2
PO NO.	CHAIN OF CUSTODY SEALS	N
	REC'D GOOD CONDITION/COLD	No
SHIPPING ID. NO.	CONFORMS TO RECORD	N
VIA:	LAB NO. 808055	

SPECIAL INSTRUCTIONS/COMMENTS:
ANY QUESTIONS CALL RON TURNER AT KLEINFELDER AT 231-0992
top layer

INVOICE TO:

RELINQUISHED BY	RELINQUISHED BY
(Signature) Mark Ekl (Time) 1700	(Signature) (Time)
(Printed Name) MARK EKLUND (Date) 8/9/88	(Printed Name) (Date)
(Company)	(Company)
RECEIVED BY	RECEIVED BY (LABORATORY)
(Signature) (Time)	(Signature) Ralph H. Bereit (Time) 1700
(Printed Name) (Date)	(Printed Name) RALPH H. BEREIT 8/9/88
(Company)	(Company) ATI ANALYTICAL TECHNOLOGIES, INC

ATI LABORATORIES: SAN DIEGO (619) 458-9141 • PHOENIX (602) 438-1530 • SEATTLE (206) 228-8335 DISTRIBUTION: WHITE, CANARY - ANALYTICAL TECHNOLOGIES, INC. • PINK - ORIGINATOR

DRAFT

DRAFT

AnalyticalTechnologies,Inc.
2113 S. 48th Street Suite 107 Tempe, AZ 85282 (602) 438-1530

SEPTEMBER 5, 1988

KLEINFELDER
4920 E. McDOWELL
SUITE 101
PHOENIX, AZ 85008

Accession: 808061

Date Received: 8/11/88

Attention: RON TURNER

Project: 52-1020-01

Elizabeth Proffitt
Project Manager

Robert V. Woods
Laboratory Manager

RVW/clf

Note: Samples will be disposed of within 30 days unless otherwise notified.

Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

DRAFT

Analytical Technologies, Inc

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

DATE RECEIVED : 08/11/88
REPORT DATE : 09/02/88

ATI I.D. : 808061

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	3016	AQUEOUS	08/11/88
02	2013	AQUEOUS	08/11/88
03	3020	AQUEOUS	08/11/88
04	9882	AQUEOUS	08/11/88

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	4

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc

DRAFT

GENERAL CHEMISTRY RESULTS

ATI I.D. : 808061

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

DATE RECEIVED : 08/11/88
REPORT DATE : 09/02/88

PARAMETER	UNITS	01	02	03
CARBONATE	MG/L	<1	<1	<1
BICARBONATE	MG/L	324	344	306
HYDROXIDE	MG/L	<1	<1	<1
TOTAL ALKALINITY (AS CACO3)	MG/L	324	344	306
CHLORIDE	MG/L	257.4	463.8	179.5
CONDUCTIVITY, (UMHOS/CM)		1450	2770	1260
FLUORIDE	MG/L	0.30	0.51	0.30
NITRATE AS NITROGEN	MG/L	2.22	1.53	1.87
PH	UNITS	7.5	7.5	7.7
SULFATE	MG/L	109	338	85
TOTAL DISSOLVED SOLIDS	MG/L	900	1960	752

Analytical Technologies, Inc

DRAFT

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

ATI I.D. : 808061

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CARBONATE	MG/L	80803604	NA	NA	NA	NA	NA	NA
BICARBONATE	MG/L		<1	<1	NA	NA	NA	NA
HYDROXIDE	MG/L		NA	NA	NA	NA	NA	NA
TOTAL ALKALINITY	MG/L		<1	<1	NA	NA	NA	NA
CHLORIDE	MG/L	80809901	193.2	195.6	1	1248	1000	105
		80706512	8080	7940	2	NA	NA	NA
FLUORIDE	MG/L	80806601	0.77	0.78	1	1.71	1.00	94
NITRATE AS NITROGEN	MG/L	80806102	1.53	1.57	3	NA	NA	NA
PH	UNITS	80803604	3.3	3.3	0	NA	NA	NA
SULFATE	MG/L	80806101	109	109	0	285	200	88
TOTAL DISSOLVED SOLIDS	MG/L	80807405	11,200	11,400	2	NA	NA	NA

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc

DRAFT

METALS RESULTS

ATI I.D. : 808061

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

DATE RECEIVED : 08/11/88
REPORT DATE : 09/02/88

PARAMETER	UNITS	01	02	03
SILVER	MG/L	-	-	<0.03
ARSENIC	MG/L	-	-	<0.01
BARIUM	MG/L	-	-	<0.01
CALCIUM	MG/L	20	88	25
CADMIUM	MG/L	-	-	<0.02
CHROMIUM	MG/L	-	-	<0.06
COPPER	MG/L	0.097	0.022	0.036
IRON	MG/L	20.5	1.18	3.50
HARDNESS	MG/L	190	384	163
MERCURY	MG/L	-	-	<0.001
POTASSIUM	MG/L	10.5	5.3	6.4
MAGNESIUM	MG/L	34.1	39.8	24.4
MANGANESE	MG/L	3.80	0.022	0.102
SODIUM	MG/L	173	388	172
LEAD	MG/L	-	-	<0.24
SELENIUM	MG/L	-	-	<0.01
ZINC	MG/L	0.083	0.085	0.033

Analytical Technologies, Inc

DRAFT

METALS - QUALITY CONTROL

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

ATI I.D. : 808061

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER	MG/L	80899807	<0.03	<0.03	NA	2.08	2.0	104
ARSENIC	MG/L	80899601	<0.01	<0.01	NA	0.070	0.078	90
BARIUM	MG/L	80899807	<0.01	<0.01	NA	1.90	2.0	95
CALCIUM	MG/L	80805906	36	36	0	88	50.00	104
CADMIUM	MG/L	80899807	0.02	0.02	0	1.83	2.0	91
CHROMIUM	MG/L	80806103	<0.06	<0.06	NA	1.94	2.0	97
COPPER	MG/L	80805906	0.021	0.019	10	0.517	0.500	99
IRON	MG/L	80808505	0.960	0.959	0.1	2.846	2.000	94
MERCURY	MG/L	80806103	<0.001	<0.001	NA	NA	NA	NA
POTASSIUM	MG/L	80806003	3.1	3.0	3	23.2	20.00	101
MAGNESIUM	MG/L	80806003	35.0	34.8	0.6	82.8	50.0	96
MANGANESE	MG/L	80805906	0.052	0.050	4	0.930	1.000	88
SODIUM	MG/L	80806003	39.9	40.5	1	78.1	40.00	96
LEAD	MG/L	80899807	<0.24	<0.24	NA	2.12	2.0	106
SELENIUM	MG/L	80899807	<0.01	<0.01	NA	0.070	0.078	90
ZINC	MG/L	80806003	<0.010	<0.010	NA	0.562	0.500	112

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80806101

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/11/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/11/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: N/A
CLIENT I.D.	: 3016	DATE ANALYZED	: 08/15/88
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	0.3
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	0.6
1,2-DICHLOROETHANE	0.6
1,1-DICHLOROETHENE	2.3
TRANS-1,2-DICHLOROETHENE	1.6
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	1.4
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	0.5
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	5.7
TRICHLOROFLUOROMETHANE	<2.0
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	<0.5

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	101
TRIFLUOROTOLUENE (%)	111

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80806102

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/11/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/11/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: N/A
CLIENT I.D.	: 2013	DATE ANALYZED	: 08/15/88
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
TRANS-1,2-DICHLOROETHENE	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<2.0
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	<0.5

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	98
TRIFLUOROTOLUENE (%)	112

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80806103

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/11/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/11/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: N/A
CLIENT I.D.	: 3020	DATE ANALYZED	: 08/15/88
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	0.4
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	3.4
TRANS-1,2-DICHLOROETHENE	0.8
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	0.3
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	4.9
TRICHLOROFLUOROMETHANE	<2.0
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	<0.5

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	89
TRIFLUOROTOLUENE (%)	104

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80806104

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/11/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/11/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: N/A
CLIENT I.D.	: 9882	DATE ANALYZED	: 08/15/88
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	1.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	0.4
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
TRANS-1,2-DICHLOROETHENE	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<2.0
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	<0.5

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	106
TRIFLUOROTOLUENE (%)	95

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT	: KLEINFELDER	ATI I.D.	: 808061
PROJECT #	: 52-1020-01	DATE EXTRACTED	: 08/15/88
PROJECT NAME	: (NONE)	DATE ANALYZED	: 08/15/88
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	1.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
TRANS-1,2-DICHLOROETHENE	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	47
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<2.0
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	<0.5

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	101
TRIFLUOROTOLUENE (%)	125

AnalyticalTechnologies, Inc.
San Diego • Phoenix • Seattle

Chain of Custody

DATE 8/11/88 PAGE 1 OF 1

PROJ. MGR. Ron Turner
COMPANY Kleinfelder
ADDRESS 4920 E. McDowell Suite 101, Phx, Az

SAMPLERS (SIGNATURE) Gary Bennett (PHONE NO.)

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240	PESTICIDES/PCB 608/8080	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418	601		PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8)	~~SVOA/ORGANICS~~ PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE				NUMBER OF CONTAINERS
3016	8/11	9:30a		1							X				X					X					5
2013	↓	↓		2							X				X					X					5
3020				3							X				X				X	X					6
~~[illegible]~~																									1
9882				4							X				X					X				2	2
~~9883~~				~~5~~																					2
~~9884~~				~~6~~																					2
~~trip blank~~				~~7~~																					

PROJECT INFORMATION	SAMPLE RECEIPT	
PROJECT: 52-1020-01	TOTAL NO. OF CONTAINERS	18
PO NO.	CHAIN OF CUSTODY SEALS	N
	REC'D GOOD CONDITION/COLD	Y
SHIPPING ID. NO.	CONFORMS TO RECORD	Y
VIA: Hand	LAB NO. 808061	

SPECIAL INSTRUCTIONS/COMMENTS:
Any Questions, call Ron Turner at Kleinfelder (231-0992).

INVOICE TO:

RELINQUISHED BY	RELINQUISHED BY
(Signature) (Time)	Gary Bennett 10:30
(Printed Name) (Date)	(Signature) (Time) Gary Bennett 8/11
(Company)	(Printed Name) (Date)
RECEIVED BY	(Company)
(Signature) (Time)	RECEIVED BY (LABORATORY)
(Printed Name) (Date)	(Signature) (Time)
(Company)	(Printed Name)
	ANALYTICAL TECHNOLOGIES, INC.

ATI LABORATORIES: SAN DIEGO (619) 458-9141•PHOENIX (602) 438-1530•SEATTLE (206) 228-8335 DISTRIBUTION: WHITE, CANARY - ANALYTICAL TECHNOLOGIES, INC. • PINK - ORIGINATOR

DRAFT

DRAFT

AnalyticalTechnologies,Inc. 2113 S 48th Street Suite 107 Tempe, AZ 85282 (602) 438-1530

SEPTEMBER 14, 1988

RECEIVED
SEP 19 1988
KLEINFELDER
PHOENIX

KLEINFELDER
4920 E. McDOWELL
SUITE 101
PHOENIX, AZ 85008

Accession: 808085

Date Received: 8/16/88

Attention: GRANT BUMA

Project: 52-1020-01 EAST LAKE PARK

Note: "NG" ON QUALITY CONTROL SHEET MEANS NONE GIVEN. EP TOX METALS AND NITRATE ANALYZED BY TURNER LABORATORIES.

Elizabeth Proffitt
Project Manager

Robert V. Woods
Laboratory Manager

Lorraine Davis
QA Coordinator

RVW/clf

Note: Samples will be disposed of within 30 days unless otherwise notified.

Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

DRAFT

Analytical Technologies, Inc

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

DATE RECEIVED : 08/16/88
REPORT DATE : 09/12/88

ATI I.D. : 808085

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	3012A	AQUEOUS	08/16/88
02	TRIP BLANK	AQUEOUS	08/16/88
03	3012B	AQUEOUS	08/16/88
04	9012A	AQUEOUS	08/16/88
05	3035B	AQUEOUS	08/16/88

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	5

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

AnalyticalTechnologies, Inc

DRAFT

GENERAL CHEMISTRY RESULTS

ATI I.D. : 808085

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

DATE RECEIVED : 08/16/88

REPORT DATE : 09/12/88

PARAMETER	UNITS	01	03	05
CARBONATE	MG/L	<1	<1	<1
BICARBONATE	MG/L	290	298	246
HYDROXIDE	MG/L	<1	<1	<1
TOTAL ALKALINITY (AS CACO3)	MG/L	290	298	246
CHLORIDE	MG/L	252.8	236.8	133.7
CONDUCTIVITY, (UMHOS/CM)		1060	1050	654
FLUORIDE	MG/L	0.35	0.31	0.35
NITRATE AS NITROGEN	MG/L	0.40	0.69	<0.1
PH	UNITS	8.2	8.0	8.0
SULFATE	MG/L	100	92	45
TOTAL DISSOLVED SOLIDS	MG/L	848	850	544

AnalyticalTechnologies, Inc

DRAFT

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

ATI I.D. : 808085

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CARBONATE	MG/L	80813402	<1	<1	NA	NA	NA	NA
BICARBONATE	MG/L		412	410	0.5	NA	NA	NA
HYDROXIDE	MG/L		<1	<1	NA	NA	NA	NA
TOTAL ALKALINITY	MG/L		412	410	0.5	NA	NA	NA
CHLORIDE	MG/L	80809901	193.2	195.6	1	1248	1000	105
CONDUCTIVITY(UMHOMS/CM		80805401	996	945	5	NA	NA	NA
FLUORIDE	MG/L	80810008	0.23	0.23	0	1.07	1.00	84
NITRATE AS NITROGEN	MG/L	80808501	0.40	0.36	11	NA	NA	NA
PH	UNITS	80813402	8.2	8.1	1	NA	NA	NA
SULFATE	MG/L	80811201	78	78	0	305	200	114
TOTAL DISSOLVED SOLIDS	MG/L	80807405	11,200	11,400	2	NA	NA	NA

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc

DRAFT

METALS RESULTS

ATI I.D. : 808085

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

DATE RECEIVED : 08/16/88
REPORT DATE : 09/12/88

PARAMETER	UNITS	01	03	05
SILVER	MG/L	<0.03	<0.03	<0.03
ARSENIC	MG/L	<0.001	<0.001	<0.001
BARIUM	MG/L	<0.02	<0.02	<0.02
CALCIUM	MG/L	60	52	22
CADMIUM	MG/L	<0.01	<0.01	<0.01
CHROMIUM	MG/L	<0.06	<0.06	<0.06
COPPER	MG/L	<0.010	<0.010	<0.010
IRON	MG/L	0.065	0.069	0.960
HARDNESS	MG/L	257	231	110
MERCURY	MG/L	<0.0002	<0.0002	<0.0002
POTASSIUM	MG/L	5.7	5.6	4.6
MAGNESIUM	MG/L	26.0	24.6	13.4
MANGANESE	MG/L	<0.010	<0.010	0.319
SODIUM	MG/L	182	180	131
LEAD	MG/L	<0.21	<0.21	<0.21
SELENIUM	MG/L	<0.01	<0.01	<0.01
ZINC	MG/L	<0.010	<0.010	<0.010

Analytical Technologies, Inc

DRAFT

METALS - QUALITY CONTROL

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

ATI I.D. : 808085

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER	MG/L	80999901	<0.03	<0.03	NA	NG	2.0	102
ARSENIC	MG/L	80999906	0.01	0.01	0	NA	NA	NA
BARIUM	MG/L	80999901	<0.02	<0.02	NA	NA	NA	NA
CALCIUM	MG/L	80806003	35	35	0	91	50.00	112
CADMIUM	MG/L	80999901	<0.01	<0.01	NA	NG	NA	NA
CHROMIUM	MG/L	80902702	<0.06	0.06	NA	NA	2.0	102
COPPER	MG/L	80805906	0.021	0.019	10	0.517	0.500	99
IRON	MG/L	80808505	0.960	0.959	0.1	2.846	2.000	94
MERCURY	MG/L	80810006	<0.0002	<0.0002	NA	0.0050	0.0050	100
POTASSIUM	MG/L	80806003	3.1	3.0	3	23.2	20.00	101
MAGNESIUM	MG/L	80806003	35.0	34.8	0.6	82.8	50.0	96
MANGANESE	MG/L	80805906	0.052	0.050	4	0.930	1.000	88
SODIUM	MG/L	80806003	39.9	40.5	1	78.1	40.00	96
LEAD	MG/L	80902702	<0.21	<0.21	NA	NA	NA	NA
SELENIUM	MG/L	80808503	<0.001	<0.001	NA	NG	0.002	90
ZINC	MG/L	80806003	<0.010	<0.010	NA	0.562	0.500	112

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

AnalyticalTechnologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80808501

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/16/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/16/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: N/A
CLIENT I.D.	: 3012A	DATE ANALYZED	: 08/16/88
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	2.0
1,2-DICHLOROETHANE	0.4
1,1-DICHLOROETHENE	7.3
TRANS-1,2-DICHLOROETHENE	16.5
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	1.4
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	37.5
TRICHLOROFLUOROMETHANE	<2.0
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	<0.5

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	96
TRIFLUOROTOLUENE (%)	95

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80808502

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/16/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/16/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 08/16/88
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
TRANS-1,2-DICHLOROETHENE	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<2.0
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	<0.5

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	88
TRIFLUOROTOLUENE (%)	97

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80808503

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/16/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/16/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: N/A
CLIENT I.D.	: 3012B	DATE ANALYZED	: 08/16/88
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	3.1
1,2-DICHLOROETHANE	0.5
1,1-DICHLOROETHENE	15.0
TRANS-1,2-DICHLOROETHENE	22.8
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	2.0
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	0.3
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	58
TRICHLOROFLUOROMETHANE	<2.0
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	<0.5

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	94
TRIFLUOROTOLUENE (%)	92

Analytical Technologies, Inc

GAS CHROMATOGRAPHY - RESULTS

DRAFT

ATI I.D. : 80808504

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/16/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/16/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: N/A
CLIENT I.D.	: 9012A	DATE ANALYZED	: 08/16/88
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	1.7
1,2-DICHLOROETHANE	0.2
1,1-DICHLOROETHENE	6.5
TRANS-1,2-DICHLOROETHENE	14.4
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	1.2
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	33.6
TRICHLOROFLUOROMETHANE	<2.0
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	<0.5

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	87
TRIFLUOROTOLUENE (%)	91

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80808505

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/16/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/16/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: N/A
CLIENT I.D.	: 3035B	DATE ANALYZED	: 08/16/88
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
TRANS-1,2-DICHLOROETHENE	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<2.0
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	<0.5

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	92
TRIFLUOROTOLUENE (%)	83

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

		ATI I.D.	: 808085
CLIENT	: KLEINFELDER	DATE EXTRACTED	: 08/16/88
PROJECT #	: 52-1020-01	DATE ANALYZED	: 08/16/88
PROJECT NAME	: (NONE)	UNITS	: UG/L
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
TRANS-1,2-DICHLOROETHENE	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	5.4
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<2.0
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	<0.5

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	92
TRIFLUOROTOLUENE (%)	86

AnalyticalTechnologies,Inc.
San Diego • Phoenix • Seattle

Chain of Custody

DATE 8/16/88 PAGE 1 OF 1

PROJ. MGR. Ron Turner
COMPANY Klein-felder
ADDRESS 4920 E. McDowell
231-0992
SAMPLERS (SIGNATURE) Gary Bennett (PHONE NO.)

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240	PESTICIDES/PCB 608/8080	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418	Cal. Title 22		PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8)	SWDA-INORGANICS PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE				NUMBER OF CONTAINERS
3012 A	8/16	10:00	H_2O	1						X	X				X				X						6
TRIP BLANK	↓	↓		2																					1
3012 B	↓	↓		3						X	X				X				X						6
3012 A	↓	↓		4						X	X														2
3035 B	↓	↓		5						X	X				X				X						6

PROJECT INFORMATION	SAMPLE RECEIPT	
PROJECT 52-1020-01	TOTAL NO. OF CONTAINERS	21
PO NO.	CHAIN OF CUSTODY SEALS	N
SHIPPING ID. NO.	REC'D GOOD CONDITION/COLD	Y
VIA Hand	CONFORMS TO RECORD	Y
	LAB NO 808085	

SPECIAL INSTRUCTIONS/COMMENTS:

INVOICE TO:

RELINQUISHED BY	RELINQUISHED BY
Gary Bennett 11:00 (Signature) (Time)	(Signature) (Time)
GARY BENNETT 8/16/88 (Printed Name) (Date)	(Printed Name) (Date)
(Company)	(Company)
RECEIVED BY	RECEIVED BY (LABORATORY)
(Signature) (Time)	Ralph H. Bereit 1045 (Signature) (Time)
(Printed Name) (Date)	RALPH H. BEREIT 8/16/88 (Printed Name)
(Company)	ATI ANALYTICAL TECHNOLOGIES, INC.

ATI LABORATORIES: SAN DIEGO (619) 458-9141•PHOENIX (602) 438-1530•SEATTLE (206) 228-8335 DISTRIBUTION: WHITE, CANARY · ANALYTICAL TECHNOLOGIES, INC. • PINK · ORIGINATOR

DRAFT

DRAFT

AnalyticalTechnologies, Inc.
2113 S 48th Street Suite 107 Tempe, AZ 85282 (602) 438-1530

SEPTEMBER 12, 1988

KLEINFELDER
4920 E. McDOWELL
SUITE 101
PHOENIX, AZ 85008

Accession: 808094

Date Received: 8/18/88

Attention: RON TURNER

Project: 52-1020-01

Elizabeth Proffitt
Project Manager

Robert V. Woods
Laboratory Manager

RVW/clf

Note: Samples will be disposed of within 30 days unless otherwise notified.

Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

DRAFT

Analytical Technologies, Inc

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

DATE RECEIVED : 08/18/88
REPORT DATE : 09/09/88

ATI I.D. : 808094

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	S-15-04	NON-AQUEOUS	08/17/88
02	S-17-03	NON-AQUEOUS	08/17/88
03	S-25-03	NON-AQUEOUS	08/17/88
04	S-25-02	NON-AQUEOUS	08/17/88
05	S-27-02	NON-AQUEOUS	08/17/88
06	S-28-03	NON-AQUEOUS	08/17/88

----- TOTALS -----

MATRIX	# SAMPLES
NON-AQUEOUS	6

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc

DRAFT

METALS RESULTS

ATI I.D. : 808094

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

DATE RECEIVED : 08/18/88
REPORT DATE : 09/09/88

PARAMETER	UNITS	04	05
SILVER (IN EP TOX)	MG/L	0.014	0.026
ARSENIC (IN EP TOX)	MG/L	0.026	<0.005
BARIUM (IN EP TOX)	MG/L	1.2	1.3
CADMIUM (IN EP TOX)	MG/L	0.016	0.028
CHROMIUM (IN EP TOX)	MG/L	<0.02	0.06
COPPER (IN EP TOX)	MG/L	158	-
MERCURY (IN EP TOX)	MG/L	<0.0002	<0.0002
LEAD (IN EP TOX)	MG/L	0.12	0.33
SELENIUM (IN EP TOX)	MG/L	<0.005	<0.005

Analytical Technologies, Inc

DRAFT

METALS - QUALITY CONTROL

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

ATI I.D. : 808094

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER (IN EP TOX)	MG/L	80809405	0.026	0.025	4	1.026	1.000	100
ARSENIC (IN EP TOX)	MG/L	80817501	<0.005	<0.005	NA	0.0476	0.050	95
BARIUM (IN EP TOX)	MG/L	80809405	1.33	1.35	1	23.36	20.0	110
CADMIUM (IN EP TOX)	MG/L	80809405	0.028	0.027	4	0.522	0.500	99
CHROMIUM (IN EP TOX)	MG/L	80809405	0.11	0.10	10	STDA	CC=	0.99
COPPER (IN EP TOX)	MG/L	80809404	158	158	0	371	200	107
MERCURY (IN EP TOX)	MG/L	80809405	<0.0002	<0.0002	NA	0.0050	0.0050	100
LEAD (IN EP TOX)	MG/L	80809405	0.33	0.30	10	10.56	10.00	102
SELENIUM (IN EP TOX)	MG/L	80809405	<0.005	<0.005	NA	0.042	0.050	84

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80809401

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/17/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/18/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 8/18/88
CLIENT I.D.	: S-15-04	DATE ANALYZED	: 08/22/88
SAMPLE MATRIX	: NON-AQUEOUS	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
TRANS-1,2-DICHLOROETHENE	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	<0.100
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	<0.025
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	103
TRIFLUOROTOLUENE (%)	98

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80809402

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/17/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/18/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 8/18/88
CLIENT I.D.	: S-17-03	DATE ANALYZED	: 08/22/88
SAMPLE MATRIX	: NON-AQUEOUS	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
TRANS-1,2-DICHLOROETHENE	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	<0.100
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	<0.025
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	104
TRIFLUOROTOLUENE (%)	95

AnalyticalTechnologies, inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80809403

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/17/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/18/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 8/18/88
CLIENT I.D.	: S-25-03	DATE ANALYZED	: 08/23/88
SAMPLE MATRIX	: NON-AQUEOUS	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
TRANS-1,2-DICHLOROETHENE	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	<0.100
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	<0.025
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	98
TRIFLUOROTOLUENE (%)	96

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80809406

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/17/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/18/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 8/18/88
CLIENT I.D.	: S-28-03	DATE ANALYZED	: 08/23/88
SAMPLE MATRIX	: NON-AQUEOUS	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
TRANS-1,2-DICHLOROETHENE	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	<0.100
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	<0.025
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	103
TRIFLUOROTOLUENE (%)	98

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

		ATI I.D.	: 808094
CLIENT	: KLEINFELDER	DATE EXTRACTED	: 08/18/88
PROJECT #	: 52-1020-01	DATE ANALYZED	: 08/22/88
PROJECT NAME	: (NONE)	UNITS	: MG/KG
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
TRANS-1,2-DICHLOROETHENE	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	1.4
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	<0.010
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	98
TRIFLUOROTOLUENE (%)	115

Analytical Technologies, Inc.
San Diego • Phoenix • Seattle

Chain of Custody

DATE 8-18-88 PAGE 1 OF 1

PROJ. MGR. RON TURNER
COMPANY KLEINFELDER
ADDRESS 4920 E. McDowell Suite 101
Phoenix Az 85008

SAMPLERS (SIGNATURE) Michael S. Rynick
(PHONE NO.) 231-0952

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240	PESTICIDES/PCB 608/8080	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 801/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418			PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8)	SWDA-INORGANICS PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE	Copper			NUMBER OF CONTAINERS
S-15-04	8/18		SOIL	1						X	X														1
S-17-03	"		"	2						X	X														1
S-25-03	"		"	3						X	X														1
S-25-02	"		"	4															X			X			1
S-27-02	"		"	5															X						1
S-28-03	"		"	6						X	X														1

PROJECT INFORMATION	SAMPLE RECEIPT	
PROJECT: 52-1020-01	TOTAL NO. OF CONTAINERS	6
PO NO.	CHAIN OF CUSTODY SEALS	N
	REC'D GOOD CONDITION/COLD	Y
SHIPPING ID. NO.	CONFORMS TO RECORD	Y
VIA: HAND	LAB NO. 808094	

SPECIAL INSTRUCTIONS/COMMENTS:

INVOICE TO:

RELINQUISHED BY
Michael S. Rynick 10:35
(Signature) (Time)
Michael S. Rynick 8/18
(Printed Name) (Date)
KLEINFELDER
(Company)

RELINQUISHED BY
(Signature) (Time)
(Printed Name) (Date)
(Company)

RECEIVED BY
(Signature) (Time)
(Printed Name) (Date)
(Company)

RECEIVED BY (LABORATORY)
Ralph H. Bennett 1035
(Signature) (Time)
RALPH H. BENNETT 8/18/88
(Printed Name)
ATI
ANALYTICAL TECHNOLOGIES, INC.

ATI LABORATORIES: SAN DIEGO (619) 458-9141 • PHOENIX (602) 438-1530 • SEATTLE (206) 228-8335 DISTRIBUTION: WHITE, CANARY · ANALYTICAL TECHNOLOGIES, INC. • PINK · ORIGINATOR

DRAFT

DRAFT

AnalyticalTechnologies, Inc. 2113 S. 48th Street Suite 107 Tempe, AZ 85282 (602) 438-1530

OCTOBER 10, 1988

KLEINFELDER
4920 E. McDOWELL
SUITE 101
PHOENIX, AZ 85008

Accession: 808130

Date Received: 8/23/88

Attention: RON TURNER

Project: 52-1020-01

Note: ENCLOSED PLEASE FIND THE COMPLETED REPORT, INCLUDING ARSENIC AND SELENIUM DATA

Elizabeth Proffitt
Project Manager

Robert V. Woods
Laboratory Manager

RVW/clf

Note: Samples will be disposed of within 30 days unless otherwise notified.

Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

DRAFT

Analytical Technologies, Inc

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

DATE RECEIVED : 08/23/88
REPORT DATE : 09/19/88

ATI I.D. : 808130

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	S-15-03	SOIL	08/22/88
02	S-16-03	SOIL	08/22/88
03	S-19-03	SOIL	08/22/88
04	S-19-02	SOIL	08/22/88
05	S-29-03	SOIL	08/22/88

----- TOTALS -----

MATRIX	# SAMPLES
SOIL	5

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

AnalyticalTechnologies, Inc

DRAFT

METALS RESULTS

ATI I.D. : 808130

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

DATE RECEIVED : 08/23/88

REPORT DATE : 10/10/88

PARAMETER	UNITS	04
SILVER (IN EP TOX)	MG/L	0.013
ARSENIC (IN EP TOX)	MG/L	0.026
BARIUM (IN EP TOX)	MG/L	0.22
CADMIUM (IN EP TOX)	MG/L	0.014
CHROMIUM (IN EP TOX)	MG/L	<0.02
MERCURY (IN EP TOX)	MG/L	<0.0002
LEAD (IN EP TOX)	MG/L	0.18
SELENIUM (IN EP TOX)	MG/L	<0.005

Analytical Technologies, Inc

DRAFT

METALS - QUALITY CONTROL

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

ATI I.D. : 808130

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER (IN EP TOX)	MG/L	80813516	0.018	0.018	0	1.014	1.000	100
ARSENIC (IN EP TOX)	MG/L	80800805	<0.25	<0.25	NA	2.19	2.50	88
BARIUM (IN EP TOX)	MG/L	80815001	0.069	0.066	1	STDA	CC=	.999
CADMIUM (IN EP TOX)	MG/L	80813516	0.018	0.017	6	0.526	0.500	102
CHROMIUM (IN EP TOX)	MG/L	80813801	0.05	0.05	0	STDA	CC=	.999
MERCURY (IN EP TOX)	MG/L	80813516	<0.0002	<0.0002	NA	0.0049	0.0050	98
LEAD (IN EP TOX)	MG/L	80809405	0.33	0.30	10	10.56	10.00	102
SELENIUM (IN EP TOX)	MG/L	80817501	<0.005	<0.005	NA	0.0455	0.050	91

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80813001

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/22/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/23/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 8/24/88
CLIENT I.D.	: S-15-03	DATE ANALYZED	: 09/01/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
1,2-DICHLOROETHENE(TOTAL)	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	<0.100
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	<0.025
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	94
TRIFLUOROTOLUENE (%)	104

DRAFT

AnalyticalTechnologies, Inc

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80813002

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/22/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/23/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 8/24/88
CLIENT I.D.	: S-16-03	DATE ANALYZED	: 09/01/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
1,2-DICHLOROETHENE(TOTAL)	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	<0.100
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	0.1
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	92
TRIFLUOROTOLUENE (%)	101

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80813003

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/22/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/23/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 8/24/88
CLIENT I.D.	: S-19-03	DATE ANALYZED	: 09/01/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
1,2-DICHLOROETHENE(TOTAL)	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	<0.100
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	<0.025
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	103
TRIFLUOROTOLUENE (%)	114

AnalyticalTechnologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80813005

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/22/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/23/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 8/24/88
CLIENT I.D.	: S-29-03	DATE ANALYZED	: 09/01/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
1,2-DICHLOROETHENE(TOTAL)	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	<0.100
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	<0.025
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	100
TRIFLUOROTOLUENE (%)	112

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	ATI I.D.	: 808130
PROJECT #	: 52-1020-01	DATE EXTRACTED	: 08/23/88
PROJECT NAME	: (NONE)	DATE ANALYZED	: 09/01/88
CLIENT I.D.	: REAGENT BLANK	UNITS	: MG/KG
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
1,2-DICHLOROETHENE(TOTAL)	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	0.4
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	<0.025
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	96
TRIFLUOROTOLUENE (%)	113

San Diego ● Phoenix ● Seattle

DATE 8-23-03 PAGE 1 OF 1

PROJ. MGR. RON TURNER
COMPANY KLEINFELDER
ADDRESS 4920 E. McDowell Suite 101
Phoenix AZ 85008

SAMPLERS (SIGNATURE) Michael S. Ryniak
(PHONE NO.) 231-0992

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	Halogenated Volatiles 8010	Aromatic Volatiles 8020	~~Pesticides~~	EP Tox Metals	NUMBER OF CONTAINERS
S-15-03	8/22		Soil	1	X	X			1
S-16-03	"		"	2	X	X			1
S-19-03	"		"	3	X	X			1
S-19-02	"		"	4				X	1
S-25-03	"		"	5	X	X			1

PROJECT INFORMATION	SAMPLE RECEIPT	
PROJECT: 52-1020-01	TOTAL NO. OF CONTAINERS	5
PO NO	CHAIN OF CUSTODY SEALS	Y
	REC'D GOOD CONDITION/COLD	Y
SHIPPING ID. NO.	CONFORMS TO RECORD	Y
VIA: hand	LAB NO. 808130	

SPECIAL INSTRUCTIONS/COMMENTS:

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3
Michael S Ryniak 8/23 (Signature) (Time)	(Signature) (Time)	(Signature) (Time)
Michael S. Ryniak 8/23 (Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) (Date)
KLEINFELDER (Company)	(Company)	(Company)
RECEIVED BY 1.	RECEIVED BY 2.	RECEIVED BY (LABORATORY) 3
(Signature) (Time)	(Signature) (Time)	Julie C. Baltazar 8/23 (Signature) (Time)
(Printed Name) (Date)	(Printed Name) (Date)	Julie Baltazar 8-23-03 (Printed Name)
(Company)	(Company)	ATI ANALYTICAL TECHNOLOGIES, INC

ATI LABORATORIES: SAN DIEGO (619) 458 9141 PHOENIX (602) 438-1530

DISTRIBUTION: WHITE, CANARY - ANALYTICAL TECHNOLOGIES, INC ● PINK - ORIGINATOR

DRAFT

DRAFT

AnalyticalTechnologies, Inc. 2113 S. 48th Street Suite 107 Tempe, AZ 85282 (602) 438-1530

OCTOBER 10, 1988

KLEINFELDER
4920 E. McDOWELL
SUITE 101
PHOENIX, AZ 85008

RECEIVED
OCT 13 1988
KLEINFELDER
PHOENIX

Accession: 808135

Date Received: 8/24/88

Attention: RON TURNER

Project: 52-1020-01

Note: ENCLOSED PLEASE FIND THE COMPLETED REPORT.

Elizabeth Proffitt
Project Manager

Robert V. Woods
Laboratory Manager

Lorraine Davis
QA Coordinator

RVW/clf

Note: Samples will be disposed of within 30 days unless otherwise notified.

Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

DRAFT

Analytical Technologies, Inc

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

DATE RECEIVED : 08/24/88
REPORT DATE : 09/19/88

ATI I.D. : 808135

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	S-01-02	SOIL	08/24/88
02	S-04-03	SOIL	08/24/88
03	S-04-02	SOIL	08/24/88
04	S-07-03	SOIL	08/24/88
05	S-9A-00	SOIL	08/24/88
06	S-9B-00	SOIL	08/24/88
07	S-10-02	SOIL	08/24/88
08	S-10-01	SOIL	08/24/88
09	S-07-02	SOIL	08/24/88
10	S-22-01	SOIL	08/24/88
11	S-23-00	SOIL	08/24/88
12	S-30-00	SOIL	08/24/88
13	S-31-01	SOIL	08/24/88
14	S-32-00	SOIL	08/24/88
15	S-33-03	SOIL	08/24/88
16	S-33-02	SOIL	08/24/88
17	S-34-00	SOIL	08/24/88
18	9999	AQUEOUS	08/24/88

----- TOTALS -----

MATRIX	# SAMPLES
SOIL	17
AQUEOUS	1

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc

DRAFT

GENERAL CHEMISTRY RESULTS

ATI I.D. : 808135

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

DATE RECEIVED : 08/24/88
REPORT DATE : 09/19/88

PARAMETER	UNITS	18
CARBONATE	MG/L	<1
BICARBONATE	MG/L	136
HYDROXIDE	MG/L	<1
TOTAL ALKALINITY (AS CACO3)	MG/L	136
CHLORIDE	MG/L	130
CONDUCTIVITY, (UMHOS/CM)		641
FLUORIDE	MG/L	0.68
NITRATE AS NITROGEN	MG/L	1.3
PH	UNITS	7.6
SULFATE	MG/L	37
TOTAL DISSOLVED SOLIDS	MG/L	410

AnalyticalTechnologies, Inc

DRAFT

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

ATI I.D. : 808135

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CARBONATE	MG/L	80815713	<1	<1	NA	NA	NA	NA
BICARBONATE	MG/L		246	246	0	NA	NA	NA
HYDROXIDE	MG/L		<1	<1	NA	NA	NA	NA
TOTAL ALKALINITY	MG/L		246	246	0	NA	NA	NA
CHLORIDE	MG/L	80814605	1.34	1.44	7	11.1	10.0	98
CONDUCTIVITY(UMHOMS/CM		80813518	641	652	2	NA	NA	NA
FLUORIDE	MG/L	80814605	0.09	0.09	0	1.08	1.00	99
NITRATE AS NITROGEN	MG/L	80814605	0.06	0.06	0	1.04	1.00	98
PH	UNITS	80813402	8.2	8.1	1	NA	NA	NA
SULFATE	MG/L	80813518	37	35	6	56	20	95
TOTAL DISSOLVED SOLIDS	MG/L	80811101	438	438	0	NA	NA	NA

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc

DRAFT

METALS RESULTS

ATI I.D. : 808135

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

DATE RECEIVED : 08/24/88
REPORT DATE : 10/10/88

PARAMETER	UNITS	18
CALCIUM	MG/L	35
COPPER	MG/L	0.027
IRON	MG/L	0.403
HARDNESS	MG/L	141
POTASSIUM	MG/L	4.1
MAGNESIUM	MG/L	12.9
MANGANESE	MG/L	0.163
SODIUM	MG/L	74.2
ZINC	MG/L	0.076

AnalyticalTechnologies, Inc

DRAFT

METALS RESULTS

ATI I.D. : 808135

DATE RECEIVED : 08/24/88

REPORT DATE : 10/10/88

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

PARAMETER	UNITS	03	08	09	16
SILVER (IN EP TOX)	MG/L	0.014	<0.010	0.016	0.018
ARSENIC (IN EP TOX)	MG/L	0.028	0.012	0.017	0.015
BARIUM (IN EP TOX)	MG/L	1.3	0.47	0.85	<0.06
CADMIUM (IN EP TOX)	MG/L	0.023	0.016	0.019	0.018
CHROMIUM (IN EP TOX)	MG/L	<0.02	<0.02	<0.02	<0.02
MERCURY (IN EP TOX)	MG/L	<0.0002	<0.0002	<0.0002	<0.0002
LEAD (IN EP TOX)	MG/L	0.18	0.16	0.19	0.20
SELENIUM (IN EP TOX)	MG/L	<0.005	<0.005	<0.005	<0.005

AnalyticalTechnologies, Inc

DRAFT

METALS - QUALITY CONTROL

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

ATI I.D. : 808135

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER (IN EP TOX)	MG/L	80813516	0.018	0.018	0	1.014	1.000	100
ARSENIC (IN EP TOX)	MG/L	80800805	<0.25	<0.25	NA	2.19	2.50	88
BARIUM (IN EP TOX)	MG/L	80815001	0.069	0.066	1	STDA	CC=	.999
CALCIUM	MG/L	80810008	34	34	0	86	50.0	104
CADMIUM (IN EP TOX)	MG/L	80813516	0.018	0.017	6	0.526	0.500	102
CHROMIUM (IN EP TOX)	MG/L	80813801	0.05	0.05	0	STDA	CC=	.999
COPPER	MG/L	80911401	0.051	0.052	2	1.03	1.000	98
IRON	MG/L	80908602	<0.030	<0.030	NA	1.92	2.000	96
MERCURY (IN EP TOX)	MG/L	80813516	<0.0002	<0.0002	NA	0.0049	0.0050	98
POTASSIUM	MG/L	80907806	46.7	47.5	2	98.9	60.00	104
MAGNESIUM	MG/L	80807405	216	217	0.5	461	250.0	98
MANGANESE	MG/L	80907801	11.1	11.2	0.9	31.2	20.00	101
SODIUM	MG/L	80907801	8.4	8.2	2	17.0	10.00	86
LEAD (IN EP TOX)	MG/L	80809405	0.33	0.30	10	10.56	10.00	102
SELENIUM (IN EP TOX)	MG/L	80816410	<0.005	<0.005	NA	0.050	0.050	100
SELENIUM (IN EP TOX)	MG/L	80817501	<0.005	<0.005	NA	0.0455	0.050	91
ZINC	MG/L	80917305	0.023	0.022	4	0.550	0.500	105

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80813518

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/24/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/24/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: N/A
CLIENT I.D.	: 9999	DATE ANALYZED	: 08/31/88
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 10

COMPOUNDS	RESULTS
BENZENE	<5.0
BROMODICHLOROMETHANE	<2.0
BROMOFORM	<2.0
BROMOMETHANE	<2.0
CARBON TETRACHLORIDE	<2.0
CHLOROBENZENE	<5.0
CHLOROETHANE	<2.0
CHLOROFORM	<2.0
CHLOROMETHANE	<2.0
DIBROMOCHLOROMETHANE	<2.0
1,2-DICHLOROBENZENE	<5.0
1,3-DICHLOROBENZENE	<5.0
1,4-DICHLOROBENZENE	<5.0
DICHLORODIFLUOROMETHANE	<2.0
1,1-DICHLOROETHANE	<2.0
1,2-DICHLOROETHANE	<2.0
1,1-DICHLOROETHENE	<2.0
1,2-DICHLOROETHENE(TOTAL)	<2.0
1,2-DICHLOROPROPANE	<2.0
CIS-1,3-DICHLOROPROPENE	<2.0
TRANS-1,3-DICHLOROPROPENE	<2.0
ETHYLBENZENE	<5.0
METHYLENE CHLORIDE	<20.0
1,1,2,2-TETRACHLOROETHANE	<2.0
TETRACHLOROETHENE	<2.0
TOLUENE	<5.0
1,1,1-TRICHLOROETHANE	<2.0
1,1,2-TRICHLOROETHANE	<2.0
TRICHLOROETHENE	<2.0
TRICHLOROFLUOROMETHANE	<20.0
VINYL CHLORIDE	<2.0
META XYLENE	<5.0
ORTHO & PARA XYLENE	<5.0

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	95
TRIFLUOROTOLUENE (%)	92

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT	: KLEINFELDER	ATI I.D.	: 808135
PROJECT #	: 52-1020-01	DATE EXTRACTED	: 08/31/88
PROJECT NAME	: (NONE)	DATE ANALYZED	: 08/31/88
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	0.4
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
1,2-DICHLOROETHENE(TOTAL)	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	11.2
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<0.5
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	<0.5

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	90
BROMOFLUOROBENZENE (%)	87

AnalyticalTechnologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80813501

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/24/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/24/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 08/29/88
CLIENT I.D.	: S-01-02	DATE ANALYZED	: 09/07/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 10

COMPOUNDS	RESULTS
BENZENE	<0.250
BROMODICHLOROMETHANE	<0.100
BROMOFORM	<0.100
BROMOMETHANE	<0.100
CARBON TETRACHLORIDE	<0.100
CHLOROBENZENE	<0.250
CHLOROETHANE	<0.100
CHLOROFORM	<0.100
CHLOROMETHANE	<0.100
DIBROMOCHLOROMETHANE	<0.100
1,2-DICHLOROBENZENE	<0.250
1,3-DICHLOROBENZENE	<0.250
1,4-DICHLOROBENZENE	<0.250
DICHLORODIFLUOROMETHANE	<0.100
1,1-DICHLOROETHANE	<0.100
1,2-DICHLOROETHANE	<0.100
1,1-DICHLOROETHENE	<0.100
1,2-DICHLOROETHENE(TOTAL)	<0.100
1,2-DICHLOROPROPANE	<0.100
CIS-1,3-DICHLOROPROPENE	<0.100
TRANS-1,3-DICHLOROPROPENE	<0.100
ETHYLBENZENE	<0.250
METHYLENE CHLORIDE	<1.000
1,1,2,2-TETRACHLOROETHANE	<0.100
TETRACHLOROETHENE	4.6
TOLUENE	<0.250
1,1,1-TRICHLOROETHANE	<0.100
1,1,2-TRICHLOROETHANE	<0.100
TRICHLOROETHENE	<0.100
TRICHLOROFLUOROMETHANE	<1.000
VINYL CHLORIDE	<0.100
META XYLENE	<0.250
ORTHO & PARA XYLENE	<0.250

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	99
TRIFLUOROTOLUENE (%)	102

AnalyticalTechnologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80813502

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/24/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/24/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 08/29/88
CLIENT I.D.	: S-04-03	DATE ANALYZED	: 09/06/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
1,2-DICHLOROETHENE(TOTAL)	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	<0.100
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	<0.025
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	95
TRIFLUOROTOLUENE (%)	99

AnalyticalTechnologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80813504

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/24/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/24/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 08/29/88
CLIENT I.D.	: S-07-03	DATE ANALYZED	: 09/06/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
1,2-DICHLOROETHENE(TOTAL)	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	<0.100
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	<0.025
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	88
TRIFLUOROTOLUENE (%)	95

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80813505

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/24/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/24/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 08/29/88
CLIENT I.D.	: S-9A-00	DATE ANALYZED	: 09/07/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 10

COMPOUNDS	RESULTS
BENZENE	<0.250
BROMODICHLOROMETHANE	<0.100
BROMOFORM	<0.100
BROMOMETHANE	<0.100
CARBON TETRACHLORIDE	<0.100
CHLOROBENZENE	<0.250
CHLOROETHANE	<0.100
CHLOROFORM	<0.100
CHLOROMETHANE	<0.100
DIBROMOCHLOROMETHANE	<0.100
1,2-DICHLOROBENZENE	<0.250
1,3-DICHLOROBENZENE	<0.250
1,4-DICHLOROBENZENE	<0.250
DICHLORODIFLUOROMETHANE	<0.100
1,1-DICHLOROETHANE	<0.100
1,2-DICHLOROETHANE	<0.100
1,1-DICHLOROETHENE	<0.100
1,2-DICHLOROETHENE(TOTAL)	<0.100
1,2-DICHLOROPROPANE	<0.100
CIS-1,3-DICHLOROPROPENE	<0.100
TRANS-1,3-DICHLOROPROPENE	<0.100
ETHYLBENZENE	<0.250
METHYLENE CHLORIDE	<1.000
1,1,2,2-TETRACHLOROETHANE	<0.100
TETRACHLOROETHENE	<0.100
TOLUENE	0.2
1,1,1-TRICHLOROETHANE	<0.100
1,1,2-TRICHLOROETHANE	<0.100
TRICHLOROETHENE	<0.100
TRICHLOROFLUOROMETHANE	<1.000
VINYL CHLORIDE	<0.100
META XYLENE	<0.250
ORTHO & PARA XYLENE	<0.250

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	101
TRIFLUOROTOLUENE (%)	99

AnalyticalTechnologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80813506

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/24/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/24/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 08/29/88
CLIENT I.D.	: S-9B-00	DATE ANALYZED	: 09/07/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 10

COMPOUNDS	RESULTS
BENZENE	<0.250
BROMODICHLOROMETHANE	<0.100
BROMOFORM	<0.100
BROMOMETHANE	<0.100
CARBON TETRACHLORIDE	<0.100
CHLOROBENZENE	<0.250
CHLOROETHANE	<0.100
CHLOROFORM	<0.100
CHLOROMETHANE	<0.100
DIBROMOCHLOROMETHANE	<0.100
1,2-DICHLOROBENZENE	<0.250
1,3-DICHLOROBENZENE	<0.250
1,4-DICHLOROBENZENE	<0.250
DICHLORODIFLUOROMETHANE	<0.100
1,1-DICHLOROETHANE	<0.100
1,2-DICHLOROETHANE	<0.100
1,1-DICHLOROETHENE	<0.100
1,2-DICHLOROETHENE(TOTAL)	<0.100
1,2-DICHLOROPROPANE	<0.100
CIS-1,3-DICHLOROPROPENE	<0.100
TRANS-1,3-DICHLOROPROPENE	<0.100
ETHYLBENZENE	<0.250
METHYLENE CHLORIDE	<1.000
1,1,2,2-TETRACHLOROETHANE	<0.100
TETRACHLOROETHENE	<0.100
TOLUENE	0.3
1,1,1-TRICHLOROETHANE	<0.100
1,1,2-TRICHLOROETHANE	<0.100
TRICHLOROETHENE	<0.100
TRICHLOROFLUOROMETHANE	<1.000
VINYL CHLORIDE	<0.100
META XYLENE	<0.250
ORTHO & PARA XYLENE	<0.250

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	101
TRIFLUOROTOLUENE (%)	96

AnalyticalTechnologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80813507

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/24/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/24/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 08/29/88
CLIENT I.D.	: S-10-02	DATE ANALYZED	: 09/07/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 10

COMPOUNDS	RESULTS
BENZENE	<0.250
BROMODICHLOROMETHANE	<0.100
BROMOFORM	<0.100
BROMOMETHANE	<0.100
CARBON TETRACHLORIDE	<0.100
CHLOROBENZENE	<0.250
CHLOROETHANE	<0.100
CHLOROFORM	<0.100
CHLOROMETHANE	<0.100
DIBROMOCHLOROMETHANE	<0.100
1,2-DICHLOROBENZENE	<0.250
1,3-DICHLOROBENZENE	<0.250
1,4-DICHLOROBENZENE	<0.250
DICHLORODIFLUOROMETHANE	<0.100
1,1-DICHLOROETHANE	<0.100
1,2-DICHLOROETHANE	<0.100
1,1-DICHLOROETHENE	<0.100
1,2-DICHLOROETHENE(TOTAL)	<0.100
1,2-DICHLOROPROPANE	<0.100
CIS-1,3-DICHLOROPROPENE	<0.100
TRANS-1,3-DICHLOROPROPENE	<0.100
ETHYLBENZENE	<0.250
METHYLENE CHLORIDE	<1.000
1,1,2,2-TETRACHLOROETHANE	<0.100
TETRACHLOROETHENE	0.5
TOLUENE	3.1
1,1,1-TRICHLOROETHANE	<0.100
1,1,2-TRICHLOROETHANE	<0.100
TRICHLOROETHENE	<0.100
TRICHLOROFLUOROMETHANE	<1.000
VINYL CHLORIDE	<0.100
META XYLENE	3.8
ORTHO & PARA XYLENE	2.3

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	101
TRIFLUOROTOLUENE (%)	110

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80813512

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/24/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/24/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 08/29/88
CLIENT I.D.	: S-30-00	DATE ANALYZED	: 09/06/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
1,2-DICHLOROETHENE(TOTAL)	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	0.04
METHYLENE CHLORIDE	<0.100
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	0.1
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	92
TRIFLUOROTOLUENE (%)	90

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80813511

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/24/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/24/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 08/29/88
CLIENT I.D.	: S-23-00	DATE ANALYZED	: 09/06/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
1,2-DICHLOROETHENE(TOTAL)	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	<0.100
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	<0.025
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	91
TRIFLUOROTOLUENE (%)	92

AnalyticalTechnologies, Inc

DRAF

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80813510

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 0
PROJECT #	: 52-1020-01	DATE RECEIVED	: 0
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 0
CLIENT I.D.	: S-22-01	DATE ANALYZED	: 0
SAMPLE MATRIX	: SOIL	UNITS	: M
		DILUTION FACTOR	:

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
1,2-DICHLOROETHENE(TOTAL)	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	<0.100
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	0.03
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	91
TRIFLUOROTOLUENE (%)	96

AnalyticalTechnologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80813507

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/24/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/24/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 08/29/88
CLIENT I.D.	: S-10-02	DATE ANALYZED	: 09/07/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 10

COMPOUNDS	RESULTS
BENZENE	<0.250
BROMODICHLOROMETHANE	<0.100
BROMOFORM	<0.100
BROMOMETHANE	<0.100
CARBON TETRACHLORIDE	<0.100
CHLOROBENZENE	<0.250
CHLOROETHANE	<0.100
CHLOROFORM	<0.100
CHLOROMETHANE	<0.100
DIBROMOCHLOROMETHANE	<0.100
1,2-DICHLOROBENZENE	<0.250
1,3-DICHLOROBENZENE	<0.250
1,4-DICHLOROBENZENE	<0.250
DICHLORODIFLUOROMETHANE	<0.100
1,1-DICHLOROETHANE	<0.100
1,2-DICHLOROETHANE	<0.100
1,1-DICHLOROETHENE	<0.100
1,2-DICHLOROETHENE(TOTAL)	<0.100
1,2-DICHLOROPROPANE	<0.100
CIS-1,3-DICHLOROPROPENE	<0.100
TRANS-1,3-DICHLOROPROPENE	<0.100
ETHYLBENZENE	<0.250
METHYLENE CHLORIDE	<1.000
1,1,2,2-TETRACHLOROETHANE	<0.100
TETRACHLOROETHENE	0.5
TOLUENE	3.1
1,1,1-TRICHLOROETHANE	<0.100
1,1,2-TRICHLOROETHANE	<0.100
TRICHLOROETHENE	<0.100
TRICHLOROFLUOROMETHANE	<1.000
VINYL CHLORIDE	<0.100
META XYLENE	3.8
ORTHO & PARA XYLENE	2.3

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	101
TRIFLUOROTOLUENE (%)	110

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80813513

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/24/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/24/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 08/29/88
CLIENT I.D.	: S-31-01	DATE ANALYZED	: 09/06/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
1,2-DICHLOROETHENE(TOTAL)	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	<0.100
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	<0.025
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	94
TRIFLUOROTOLUENE (%)	93

AnalyticalTechnologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80813514

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/24/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/24/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 08/29/88
CLIENT I.D.	: S-32-00	DATE ANALYZED	: 09/06/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
1,2-DICHLOROETHENE(TOTAL)	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	0.1
METHYLENE CHLORIDE	<0.100
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	0.1
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	91
TRIFLUOROTOLUENE (%)	88

AnalyticalTechnologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80813515

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/24/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/24/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 08/29/88
CLIENT I.D.	: S-33-03	DATE ANALYZED	: 09/06/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
1,2-DICHLOROETHENE(TOTAL)	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	<0.100
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	0.05
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	91
TRIFLUOROTOLUENE (%)	92

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80813517

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/24/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/24/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 08/29/88
CLIENT I.D.	: S-34-00	DATE ANALYZED	: 09/06/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
1,2-DICHLOROETHENE(TOTAL)	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	<0.100
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	0.03
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	95
TRIFLUOROTOLUENE (%)	94

AnalyticalTechnologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

		ATI I.D.	: 808135
CLIENT	: KLEINFELDER	DATE EXTRACTED	: 08/29/88
PROJECT #	: 52-1020-01	DATE ANALYZED	: 09/06/88
PROJECT NAME	: (NONE)	UNITS	: MG/KG
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
1,2-DICHLOROETHENE(TOTAL)	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	0.6
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	<0.025
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	96
TRIFLUOROTOLUENE (%)	98

AnalyticalTechnologies, Inc.
San Diego • Phoenix • Seattle

Chain of Custody

DATE 8/24 PAGE 1 OF 2

PROJ. MGR. Ron Turner
COMPANY Kleinfelder
ADDRESS 4920 E McDowell Suite 101

SAMPLERS (SIGNATURE) Gary Bennett (PHONE NO.) 231-0992

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240	PESTICIDES/PCB 608/8080	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418			PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8) by CD	SWDA-INORGANICS PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE				NUMBER OF CONTAINERS
S-01-02	8/24	3:00p	Soil	1						X	X														1
S-04-03	↓	↓	↓	2						X	X														1
S-04-02				3															X						1
S-07-03				4						X	X														1
S-9A-00				5						X	X														1
S-9B-00				6						X	X														1
S-10-02				7						X	X														1
S-10-01				8															X						1
S-07-02				9															X						1

PROJECT INFORMATION	SAMPLE RECEIPT		INVOICE TO:	RELINQUISHED BY	RELINQUISHED BY
PROJECT: 52-1020-01	TOTAL NO. OF CONTAINERS	21			Michael S. Kynick
PO NO.	CHAIN OF CUSTODY SEALS	Y		(Signature) (Time)	(Signature) (Time) Michael S. Kynick 8/24
SHIPPING ID. NO.	REC'D GOOD CONDITION/COLD	Y		(Printed Name) (Date)	(Printed Name) (Date) KLEINFELDER
VIA: hand	CONFORMS TO RECORD	Y		(Company)	(Company)
	LAB NO. 808135			RECEIVED BY	RECEIVED BY (LABORATORY)
SPECIAL INSTRUCTIONS/COMMENTS:				(Signature) (Time)	(Signature) (Time)
				(Printed Name) (Date)	(Printed Name)
				(Company)	ANALYTICAL TECHNOLOGIES, INC

DRAFT

C-87

ATI LABORATORIES: SAN DIEGO (619) 458-9141 • PHOENIX (602) 438-1530 • SEATTLE (206) 228-8335 DISTRIBUTION: WHITE, CANARY - ANALYTICAL TECHNOLOGIES, INC • PINK ORIGINATOR

AnalyticalTechnologies, Inc.
San Diego • Phoenix • Seattle

Chain of Custody

DATE 8/24 PAGE 2 OF 2

PROJ. MGR. Ron Turenne
COMPANY Klemfelder
ADDRESS 4920 E. McDowell Suite 107

SAMPLERS (SIGNATURE) Gary Bennett (PHONE NO.) 231-0992

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240	PESTICIDES/PCB 608/8080	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418	CAL. Title 22		PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8)	SWDA-INORGANICS PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE				NUMBER OF CONTAINERS
S-22-01	8/24	3:00p	Soil	10						X	X														3
S-23-00	↓	↓	↓	11						X	X														1
S-30-00				12						X	X														1
S-31-01				13						X	X														1
S-32-00				14						X	X														1
S-33-03				15						X	X														1
S-33-02				16															X						1
S-34-00				17						X	X														1
9999	↓	↓	WATER	18						+	+				X										5

PROJECT INFORMATION	SAMPLE RECEIPT	INVOICE TO:	RELINQUISHED BY	RELINQUISHED BY
PROJECT:	TOTAL NO. OF CONTAINERS			Michael S. Kynik 3:45
PO NO.	CHAIN OF CUSTODY SEALS		(Signature) (Time)	(Signature) Michael S. Kynik 8/24 (Time)
SHIPPING ID. NO	REC'D GOOD CONDITION/COLD		(Printed Name) (Date)	(Printed Name) KLEMFELDER (Date)
VIA: hand	CONFORMS TO RECORD		(Company)	(Company)
	LAB NO. 808135		RECEIVED BY	RECEIVED BY (LABORATORY)
			(Signature) (Time)	(Signature) K. L. Mendes 15:4 (Time)
			(Printed Name) (Date)	(Printed Name) 9-7 (Date)
			(Company)	ANALYTICAL TECHNOLOGIES, INC

SPECIAL INSTRUCTIONS/COMMENTS:
#18 dont do metals {alk, ph, cond, hard, TDS, Cl, F, SO4, NO3}
no trip blank

ATI LABORATORIES: SAN DIEGO (619) 458-9141 • PHOENIX (602) 438-1530 • SEATTLE (206) 228-8335 DISTRIBUTION: WHITE, CANARY · ANALYTICAL TECHNOLOGIES, INC. • PINK · ORIGINATOR

DRAFT

DRAFT

AnalyticalTechnologies,Inc. 2113 S 48th Street Suite 107 Tempe AZ 85282 (602) 438-1530

SEPTEMBER 14, 1988

KLEINFELDER
4920 E. McDOWELL
SUITE 101
PHOENIX, AZ 85008

Accession: 808144

Date Received: 8/25/88

Attention: GRANT BUMA

Project: 52-1020-01

Elizabeth Proffitt
Project Manager

Robert V. Woods
Laboratory Manager

RVW/clf

Note: Samples will be disposed of within 30 days unless otherwise notified.

Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

DRAFT

Analytical Technologies, Inc

CLIENT : KLEINFELDER
PROJECT # : 52-1020-01
PROJECT NAME : (NONE)

DATE RECEIVED : 08/25/88
REPORT DATE : 09/13/88

ATI I.D. : 808144

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	S-11-03	SOIL	08/25/88
02	S-35-03	SOIL	08/25/88
03	S-36-00	SOIL	08/25/88

----- TOTALS -----

MATRIX	# SAMPLES
SOIL	3

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80814401

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/25/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/25/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 08/29/88
CLIENT I.D.	: S-11-03	DATE ANALYZED	: 09/07/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 10

COMPOUNDS	RESULTS
BENZENE	<0.250
BROMODICHLOROMETHANE	<0.100
BROMOFORM	<0.100
BROMOMETHANE	<0.100
CARBON TETRACHLORIDE	<0.100
CHLOROBENZENE	<0.250
CHLOROETHANE	<0.100
CHLOROFORM	<0.100
CHLOROMETHANE	<0.100
DIBROMOCHLOROMETHANE	<0.100
1,2-DICHLOROBENZENE	<0.250
1,3-DICHLOROBENZENE	<0.250
1,4-DICHLOROBENZENE	<0.250
DICHLORODIFLUOROMETHANE	<0.100
1,1-DICHLOROETHANE	<0.100
1,2-DICHLOROETHANE	<0.100
1,1-DICHLOROETHENE	<0.100
1,2-DICHLOROETHENE(TOTAL)	<0.100
1,2-DICHLOROPROPANE	<0.100
CIS-1,3-DICHLOROPROPENE	<0.100
TRANS-1,3-DICHLOROPROPENE	<0.100
ETHYLBENZENE	<0.250
METHYLENE CHLORIDE	<1.000
1,1,2,2-TETRACHLOROETHANE	<0.100
TETRACHLOROETHENE	<0.100
TOLUENE	0.4
1,1,1-TRICHLOROETHANE	<0.100
1,1,2-TRICHLOROETHANE	<0.100
TRICHLOROETHENE	<0.100
TRICHLOROFLUOROMETHANE	<1.000
VINYL CHLORIDE	<0.100
META XYLENE	<0.250
ORTHO & PARA XYLENE	<0.250

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	101
TRIFLUOROTOLUENE (%)	95

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80814402

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/25/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/25/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 08/29/88
CLIENT I.D.	: S-35-03	DATE ANALYZED	: 09/07/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
1,2-DICHLOROETHENE(TOTAL)	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	<0.100
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	0.06
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	94
TRIFLUOROTOLUENE (%)	94

Analytical Technologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80814403

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

CLIENT	: KLEINFELDER	DATE SAMPLED	: 08/25/88
PROJECT #	: 52-1020-01	DATE RECEIVED	: 08/25/88
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 08/29/88
CLIENT I.D.	: S-36-00	DATE ANALYZED	: 09/07/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	<0.010
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
1,2-DICHLOROETHENE(TOTAL)	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	<0.100
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	0.09
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	92
TRIFLUOROTOLUENE (%)	94

AnalyticalTechnologies, Inc

DRAFT

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 8010/8020)

		ATI I.D.	: 808144
CLIENT	: KLEINFELDER	DATE EXTRACTED	: 08/29/88
PROJECT #	: 52-1020-01	DATE ANALYZED	: 09/08/88
PROJECT NAME	: (NONE)	UNITS	: MG/KG
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
BENZENE	<0.025
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.010
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.010
CHLOROFORM	0.02
CHLOROMETHANE	<0.010
DIBROMOCHLOROMETHANE	<0.010
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
1,2-DICHLOROETHENE(TOTAL)	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
ETHYLBENZENE	<0.025
METHYLENE CHLORIDE	1.6
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
TOLUENE	<0.025
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.100
VINYL CHLORIDE	<0.010
META XYLENE	<0.025
ORTHO & PARA XYLENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	102
TRIFLUOROTOLUENE (%)	98

AnalyticalTechnologies, Inc.
San Diego • Phoenix • Seattle

Chain of Custody

DATE 8-25-88 PAGE 1 OF 1

PROJ. MGR. RON TURNER
COMPANY KLEINFELDER
ADDRESS 4920 E. McDowell Suite 101
Phoenix AZ 85008

SAMPLERS (SIGNATURE) Michael S. Rymuk
(PHONE NO.) 231-8742

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240	PESTICIDES/PCB 608/8080	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418			PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8)	SWDA-INORGANICS PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE				NUMBER OF CONTAINERS
S-11-03	8/25		SOIL	1						X	X														1
S-35-03	"		"	2						X	X														1
S-36-00	"		"	3						X	X														1

PROJECT INFORMATION
PROJECT 52-1020-01
PO NO.
SHIPPING ID. NO
VIA AT HAND

SAMPLE RECEIPT
TOTAL NO. OF CONTAINERS 3
CHAIN OF CUSTODY SEALS Y
REC'D GOOD CONDITION/COLD Y
CONFORMS TO RECORD Y
LAB NO. 808144

INVOICE TO:

RELINQUISHED BY
(Signature) (Time)
(Printed Name) (Date)
(Company)

RELINQUISHED BY
Michael S. Rymuk 1:35
(Signature) (Time) Michael S. Rymuk 8/25
(Printed Name) (Date) KLEINFELDER
(Company)

RECEIVED BY
(Signature) (Time)
(Printed Name) (Date)
(Company)

RECEIVED BY (LABORATORY)
K. Meinders 1338
(Signature) (Time) K. Meinders 8/25
(Printed Name) ATI
ANALYTICAL TECHNOLOGIES, INC.

SPECIAL INSTRUCTIONS/COMMENTS:

DRAFT

AnalyticalTechnologies

LABORATORIES: SAN DIEGO (619) 458-9141 • PHOENIX (602) 438-1530 • SEATTLE (206) 228-8335 DISTRIBUTION: WHITE, CANARY · ANALYTICAL TECHNOLOGIES, INC. • PINK · ORIGINATOR

C-95

DRAFT

APPENDIX D

Analytical Data Exceeding Maximum Contaminant Levels

This appendix lists wells where chemical concentrations exceeded the EPA maximum contaminant level (MCL) or the Arizona Department of Health Services (ADHS) Action Level guidelines.

In cases where the EPA has not established an MCL, or where the ADHS Action Level guideline was lower, the ADHS guideline was used.

DRAFT

KEY TO APPENDIX D

ENVIS Site Number	Legal Well Designation	Owner Desingation or Common Name
1026	(A-1-3)5dcd	ADOT PWT-8
1027	(A-1-3)5dd	Republic & Gazette (R&G)
1029	(A-1-3)5cda	U.S. Post Office
2016	(A-1-3)1bdd	DM126
2019	(A-1-3)1ddd	SRP 18E 5N
2020	(A-1-4)6acc	DM104
2021	(A-1-4)6aba	DM106
2022	(A-1-4)6aab	MP49
2023	(A-2-4)31ccd	DM119
2024	(A-1-4)6bdb	DM120
2025	(A-1-4)6bcb	DM121
2028	(A-1-4)6aac	MP50
2031	(A-1-4)6acc	Willis
2032	(A-1-4)6adb	MP51
2033	(A-1-4)6ada	DM115
3004	(A-1-3)8baa	Security Center
3009	(A-1-3)8aac	Greyhound
3012A	(A-1-3)8bda1	Old Courthouse-north
3012B	(A-1-3)8bda2	Old Courthouse-south
3016	(A-1-3)8cdd	Not Available
3017	(A-1-3)9ada	Eastlake Park
3020	(A-1-3)9ddc1	FMC-1
3021	(A-1-3)9ddc2	FMC-2
3022	(A-1-3)9ddc3	FMC-3
3039	(A-1-3)15aac1	AVIS MW-1
3040	(A-1-3)15aac2	AVIS MW-2
3041	(A-1-3)15aac3	AVIS MW-3
3042	(A-1-3)15aac7	AVIS MW-7
3047	(A-1-3)15cdd1	ADOT #D-1
3049	(A-1-3)15cdd3	ADOT #D-3
3053	(A-1-3)8dcb	ADOT WT-8
3056	(A-1-3)15cad	ADOT #D-6
3057	(A-1-3)15abc	ADOT #D-9
3058	(A-1-3)15acc1	ADOT #D-7
3064	(A-1-3)9acc	Tiernay Turbines (4 wells)
4001	(A-1-3)11bbb1	Deer-O OW1
4002	(A-1-3)11bbb2	Deer-O OW2
4003	(A-1-3)11bbb3	Deer-O OW3
4015	(A-1-3)13dda	Tanner 40th St.
4019	(A-1-4)18dbc	Estes NE
4020	(A-1-4)18cac	Estes E
4024	(A-1-4)18cbd1	Estes NW
4025	(A-1-4)18cbd2	Estes W
4027	(A-1-4)18cca1	Bradley Production
4034	(A-1-3)11baa	Desert Hills

DRAFT

KLEINFELDER

Chemical Information

trichloroethene

ID Number 80.02 STORET Number 39180
CAS Number 79-01-6 MCL and ADHS Action Level = 5.0 ug/L

Synonyms : trichloroethylene
TCE
ethylene trichloride
triclene

Site	Date	Result	Units
1026	06/21/86	446	ug/L
1027	11/05/86	245	ug/L
1027	11/22/86	210	ug/L
1029	09/23/86	150	ug/L
2016	1986	17.6*	ug/L
2019	1986	9.3*	ug/L
2020	1986	147 *	ug/L
2021	1986	3460 *	ug/L
2022	1986	5410 *	ug/L
2024	1986	636 *	ug/L
2025	1986	1800 *	ug/L
2028	1986	1230 *	ug/L
2031	1986	818 *	ug/L
2032	1986	1510 *	ug/L
2033	1986	1040 *	ug/L
3004	09/27/84	202	ug/L
3004	09/23/86	300	ug/L
3009	03/18/86	16	ug/L
3012A	08/16/88	37.5	ug/L
3012B	08/16/88	58	ug/L
3012B	09/27/84	12	ug/L
3016	08/11/88	5.7	ug/L
3017	09/27/84	44	ug/L
3017	07/29/83	61.1	ug/L
3020	05/22/88	5.91	ug/L
3021	05/22/88	5.74	ug/L
3041	11/01/85	9.3	ug/L
3053	09/28/84	7.4	ug/L

DRAFT

KLEINFELDER

Chemical Information

trichloroethene

Site	Date	Result	Units
3056	01/31/85	32	ug/L
3057	03/07/85	14	ug/L
3058	01/31/85	7	ug/L
3064	04/06/88	20-32	ug/L
4001	03/14/85	390	ug/L
4001	06/30/86	3300	ug/L
4001	07/30/85	570	ug/L
4001	09/17/86	890	ug/L
4001	01/12/87	890	ug/L
4001	04/15/87	500	ug/L
4002	03/14/86	550	ug/L
4002	06/30/86	2300	ug/L
4002	07/30/85	2000	ug/L
4002	09/17/86	780	ug/L
4002	04/15/87	410	ug/L
4003	03/14/86	490	ug/L
4003	07/30/85	130	ug/L
4003	06/30/86	710	ug/L
4003	09/17/86	20	ug/L
4003	01/12/87	540	ug/L
4003	04/15/87	43	ug/L
4015	12/21/82	13	ug/L
4019	04/12/82	112.8	ug/L
4020	05/17/82	31.8	ug/L
4020	09/17/82	17	ug/L
4020	12/20/82	150	ug/L
4020	10/10/84	33	ug/L
4024	04/13/82	7.4	ug/L
4025	12/20/82	23	ug/L
4027	06/17/80	41	ug/L
4027	09/17/82	23	ug/L
4027	12/21/82	45	ug/L
4027	01/27/83	19	ug/L
4027	10/11/84	10	ug/L
4034	09/28/84	640	ug/L
4034	03/14/86	380	ug/L

* Mean concentrations from Dames & Moore DRAFT 52nd Street Motorola RI/FS. Data subject to revision.

DRAFT

KLEINFELDER

Chemical Information

tetrachloroethene

ID Number 75.01 STORET Number 34475
CAS Number 127-18-4 ADHS Action Level = 1.0 ug/L

Synonyms : PCE
perchloroethylene
perchloroethene
tetrachloroethylene
1,1,2,2-tetrachloroethene
ethylene tetrachloride

Site	Date	Result	Units
1026	06/21/86	3	ug/L
1027	11/22/86	2.7	ug/L
2016	1986	1.1*	ug/L
2020	1986	12.9*	ug/L
2021	1986	7.6*	ug/L
2022	1986	411 *	ug/L
2023	1986	1.3*	ug/L
2025	1986	110 *	ug/L
2028	1986	11.8*	ug/L
2031	1986	15.8*	ug/L
2032	1986	130 *	ug/L
2033	1986	7.1*	ug/L
3012A	08/16/88	1.4	ug/L
3012B	08/16/88	2	ug/L
3016	08/11/88	1.4	ug/L
3017	07/29/83	> 5.2	ug/L
3022	05/22/88	1.55	ug/L
3047	11/01/84	60	ug/L
3049	01/31/85	5	ug/L
3056	01/31/85	13	ug/L
3064	04/06/88	< 1-2	ug/L
4001	04/15/87	2	ug/L

DRAFT

KLEINFELDER

Chemical Information

tetrachloroethene

Site	Date	Result	Units
4019	04/12/82	> 5.04	ug/L
4020	12/20/82	5	ug/L
4020	10/10/84	5	ug/L
4027	12/21/82	3	ug/L
4027	10/11/84	2	ug/L

* Mean concentrations from Dames & Moore DRAFT 52nd Street Motorola RI/FS. Data subject to revision.

DRAFT

KLEINFELDER

Chemical Information

1,1-dichloroethene

ID Number 6.00 STORET Number 34501
CAS Number 75-35-4 MCL and ADHS Action Level = 7.0 ug/L

Synonyms : 1,1-DCE
1,1-dichloroethylene
asym-dichloroethylene
DCE
VCE

Site	Date	Result	Units
1026	06/21/86	8	ug/L
1027	11/22/86	7.3	ug/L
2020	1986	17.2*	ug/L
2022	1986	356 *	ug/L
2032	1986	50.9*	ug/L
2033	1986	25.5*	ug/L
3012A	08/16/88	7.3	ug/L
3012B	08/16/88	15	ug/L
3017	09/27/84	11	ug/L
3056	01/31/85	15	ug/L
3064	04/06/88	19-44	ug/L
4001	07/30/85	25	ug/L
4020	05/17/82	46.3	ug/L
4020	10/10/84	11	ug/L
4027	06/17/80	12	ug/L

* Mean concentrations from Dames & Moore DRAFT 52nd Street Motorola RI/FS. Data subject to revision.

DRAFT

KLEINFELDER

Chemical Information

trans-1,2-dichloroethene

ID Number 78.01 STORET Number 34546
CAS Number 156-60-5 ADHS Action Level= 70 ug/L *

Synonyms : acetylene dichloride
1,2-dichloroethylene
1,2-dichloroethene

* Note : Action level is for a single isomer or sum of the two isomers.

Site	Date	Result	Units
2022	1986	88.7*	ug/L
2025	1986	764 *	ug/L
2031	1986	139 *	ug/L
2032	1986	855 *	ug/L
3064	04/06/88	4-530	ug/L
4001	06/30/86	170	ug/L
4002	07/30/85	110	ug/L
4002	06/30/86	84	ug/L
4003	06/30/86	2500	ug/L
4003	09/17/86	480	ug/L
4003	01/12/87	120	ug/L
4003	04/15/87	500	ug/L
4015	10/10/84	130	ug/L
4020	05/17/82	19100	ug/L
4020	09/17/82	1950	ug/L
4020	12/20/82	1600	ug/L
4020	01/27/83	1200	ug/L
4020	10/10/84	5300	ug/L
4024	09/16/82	187	ug/L
4024	10/10/84	570	ug/L
4025	05/17/82	1320	ug/L
4025	09/17/82	215	ug/L
4025	12/20/82	360	ug/L
4025	01/27/83	355	ug/L
4025	10/10/84	1000	ug/L
4027	06/17/80	1588	ug/L
4027	04/07/81	233	ug/L

DRAFT

KLEINFELDER

Chemical Information

trans-1,2-dichloroethene

Site	Date	Result	Units
4027	12/21/82	260	ug/L
4027	01/27/83	430	ug/L
4027	10/11/84	480	ug/L
4034	03/14/86	96	ug/L

* Mean concentrations from Dames & Moore DRAFT 52nd Street Motorola RI/FS. Data subject to revision.

DRAFT

KLEINFELDER

Chemical Information

1,1,1-trichloroethane

ID Number	1.00	STORET Number	34506
CAS Number	71-55-6	MCL and ADHS Action Level = 200 ug/L	

Synonyms: 1,1,1-TCA
TCA

Site	Date	Result	Units
2021	1986	311*	ug/L
2022	1986	994*	ug/L
2024	1986	284*	ug/L
2031	1986	254*	ug/L

* Mean concentrations from Dames & Moore DRAFT 52nd Street Motorola RI/FS. Data subject to revision.

DRAFT

KLEINFELDER

Chemical Information

1,1,2,2-tetrachloroethane

ID Number	2.00	STORET Number	34516
CAS Number	79-34-5	ADHS Action Level = 0.50 ug/L	

Synonyms : tetrachloroethane
PCA
1,1,2,2-PCA

Site	Date	Result	Units
4034	09/28/84	17	ug/L

DRAFT

KLEINFELDER

Chemical Information

vinyl chloride

ID Number 82.00 STORET Number 39175
CAS Number 75-01-4 ADHS Action Level = 1.0 ug/L

Synonyms : chloroethylene

Site	Date	Result	Units
4015	12/21/82	23	ug/L
4015	01/27/83	17	ug/L
4015	10/10/84	82	ug/L
4020	05/17/82	4970	ug/L
4020	09/17/82	4230	ug/L
4020	12/20/82	1300	ug/L
4020	01/27/83	1500	ug/L
4020	10/10/84	1700	ug/L
4024	09/16/82	2590	ug/L
4024	12/20/82	180	ug/L
4024	01/27/83	89	ug/L
4024	10/10/84	830	ug/L
4025	05/17/82	3060	ug/L
4025	09/17/82	6140	ug/L
4025	12/20/82	480	ug/L
4025	01/27/83	1800	ug/L
4025	10/10/84	1000	ug/L
4027	06/17/80	> 2000	ug/L
4027	04/07/81	6311	ug/L
4027	12/21/82	220	ug/L
4027	01/27/83	704	ug/L
4027	10/11/84	160	ug/L

DRAFT

KLEINFELDER

Chemical Information

benzene

ID Number 41.00 STORET Number 34030
CAS Number 71-43-2 MCL and ADHS Action Level = 5.0 ug/L

Synonyms : Benzol

Site	Date	Result	Units
3039	08/26/85	15000	ug/L
3039	09/04/86	18000	ug/L
3039	04/16/87	6000	ug/L
3039	08/31/87	11000	ug/L
3039	04/26/88	22000	ug/L
3039	08/29/88	2800	ug/L
3040	09/13/85	32	ug/L
3040	04/07/86	32	ug/L
3040	08/13/86	14	ug/L
3040	12/09/86	25	ug/L
3041	08/31/87	20	ug/L
3042	11/24/87	100	ug/L
3042	07/28/88	42	ug/L
3064	04/16/88	< 1-17	ug/L
4003	04/15/87	8	ug/L
4025	10/10/84	16	ug/L

DRAFT

KLEINFELDER

Chemical Information

ethylbenzene

ID Number 61.00 STORET Number 34371
CAS Number 100-41-4 ADHS Action Level = 680 ug/L

Synonyms :

Site	Date	Result	Units
3039	08/26/85	1500	ug/L
3039	09/04/86	4200	ug/L
3039	08/31/87	1200	ug/L

DRAFT

KLEINFELDER

Chemical Information

chlorobenzene

ID Number	52.00	STORET Number	34301
CAS Number	108-90-7	ADHS Action Level = 60 ug/L	

Synonyms :

Site	Date	Result	Units
4020	10/10/84	62	ug/L
4025	10/10/84	110	ug/L

DRAFT

KLEINFELDER

Chemical Information

toluene

ID Number 76.00 STORET Number 34010
CAS Number 108-88-3 ADHS Action Level = 2000 ug/L

Synonyms :

Site	Date	Result	Units
3039	08/26/85	26000	ug/L
3039	09/04/86	38000	ug/L
3039	04/16/87	3500	ug/L
3039	08/31/87	17000	ug/L
3039	04/26/88	33000	ug/L
3039	08/29/88	3000	ug/L

DRAFT

KLEINFELDER

Chemical Information

xylenes

ID Number 77.01 STORET Number 81551
CAS Number 1330-20-7 ADHS Action Level = 440 ug/L

Synonyms : o/p-xylene
meta xylene

Site	Date	Result	Units
3039	08/26/85	10000	ug/L
3039	09/04/86	25000	ug/L
3039	04/16/87	5400	ug/L
3039	08/31/87	14000	ug/L
3039	04/26/88	35000	ug/L
3039	08/29/88	2300	ug/L
4003	04/15/87	548	ug/L

DRAFT

KLEINFELDER

Chemical Information

methylene chloride

ID Number	68.00	STORET Number	34423
CAS Number	75-09-2	ADHS Action Level =	4.7 ug/L

Synonyms: dichloromethane
methylene dichloride
methylene bichloride
Freon 30
methane dichloride

Site	Date	Result	Unit
1027	11/22/86	9.9	ug/L
2020	1986	8.3*	ug/L
2021	1986	81.7*	ug/L
2022	1986	8.4*	ug/L
4002	07/30/85	20	ug/L

* Mean concentrations from Dames & Moore DRAFT 52nd Street Motorola RI/FS. Data subject to revision.

DRAFT

KLEINFELDER

Chemical Information

chloroform

ID Number 54.00 STORET Number 32106
CAS Number 67-66-3 ADHS Action Level = 3.0 ug/L

Synonyms : trichloromethane

Site	Date	Result	Units
1027	11/05/86	12.8	ug/L
1027	11/22/86	6.5	ug/L
2021	1986	13.1*	ug/L
2022	1986	126 *	ug/L
2028	1986	12.4*	ug/L
2032	1986	12.3*	ug/L
4001	06/30/86	7	ug/L
4001	07/30/85	4	ug/L
4002	06/30/86	7	ug/L
4002	07/30/85	28	ug/L
4002	09/17/86	6	ug/L
4003	07/03/85	10	ug/L
4019	04/12/82	> 4.07	ug/L
4034	09/28/84	18	ug/L

* Mean concentrations from Dames & Moore DRAFT 52nd Street Motorola RI/FS. Data subject to revision.

DRAFT

KLEINFELDER

Chemical Information

carbon tetrachloride

ID Number	51.00	STORET Number	32102
CAS Number	56-23-5	MCL and ADHS Action Level = 5 ug/L	

Synonyms:

Site	Date	Result	Units
2021	1986	8.6*	ug/L
2022	1986	13.9*	ug/L
2025	1986	263 *	ug/L

* Mean concentrations from Dames & Moore DRAFT 52nd Street Motorola RI/FS. Data subject to revision.

DRAFT

APPENDIX E

Comments on the Draft Phase I Report

This appendix contains comments made by reviewers of the draft Phase I Report. The comments have been indexed alphanumerically. The responses to these comments are included in Appendix F under the corresponding alphanumeric designation.

Allied-Signal Aerospace Company

Fluid Systems Division
1300 W Warner Rd
PO Box 22200
Tempe, AZ 85282
(602) 893-5000
Telex TRT-187125 FSD TMPE
Facsimile (602) 893-5123

Allied Signal

HAND-DELIVERED

November 16, 1988

NOV 1988
RECEIVED
Office of
Waste Programs

Mr. Jim McDonald
Department of Environmental Quality
Room 400A
2005 North Central Avenue
Phoenix, Arizona 85004

Subject: DRAFT PHASE I REPORT
EASTLAKE PARK AREA

Dear Mr. McDonald:

Fluid Systems Division of Allied-Signal Aerospace Company, formerly known as Garrett Pneumatic Systems Division, has learned that under its former name at 2801 East Washington Street, Phoenix, it is listed with two asterisks in the preliminary list of facilities in the subject report.

We believe this is an error, since to the best of our knowledge we have never used any chemicals at that site. Our use was primarily as office space. A copy of the letter to Don E. Atkinson of July 28, 1988 from Phil Li is enclosed for your reference. For the foregoing reasons this site does not qualify to be listed with a double asterisk pursuant to the methodology set forth in Section 5.1 of the report.

A-1 In addition, under Observations is listed an identification number. This is not an ID number that is known to the Company. We are unaware of what company or site that number refers to.

Please therefore correct the report by removing the double asterisk from in front of the listing for Garrett Pneumatic Systems at 2801 East Washington, and by deleting the indicated ID number.

Sincerely,

Thomas W. Hill, Jr.

Thomas W. Hill
Manager
Industrial & Plant Engineering

TWH:JHW:fm

cc: Roger K. Ferland, Esquire
Streich, Lang, Weeks & Cardon
100 West Washington Street
Phoenix, Arizona 85003

Kleinfelder
Suite 101
4920 East McDowell Road
Phoenix, Arizona 85008

Allied-Signal Aerospace Company

Garrett Engine Division
111 South 34th Street
P.O. Box 5217
Phoenix, Arizona 85010
Tel: (602) 231-1000

Allied Signal

CERTIFIED MAIL

REF: 80040728.1216
July 28, 1988

Donald E. Atkinson
Eastlake Park Project Manager
Remedial Projects Unit
Arizona Department of Environmental Quality
2005 North Central Avenue
Phoenix, Arizona 85004

Dear Mr. Atkinson:

This letter is in response to your inquiry regarding the prior activity of the Allied-Signal Aerospace Company at 2801 East Washington Street, Phoenix, Arizona. Allied-Signal Aerospace Company has conducted business activity at this address during two separate time frames. During both the times that we occupied the building the work was limited to office and clerical duties. No hazardous material use, manufacturing, or testing was conducted. Specifics of the activities are provided below:

A-2

- From January 1, 1967 to June 30, 1977 the building was occupied by the Garrett Engine Division which has been known in prior years as AiResearch Manufacturing Company of Arizona. The building was leased from the American Security Corporation and it is our understanding that the building was owned by the International Brotherhood of Electrical Workers.

- From February 1, 1980 to January 31, 1986 the building was used by the Garrett Pneumatic Systems Division as purely administrative offices. During this time period the lease was from Samuelson-Hornaday and later extended by Washington Partners.

We are unaware of the name or business of any previous or subsequent occupant of the building. If you have additional questions please feel free to call Philip Li at 231-1019.

Phil Li

Philip Li
Manager
Environmental Management and Technical Support
Plant Engineering Department

/lf
cc: F.J. Nixon
J. Wigle

Allied-Signal Aerospace Company

Garrett Airline Services Division
P.O. Box 52170, Phoenix, AZ 85072

Wilbur H. Clarkston
President

Allied Signal

HAND-DELIVERED

November 16, 1988

Mr. Jim McDonald
Department of Environmental Quality
2005 North Central Avenue, Room 400A
Phoenix, Arizona 85004

Subject: DRAFT PHASE I REPORT
EASTLAKE PARK AREA

Mr. McDonald:

Garrett Airline Services Division of Allied-Signal Aerospace Company has learned that it is listed with two asterisks in the preliminary list of facilities contained in the subject report.

Under the methodology listed in Section 5.1 of the report we do not believe there is a basis for listing this division with two asterisks. We have never been cited for noncompliance, and we maintain good housekeeping practices. There is nothing in the report to the contrary. In addition, we are not even in the area defined as the Eastlake Park Area.

A-3 At most we should be listed with a single asterisk since we do use certain chemicals that have been found in certain wells in the Eastlake Park Area. This would be the sole basis for giving this facility any level of priority. However, we do not believe even this level of priority is appropriate.

A-4 In addition, the comments under the column entitled "Observations" indicate an inaccurate amount of waste. The figures indicated are for the entire year, and <u>not one month</u> as indicated.

Therefore, please correct the report by removing the double asterisk from before the name of this facility and the amount of waste generated.

Sincerely,

WHC:JHW:fm

cc: Roger K. Ferland, Esquire
Streich, Lang, Weeks & Cardon
100 West Washington Street
Phoenix, Arizona 85003

Kleinfelder
Suite 101
4920 East McDowell Road
Phoenix, Arizona 85008

Allied-Signal Aerospace Company

Garrett Engine Division
111 South 34th Street
P.O. Box 5217
Phoenix, Arizona 85010
Tel. (602) 231-1000

Allied Signal

HAND-DELIVERED

November 16, 1988

Mr. Jim McDonald
Department of Environmental Quality
Room 400A
2005 North Central Avenue
Phoenix, Arizona 85004

Subject: DRAFT PHASE I REPORT,
EASTLAKE PARK AREA

Dear Mr. McDonald:

This letter and the enclosures provide the comments of Allied-Signal Aerospace Company ("the Company") to the subject draft report. Garrett Engine Division ("GED") was formerly known as Garrett Turbine Engine Company. Other divisions of the Company will provide additional site-specific comments.

I Summary of Comments

We are in agreement with the report to the extent that it concludes that further study is required before the extent of the contamination and the sources can be determined. We do not disagree that high priority sites requiring further study should be listed, provided the reasons for designating those sites are factual and consistent, and the list is comprehensive.

In this regard we do not believe that the interests of the State are best concerned by designating a mere twenty-two sites as the highest priority for further study. The list should be greatly expanded, especially in the airport area.

A-5 Since the report does not provide enough information to reach any conclusions with respect to the extent of the contamination or the possible sources, designation of parties as "potentially responsible parties" is premature. Use of the terms "potentially responsible parties" and "PRPs" should be deleted.

The Company is concerned by the fact that it has found many deficiencies, incorrect statements, and inconsistencies in the report, both with respect to GED, and generally. These are detailed below and in the enclosures.

A-6 The management and study of what is now know as the Eastlake Park Area could be greatly facilitated if it was separated into smaller study areas. We encourage the ADEQ to take such action.

As of this time we do not believe there is any reason to believe that the Company has contributed in any manner to any groundwater contamination in the area. However the Company desires to cooperate with the State and other companies in the airport area, and "upgradient", to determine the nature and extent of any contamination, and the appropriate PRPs.

II Deficiencies, Incorrect Statements, and Inconsistencies

There are too many deficiencies, incorrect statements, and inconsistencies in the report to specify them all in any detail. The most important are highlighted in this letter and further explained along with others in Attachment A. Those relating to the GED site are discussed separately.

A-7 A. Insufficient Number of Highest Priority Sites. There is an insufficient number of the highest priority sites designated in the report. This is true generally, and especially with respect to the airport area. None of the many past or present airport tenants are listed such as fuel suppliers, airline maintenance building tenants, airlines, fixed base operators, etc. See Attachment A-1.

A-8 B. Listing of Net Worth. Listing of net worth for the highest priority sites does not provide any relevant or useful information and is inflammatory. High priority sites should be selected based upon past practices and potential for being a source of contamination, not net worth. Whether the present owner of the site can pay for its share of the cleanup, if any, is not relevant at this stage of the investigation.

The information is also highly inflammatory. It causes public and Government opinion to focus upon the companys that have the capability of paying for extensive investigations and cleanups and not those that are responsible for the contamination.

A-8 Since responsibility under applicable laws and regulations is based upon contribution to the contamination, and not ability to pay there is no reason to include the net worth in the report. It should be removed. It can always be provided separately. See Attachment A-2.

A-9 C. Technical Concerns. There are numerous technical concerns regarding the sampling methodology and reporting of the results. Because of these concerns the results from the sampling described in the report are of questionable validity. Where the concerns can be alleviated by clarifying the report this should be done. See Attachment A-3.

A-10 D. Size of Study Area and Locations of Contamination. For efficient administration, study, and cleanup, the Eastlake Park study area is much too large. We have not seen any evidence indicating that there is one large plume containing one or more contaminants extending through the entire study area. Either nine (Executive Summary) or eleven (Page 4-2) areas of contamination have been identified. Significantly none of those areas are both downgradient and in close proximity to either GED or the airport. The Eastlake Park Area should be separated into individual study areas surrounding each area of known contamination. The owners/operators of the higher priority sites in each area should be encouraged to do further study to determine the extent of the contamination and the appropriate PRPs. See Attachment A-4.

III Garrett Turbine Engine Company Description

A-11 The summary describing the Garrett Turbine Engine Company site contains an unreasonably large number of incorrect and inflammatory statements. Its ranking as a highest priority site is not consistent with the methodology for ranking facilities described in the report. Other than the fact that GED is a user of certain of the chemicals found in certain locations in Eastlake Park there is no reason to list GED as one of the highest priority facilities. Each of these issues is discussed below and in more detail in Attachment B.

A-12

A. Field Investigation. Section 5.1.2 of the report seems to state that the field investigation was to review general housekeeping practices and to rate facilities with poor housekeeping practices, such as discharge of containerized fluids into the dry wells and stained ground around chemical storage areas, with a single asterisk. The field investigation section of the summary does not reference any practices of GED, good or bad, other than use of underground storage tanks. A priority ranking based upon the field investigation information is inconsistent with the methodology described.

B. Questionnaires and Compliance. The information contained in this section does not relate to the questionnaire and/or compliance, and is incorrect and inflammatory.

A-13

The first sentence of the section references "ADEQ RCRA Eastlake Park investigations" to determine PRPs. However the only such "investigation" that the Company could locate in ADEQ files and in communications with ADEQ personnel was a "Survey" of sites prepared by John Shepherdson several years ago. Its purpose was to "prepare a list of possible sources of groundwater contamination". It is a list of over 600 companies in the Eastlake Park Area organized by business type. It is hardly an investigation.

Other highest priority companies such as Arvin Industries, Capitol Engineering, Deer-O Paints, and Southern Pacific are listed in the survey, but their summaries do not indicate that the ADEQ had determined that they were PRPs! All references to the RCRA "investigation" should be deleted, or it should be properly described as a list of over 600 companies.

A-14

Similarly, the statement that GED was purportedly suggested for further study as part of the zipACIDS investigation is incorrect and inflammatory. The zipACIDS list is a list of companies "subject to investigations" or which have been investigated. The list dated June 1, 1988 indicates that GED was investigated January 17, 1983. The ACIDS file for the GED site includes a report of that investigation.

A-14 The report finds that the facility was in compliance. There is no other report in the file. The statement that GED was suggested for further study is incorrect and should therefore be removed.

The foregoing are just two examples of the gross misstatements and inaccuracies contained in the GED site summary. See Attachment B for a description of additional inaccuracies. The inaccuracies must be removed.

C. Proximity to Elevated Chemical Concentrations. Section 5.1.4 of the report states that facilities that were included in the higher priority group because of poor housekeeping practices and/or use of chemicals found in the groundwater were elevated to the highest priority if they were upgradient or overlying areas of groundwater contamination. The summary states that GED is approximately 1.3 miles upgradient of Well 11baa which is contaminated with solvents.

A-15 This statement is totally misleading. Possible contaminants from the GED site would have had to migrate perpendicular to the groundwater flow (as shown on the various tables contained in the report) to reach that well site. Since Well 10aa approximately 3000 feet downgradient from Well 11baa does not indicate any contamination, the contamination detected by Well 11baa is either contained in a small area or is at the southwest edge of a larger area of contamination extending from the northeast. See Page 4-5 of the report.

The above information from the Kleinfelder report clearly indicates that the contamination detected in Well 11baa could not have come from the GED site. This is a further example of the misleading and inflammatory statements contained in the report to justify including the GED facility as a highest priority facility.

Other than GED's use at certain times of certain of the subject chemicals there is no other evidence that it may have contributed to the groundwater contamination. If the only reason for classifying

A-15 GED as one of the highest priority facilities was merely its use of certain of the chemicals found in certain parts of the Eastlake Park Area, then the report should be forthright enough to indicate that.

IV Conclusion

A-16 There is insufficient information contained in the Kleinfelder report to conclude that any party should be designated as a PRP for any part of the Eastlake Park Area. The only exception are those companies that have already been determined to be Responsible Parties based upon site-specific investigations.

A-17 The State of Arizona should encourage the companies surrounding areas of known contamination that are possible sources of contamination (due to past or present use of the applicable chemicals) to investigate the extent and nature of that contamination and to determine the appropriate PRPs. The ADEQ can best do this by separating the Eastlake Park Area into smaller more manageable study areas surrounding each plume of known contamination and by increasing the number of highest priority sites.

Allied-Signal Aerospace Company because it is a visible user of many chemicals (and not because of any belief that it has contributed to any groundwater contamination) is willing to work with other companies in the airport area and upgradient to determine if there is any contamination extending from that area, and if contamination is found the appropriate PRPs.

Sincerely,

Malcolm E. Craig
President

MEC:JHW:fm

Enclosure

cc: Roger K. Ferland, Esquire
Streich, Lang, Weeks & Cardon
100 West Washington Street
Phoenix, Arizona 85003

Kleinfelder
Suite 101
4920 East McDowell Road
Phoenix, Arizona 85008

ATTACHMENT A-1
INSUFFICIENT HIGH PRIORITY SITES

A-18 1. Why wasn't the Arizona National Guard Base on the south side of Sky Harbor Airport and the owner & operator of many large volume UST's since the 1950's even considered in this study?

A-19 2. The EPA document for identifying potentially responsible parties (PRP's) was referenced once in the report. Did ADEQ follow this procedure established at the federal level or did they use some other Non-EPA approved method? The report is unclear on this point. The EPA document was not included in the list of references in Section 9.

ATTACHMENT A-2
LISTING OF NET WORTH

A-20 1. Why weren't the 22 companies rated based on a financial analysis from one source. Using different sources of information, in this case 5, does not allow an accurate comparison since different sources use different formulae to calculate this figure. We have attached a compilation of the Dun and Bradstreet net worth rating of 15 of the same 22 companies; this is the only way that an accurate comparison can be made.

A-21 2. Why was APS given a net worth of Not Applicable? It can be found under Pinnacle West Capitol Corporation.

A-26 5. The report states on page 4-5 that at the 24th Street and Van Buren Street sampling location up to 1 ppb freon was detected. Which freon is this? Page 4-3 lists trichlorofluoromethane (Freon 11) as an observed organic constituent, but Freon 113 is also listed as being present at the 48th Street and McDowell sampling location. This should be clarified. Additionally, can the detection of 1 ppb be reported with any confidence? The detection limit printed on the ATI analysis sheet is 2.0 ppb for trichlorofluoromethane (Freon 11) in water and ranges from 10 ppb to 100 ppb for soils, in which case 1 ppb is below the detection limit. There are no analyses listed for Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane) in this report.

A-27 6. The groundwater sampling results summary, table # 4-4 on page 4-11 indicates that the well samples were tested for Iron. This may introduce a source of error, since most wells are constructed with steel or block iron casings, the casing is typically the source of the Iron and accurate levels of Iron in the groundwater cannot be obtained this way.

A-28 7. On page 4-17, table 4-4 (continued) the summary of the E.P. Toxicity detected metals lists copper as an EP Toxic metal with a maximum allowable concentration of 1 ppm. As far as we are aware, the EPA has not defined copper as an EP toxic metal.

A-29 8. The report indicates that the Federal Maximum Contaminant Levels (MCL's) and Arizona Action Level guidelines were used as standards to determine the areas of contamination. However, the eleven areas of contamination appear to have been identified based on the detection limits of the chemical analyses. This is inconsistant since detection limits are not always the same and in most cases are well below the concentrations of the MCL's or the Arizona guidelines. The State needs to establish a consistent basis for determining whether or not contamination exists.

A-30 9. Only 8 of the 17 proposed wells were sampled. The report should address whether these wells will be sampled at a later date.

A-31 10. Page 3-10 states that additional water samples were taken at the point of surface water runoff from the paved area at Sky Harbor Airport. What does this have to do with groundwater? This water may not ever even be recharged to the groundwater. Also, it is not clear which analyses correspond to these samples. What were the results from these samples?

ATTACHMENT A-3
TECHNICAL CONCERNS

A-22

1. Page 3-10, dealing with the sampling methodology, states that the sampling equipment which came into contact with water was cleaned by one of two procedures, either by steam cleaning or by using a wash procedure involving a triple rinse using methanol. There are three problems with this:

   - Since the sampling method is not consistent a source of error has been introduced.

   - Using methanol as an equipment rinse introduces another source of error. Using an organic solvent to rinse sampling equipment used to take samples to be tested for organics is bad practice. Organic solvents such as methanol often contain trace amounts (or artefacts) of other organic solvents.

   - At the very least the methanol rinseate should have been analyzed for the same constituents as the soil and water samples. Page 3-15 states that groundwater sampling rinseates were analyzed but does not mention if it was from the steam cleaning or from the methanol triple rinse procedure. Apparently none of the soil sampling rinseates were collected and checked for contamination. There is no mention that the rinseate materials (steam, distilled water or methanol) were analyzed prior to use to insure that they were not a source of contamination.

A-23

2. The soil sampling procedure on page 3-12 states that soil samples to be tested for E.P. toxic metals were taken using a stainless steel auger. Stainless steel contains chrome, one of the metals tested for in the E.P. toxic metals analysis. This is not a recommended sampling practice as it may introduce a source of error.

A-24

3. The report states on page 4-4 that at the 40th Street and Salt River Channel sampling location, levels of up to 331 ppb dichlorobromine was detected. We can find no reference to such a compound in the literature a further explanation should be provided.

A-25

4. Page 4-3 lists 1,1-dichloroethane and trans-1,2-dichloroethene as observed organic constituents. The report states that at the 40th Street and Salt River Channel there are detectable levels of 1,1-dichloroethene, 1,2-trans-dichloroethene <u>and</u> dichloroethene, which one? This is confusing and should be clarified.

EASTLAKE PARK SITE
FINANCIAL STATUS
HIGHEST PRIORITY FACILITIES

		Dunn and Bradstreet
1	Allied-Signal Garrett Turbine Engine Company	$1,582,000,000
2	ITT Corporation ITT Cannon	$7,819,511,000
3	Motorola Inc. Motorola Semiconductor Sector	$3,008,000,000
4	Southern Pacific Southern Pacific Transportation Company	$2,008,794,000
5	Arvin Industries, Inc. Arvin Industries, Inc.	$348,561,000
6	Handy & Harmon Electrical Handy & Harmon Electrical Materials Corp.	$111,950,000
7	Chemonics Erly Industries, Inc.	$5,761,005
8	Continental Materials Corp. Western Automatic Machine	
9	Tiernay Metals Inc. Tiernay Turbines Inc.	
10	Frazee Deer-O Paints Deer-O Paints & Chemicals LTD.	
11	Arizona Plating & Anodizing Arizona Plating & Anodizing	$2,165,884
12	Quality Printed Circuits Quality Printed Circuits	$1,658,878
13	Capitol Engineering Company Capitol Engineering	$1,003,438
14	National Metals National Metals	$1,506,499
15	Bexton Equipment 40th Street Landfill	$206,405
16	Custom Circuits Custom Circuits	$261,352
17	Avis Rent-A-Car Systems Avis Rent-A-Car	$52,467,000
18	Pinnacle West Capital Corp. Arizona Public Service	$2,409,301,000
19	City of Phoenix City of Phoenix Sky Harbor Airport	
20	City of Phoenix Estes Landfill	
21	Maricopa County Maricopa County Equipment	
22	Salt River Project Salt River Project	

Prepared by Allied-Signal Aerospace Co. November 4, 1988

A-32 11. On page 4-8 the report states that the result of groundwater sampling indicated the presence of elevated (above background) levels of VOC's in four locations, but no reference level is sited. What is the reference for background levels of VOC's?

A-33 12. Table 4-2 on page 4-10 bears the title "Volatile Organic Compounds (VOC's) Detected" yet the results indicate that none of the wells had detectable levels of Bromodichloromethane or dibromochloromethane. Why are these 2 chemicals listed as having been detected?

A-34 13. Table 4-4 on page 4-17 cites the soil cleanup levels for Tetrachloroethane as 0.067 mg/kg, yet in three of the five samples the analytical result is given as less than 0.100 mg/kg. Why is the detection limit greater than the cleanup level?

A-35 14. The distribution of chemical contamination could be presented in a much clearer fashion by the use of isoconcentration contour maps. Why was this not done?

A-36 15. Several errors were observed in the chain of custody reports included in Appendix C. On several sheets the sample matrix was never filled out, so it is difficult to tell if the sample was soil or water. Some sheets requested E.P. Tox metals on water samples which were never done.

A-37 16. On the soil samples primary drinking water standard metals and general minerals were tested for, contrary to the sampling and analysis plan. Other, important soil characterization parameters such as cation and anion exchange capacities were not performed.

A-38 17. Soil sample analyses were reported as mg/l but should be reported as mg/kg. Why was total dissolved solids (TDS) analysis performed on soil samples? (Refer to ATI I.D.: 808135).

A-39 18. Specific sample I.D. numbers are not printed on all the analysis report forms (ATI I.D.: 808135). How were these analyses identified?

A-40 19. In numerous cases the results for the magnesium and calcium results do not add up to the total hardness result. This appears to be in error. Total hardness is defined as the sum of the calcium and magnesium concentrations.

ATTACHMENT A-4
STUDY AREA SIZE AND AREAS OF CONCENTRATION

1. The Final Summary Report on Eastlake Park issued by Kleinfelder in April 1988 details in Plate #2 "Regional Geology & Hydrology" the outline of eleven approximate areas of groundwater degradation. All these areas together cover a total area of less than 4 square miles; what is the basis, then, for the 22 square mile delineation of the Eastlake Park Study Area.

2. Two of the contaminated areas, Central Avenue & Thomas Road and 40th Street and Thomas Road are at the Northern most edge of the study area, since the report indicates that groundwater flow is to the West and Southwest and the closest of the highest priority facilities is over a mile to the South, none of these facilities could have contributed to the groundwater degradation. Why were these 2 sites included in Eastlake Park?

A-41

3. Of the 22 facilities on the highest priority list, 21 of them are located to the South of Van Buren Street. Since Van Buren is approximately the dividing line between the North and South halves of the Eastlake Park Study Area, why was the upper half included? 95% of all the highest priority facilities are located in 50% of the study area.

ATTACHMENT B

The following comments refer to the summary of Garrett Engine Division (GED) on page 5-28:

A-42 1. The study indicates that there are 27 underground storage tanks on site. Garrett originally had 27 UST's but the number has been reduced to 26 UST's, ADEQ was notified of this fact on November 23, 1987.

A-43 2. The report states that field investigations confirmed underground storage tank usage. We do not believe that the purported field investigation, if any, could have been more than a "drive by". This facility as a defense contractor is required by the Department of Defense to restrict access onto the facility to employees and escorted visitors only. The only way a field investigation could have been performed is with an escort by Garrett personnel and while Garrett would gladly consent to ADEQ personnel or their consultants visiting the facility, no request to do so by anyone associated with the Eastlake Park Area Study has ever been made.

A-44 3. The report states that the SARA files indicated "extremely hazardous substances" are stored on site. This statement is misleading and irrelevant, none of the extremely hazardous substances referred to (NH_3, Cl_2, HF, HNO_3, KCN NaCN or M_2SO_4) are chemicals which have been found to make up the contamination in the Eastlake Park Area.

A-45 4. The statement is made that in 1981 Garrett had "manifest problems" but does not explain that the problem was simply a clerical error made in numbering the manifest. The report appears to imply that there was a technical problem such as making shipments without a manifest. It should be mentioned that the errors were immediately corrected as soon as they were discovered.

A-46 5. The report states that in 1984 an unknown volume of TCE was spilled on site. The report should mention that this spill of no more than 40 gallons was reported to ADHS at the time, and was cleaned up with the approval and participation of Ted Blackburn, Environmental Health Specialist for the Arizona Department of Health Services. The cleanup cost over $ 250,000 and required the removal of over 430 cubic yards of soil.

A-47 6. The report states that the questionnaire returned by Garrett did not provide information pertaining to the 34th Street site. An applicable questionnaire was mailed from Philip Li to Don Atkinson by Certified mail on July 29, 1988.

A-48 7. The study states that Garrett is located approximately 1.3 miles upgradient of well (A-1-3) 11baa which has observed levels of chemical contaminants. This statement is contradictory. Figure 3 indicates that groundwater flow in the area is to the West and Southwest, yet this well is located to the Northwest. Why weren't the wells (A-1-3) 11aaa and (A-1-3) 12baa sampled, these are much closer to the 34th Street site.

A-49 8. The statement "subsequent sampling of the wastewater stream contained as much as 244 ppb TCA in July of 1988 and 23.4 ppb 1,2 DCA in March of 1988" is incorrect. According to our records, three TTO samples (TCA and 1,2 DCA are classified as TTO's) were taken and analyzed on July 19, 20 and 21, 1988, results for TCA were 14 ppb, 22 ppb and 15 ppb respectively. Furthermore, Garrett is permitted to discharge 2,130 ppb of TTO's to the City of Phoenix Sewer System. Lastly, we would like to point out that this data is not relevant since this wastewater is discharged to the sewer system and has no impact on the groundwater in the Eastlake Park area.

A-50 9. The report also states the amount of 97,101 lbs. of TCE was used by Garrett during 1985. We would like to clarify this; Garrett only used TCE as refrigerant in a closed loop refrigeration system. Due to 1984 spill, Garrett spent 1.5 million dollars to renovate the refrigeration system and phase out TCE as the refrigerant. The 97,101 lbs. of TCE was sold to out of state recycling facilities.

A-51 10. The preliminary list of facilities identifies Garrett Turbine Engine Company facility at 111 S. 34th Street by I.D. number 0-002227. What is this number? The list also indicates that on October 13, 1988 there was an ADHS inspection which indicated manifest problems. No such inspection was performed on this date, this is most likely a typographical error and refers to the October 1981 manifest clerical error.

Arizona Plating & Anodizing Co.

BUMPER RECYCLING

- ALL MAKES AND MODELS
- STEEL AND ALUMINUM
- TO O.E.M. SPECIFICATIONS

NOV 1988
RECEIVED
Office of
Waste Program

November 16, 1988

Arizona Department of Environmental Quality
2005 North Central Ave. # 400A
Phoenix, Az. 85004

Atten: Jim McDonald
Don Atkinson

Gentlemen:

In responce to your letter of October 14, 1988 we have the following comments to make concerning Arizona Plating & Anodizing's inclusion in the "Draft Phase I Report, Eastlake Park Area of Phoenix.

B-1 Literature & Records Search: Chemicals are not "stored" by this company. It would be impractical to inventory these materials from a financial standpoint, as well as storage, when they can be purchased from the manufacturer, Chemix at 433 South Central, Phoenix, Arizona. The Chemix Company is located only two blocks from us and delivers to us as needed.

B-2 Field Investagations: Empty drums marked "containing hazardous materials" are rinsed with water and the residue is added back to our tanks. The drums are temporarily stored and then returned to the vendor for a deposit refund, or in the case of non-deposit containers, returned for reuse by the manufacturer as in the case of Chemix, as mentioned above. Also on the premisis are drums containing muratic and sulphuric acids, and other additives used in our processes, none of which are the subject of this investigation. They also are marked as hazardous materials.
It is not clear what consitutes the "miscellaneous metal storage" referred to under this heading, unless it is a reference to steel automobile and truck bumpers kept on skids ready to be processed, or a tank containing solvent obtained from Western States Petroleum for the purpose of cleaning oil from bumpers. (See attached Material Safety Data Sheet from Western States Petroleum.)

618 SOUTH CENTRAL AVENUE • PHOENIX • ARIZONA 85004 • (602) 252-4931

ARIZONA PLATING & ANODIZING (cont.)

Questionaires & Compliance:

B-3 1- We are aware of procedural code violations outlined in Tom Chisholm's letter from the Arizona Department of Health Services of June 11, 1986. A copy of our letter of August 15, 1986 responding to him is attached.

B-4 2-Neither Joe Eulate of this company, or myself are aware of a letter from the Attorney General, or of any ruptured drums permitted to leak on our property. To further verify this, we talked at length this morning with Mr. Bob Kokesh of Loveland, Co., formerly of this company. He states that he does not know of any time that there were leaking drums in the past, nor does he recall anything of this nature being stated or written to him.

B-5 3- The information regarding 100 gallons of methylene chloride and 110 gallons of toluene on site is erroneous. While it is conceivable that at any given time there may be drums of chemicals that have been delivered, but not yet dumped into the tanks, the statement that they were permanently stored here is wrong. As mentioned previously, it is not feasible to store it or have money tied up in inventory when it is so readily available. We have never had a pure solution of either methylene chloride or toluene. The methylene chloride mentioned is a component in a solution we use, as is toluene. For the past one and one half years we have used a surface primer, and a lacquer thinner that contains an amount of toluene. We use approximately five gallons per month of the primer and thinner combined.

B-6 4- We wish to correct misinformation concerning what was termed the spill of "4000 gallons of chromium." On an evening shift a pump on a chrome tank ruptured. A minimum amount of the chromic solution was spilled while the pump was being shut off. Instead of cleaning up the spill from the floor, a garden hose was used to flush it outside into the alley, diluting it still further. The next morning when the incident was discovered the Fire Department Hazardous Materials Unit was called. They took some soil samples for analysis, and subsequently we had Chemical Waste Management of 2301 West Broadway Road, Phoenix, Az. 85041, remove 4000 lbs. of soil to a waste dump in California.

Arizona Plating & Anodizing has made every effort, regardless of time and expense to be in compliance. We have taken samples twice weekly to the City of Phoenix, (now one time per City instructions) and have been in compliance. The City of Phoenix does a random test three times a year and in each case we complied. We have been diligent in making every effort to meet environmental requirements.

Yours Truly,

ARIZONA PLATING & ANODIZING

Gerald Stovall

Gerald Stovall,
President

Encl.

Arizona Public Service Company
P.O. BOX 53999 • PHOENIX, ARIZONA 85072-3999

NOV 1988
RECEIVED
Office of
Waste Program

November 17, 1988

Mr. Jim McDonald
Department of Environmental Quality
Room 400A
2005 North Central Avenue
Phoenix, Arizona 85004

REFERENCE: DRAFT PHASE I REPORT, EASTLAKE PARK AREA

Dear Mr. McDonald:

This correspondence is intended to provide you with Arizona Public Service Company's (APS') comments on the Draft Phase I Report of the Eastlake Study Area, dated October 1988. This Draft Report identifies the APS facility at 501 South 1st Avenue as a potential source of ground water contamination within the Study Area. The report additionally identifies the same APS facility as one of the 22 "Highest Priority Facilities".

APS appreciates the opportunity to comment on the Draft Report. We hope our comments will provide information that is useful to ADEQ in finalizing the report.

We are concerned, however, that ADEQ has allowed itself only eight days from the close of the comment period on November 17, 1988 in which to consider comments submitted by interested parties. Considering the magnitude of this project, its importance to affected entities and the public in general, APS believes that a longer period of time is warranted. We believe that the short review time undermines the study's credibility. We, therefore, ask that ADEQ consider extending its deadline for publication of the Final Phase I Report from November 25, 1988 by <u>at least</u> 30 days to allow for a fair consideration of public input on this matter.

Please feel free to contact me at 371-6450 or Tom Owen at 371-6465 if you have questions regarding this information.

Sincerely,

Walter L. Bouchard
Manager, Environmental Department

Enclosure
(H662)

ARIZONA PUBLIC SERVICE COMPANY COMMENTS
EASTLAKE PARK STUDY AREA
DRAFT PHASE I REPORT

EXECUTIVE SUMMARY

C-1 A review of the various reports prepared by ADEQ's consultant, Kleinfelder, regarding groundwater contamination in the Eastlake Park Study Area reflects significant factual inaccuracies as the reports relate to Arizona Public Service Company's facilities situated in the Study Area. These inaccuracies undermine the conclusion that APS is a potentially responsible party with respect to contamination in the Study Area, because, contrary to statutory requirements contained in the Environmental Quality Act, these facts do not establish that any hazardous substance identified as a groundwater contaminant in the Study Area was released from APS' facilities. APS' review of those reports was hampered, in part, by limitations placed upon it regarding access to data developed in support of the reports.

C-2 ADEQ's approach to identifying potentially responsible parties fails to meet the mandate of the WQARF Program statues. Central to the notion of responsibility for groundwater contamination is the requirement that a hazardous substance has been released from a facility owned or operated by a potentially responsible party. Not only does ADEQ's analysis fail to establish a release from APS' 501 facility, but the agency's approach completely avoids the issue. ADEQ has merely outlined an area alleged to be contaminated, has then looked for industrial activities in the area, and then has presumed that the contamination originated from these locations without any factual basis which supports that a release has in fact occurred at the APS 501 facility. This approach violates the requirements of A.R.S. 49-283.A.

C-3 The effects of this faulty approach are compounded by the inexplicably short period ADEQ has allowed itself to review comments and factual inputs from interested parties (i.e. eight days beginning November 17, 1988 and ending November 25, 1988). ADEQ should undertake to extend this review period by <u>at least</u> 30 days in order to factor into the report all necessary information which may be useful to the agency in fulfilling its obligation to identify the source(s) of hazardous substance releases in the Eastlake Park Study Area.

DISCUSSION OF COMMENTS

I. PRELIMINARY CONCERNS

a. Data Inaccuracies

C-4 Appendix A of the Draft Phase I Report identifies five APS facilities within the Eastlake Park Study Area. Two of these listings are duplicates, the 501 South 1st Avenue and the 501 South 2nd Avenue. The correct street address for the APS facility is 501 South 2nd Avenue. This address is used by APS for properties at both 501 and 502 South 2nd Avenue. The 501 South 1st Avenue address corresponds to a vacant lot between 1st Avenue and Central Avenue which is not owned by APS. Additionally, the names and phone numbers for contacts for all APS facilities should be Walter L. Bouchard, Manager, Environmental Department, 371-6450 and Tom Owen, 371-6465. APS requests this information be corrected in the Final Report.

b. Limited Access to Information

C-5 APS is concerned that the field notes and other compiled information for the 501 South 2nd Avenue facility compiled by ADEQ's consultant, Kleinfelder, were not made available for review prior to the deadline for comments. Without this information it is impossible to provide informed comment or clarification on specific information relied upon by ADEQ and its consultant in reaching the determination that APS' 501 South 2nd Avenue facility is a "Highest Priority Facility". For that matter, without access to information compiled by Kleinfelder, it is hard to understand, on the face of the draft, how ADEQ concludes that APS' activities at the 501 South 2nd Avenue have contributed to contamination in the Study Area.

c. Insufficient Time for Review

C-6 APS is also concerned ADEQ has scheduled completion of the Final Phase I Report for November 25, 1988 only eight days after the end of the comment period. APS does not believe this short review period provides sufficient time for ADEQ to meaningfully consider and address comments the Agency receives.

d. Underground Storage Tanks

C-7 APS wishes to correct information provided to ADEQ in responding to the Eastlake Park Study Area questionaire. There are currently four underground fuel storage tanks in use at the "501 Complex", not three as previously reported. The foruth is a 4000 gallon diesel tank for the auxillary power generator. The tank is physically located at 502 South 2nd Avenue. The tank has been tested and found not to be leaking.

II. THE DRAFT REPORT FAILS TO ESTABLISH THAT THE 501 PREMISES CONTRIBUTED TO GROUNDWATER CONTAMINATION IN THE EASTLAKE PARK STUDY AREA

APS believes identification of the facility at 501 South 2nd Avenue as a "Highest Priority Facility" is inappropriate. For the following reasons, We request that the site's designation be changed to accurately reflect its character as a facility which in fact has not been shown to have contributed to any contamination identified in the Study Area. APS believes the following summary comments support removing the 501 facility from such identification:

C-8

- The Draft Report incorrectly identifies well (A-1-3) 8caa as being within the 501 facility's boundaries. The well in question appears to be located to the east of the APS 501 South 2nd Avenue property. As located, the well is upgradient from the APS facility, therefore any conclusion drawn with respect to APS' 501 facility based upon samples allegedly taken from a well on APS's property is flawed.

C-9

- Contrary to the information contained in the Draft Report, APS is not presently engaged in an investigation regarding underground storage tanks at the 501 South 2nd Avenue facility.

C-10

- The four tanks in service at the 501 facility were tested in January and August 1987, and have not been found to be leaking.

C-11

- Kleinfelder claims that APS has employed an "extremely hazardous substance" at the 501 facility, creating an inferrence that such activity contributed to groundwater contamination.

  (a) The Draft Report fails to identify the basis upon which Kleinfelder has concluded that those substances were released or otherwise discharged at the 501 facility. Moreover, the "extremely hazardous substance" used at the 501 facility is sulfuric acid. Sulfuric acid is not an organic compound and is not identified as a constituent of concern in groundwater contamination within the Study Area.

C-12

  (b) No where in the Draft Report does Kleinfelder identify that APS has released or disposed of any

C-12 of the constituent contaminants at the 501 facility.

C-13 o The 501 South 2nd Avenue facility is paved with asphalt and/or concrete. Therefore, assuming for argument's sake a spill of a hazardous substance occurred at the premises, it is highly unlikely that the event would result in groundwater contamination.

III. THE DRAFT REPORT FAILS TO SATISFY THE BURDEN OF PROOF PLACED ON ADEQ BY LAW TO ESTABLISH RESPONSIBILITY FOR GROUNDWATER CONTAMINATION

ARS 49-283.A.1 provides that:

"[f]or purposes of imposing liability under this article,... a person is deemed the party responsible for the release or threatened release of a hazardous substance if the person:

1. Owned or operated the facility:

(a) When the hazardous substance was placed or came to be located in or on the facility.

C-14 (b) When the hazardous substances was located in or on the facility but before the release.

(c) During the time of the release or threatened release."

Woven throughout this provision is the implication that a release of a hazardous substance has occurred in or on the facility. This is a necessary predicate to establishing one's liability as a responsible party. ADEQ has not indicated anywhere in the Draft Report or its associated reports that a release of a hazardous substance did occur at APS' 501 facility. ADEQ instead attempts to satisfy this requirement by innuendo, premised on flawed facts and faulty logic.

For instance, it is presumed that groundwater beneath the 501 facility is contaminated based upon sampling of a well which is alleged to exist on the premises. In fact, it does not. Moreover, the inferred location of the well is up gradient of the APS 501 facility. It is highly unlikely that any contamination that might have originated at the 501 facility would flow up C-15 gradient to this well. More than likely, any contamination which can be identified under the 501 facility (without conceding that there is indeed contamination), originated off site and migrated under APS' property. ADEQ appreciates the predicament that innocent landowners face under these circumstances, for it issued a draft guidance dealing with factors to be considered when dealing with migratory contamination.

C-16 Next, the Draft Report infers that APS must have contributed to groundwater contamination in the Eastlake Park Study Area because of the presence of underground storage tanks at the 501 facility as well as the storage of batteries which contain sulfuric acid, considered to be an "extremely hazardous substance". Nowhere has the Agency presented facts which establish that any hazardous substances alleged to be found in groundwater were released from these installations and storage areas at the 501 facility.

C-17 In short, ADEQ's approach to imposition of responsibility departs from the WQARF statutory requirements. The Agency has not identified discrete releases of hazardous substances from APS facilities within the Eastlake Park Study Area. Rather, it has outlined the Area and looked for industrial installations in the Study Area with the intention of imposing liability merely on the fact that they are situated therein, and by implication must therefore be responsible for local contamination. Not only is this approach at odds with the facts, it offends the clear mandate of the statute that a release or threatened release first be identified from a facility before the owner or operator can be held responsible. APS objects to this approach. Further, APS requests that it be removed as a potentially responsible party on the ground that there is no evidence supporting a conclusion that a release of hazardous substances has occurred from the 501 facility.

Specific comments below provide additional information related to the APS 501 South 2nd Avenue facility and the two public ADEQ reports on groundwater contamination in the Eastlake Park Study Area.

IV. SPECIFIC COMMENTS - EASTLAKE PARK AREA FINAL SUMMARY REPORT

C-18 The Final Summary Report which accompanies the Draft Report indicates five wells located near the APS 501 South 2nd Avenue facility: (A-1-3)8caa, (A-1-3)8acd, (A-1-3)8acc, (A-1-3)8dbc, and (A-1-3)8dcb. The well locations presented on Plate 3 of the Summary Report indicate all five wells are to the east of the APS 501 facility. The groundwater gradient in the area is west to southwest, therefore, all five of these wells are located up gradient of the APS 501 facility. Taken together with the facts addressed above in Section II of of these comments, this suggests that any contamination which may exist beneath the 501 facility probably originated up gradient of the facility. The Summary Report does not identify any wells in the Eastlake Park Study Area down gradient of the APS 501 facility which might be useful in identifying the introduction of contamination, if any, from the facility. APS believes using data from wells up gradient from its 501 facility to implicate the premises as a source of groundwater contamination is contrary to the facts presented elsewhere in the reports and constitutes an arbitrary, capricious determination unsubstatiated by the facts.

Moreover, it is curious Appendix B of the Summary Report does not provide any construction information for the five wells; and well (A-1-3)8caa is not included in the well master list used for the study. An APS field investigation was unable to physically locate the well in the area indicated by Plate 3. This leads us to question whether well (A-1-3)8caa exists at all.

The Final Summary Report does not include a tabulation of data from three of the five wells nearest the APS property. Data in Appendices B and C are only presented for wells (A-1-3)8dcb and (A-1-3)8acd. Plate 3 provides some partial data for well (A-1-3)8caa (benzene, toluene, xylene, and ethylbenzene). The source of this data is not identified, nor is the data presented in the data tabulations of Appendices B and C. Without a more definitive explanation, the existence and source of contamination cannot be established or confirmed using this data.

Only one set of data is reported for well (A-1-3)8dcb (site no. 3053). This data was obtained from a sample collected September 28, 1984. Similarly, only one partial set of data is reported for well (A-1-3)8acd (site no. 3054). This data was obtained from a sample collected September 26, 1986, apparently by the Arizona Department of Transportation. The Final Summary Report does not identify who collected these samples, the sampling and the accuracy of laboratory techniques, chain of
C-18 custody, or the validity of results and, therefore, is of questionable value in establishing responsibility for contamination.

APS cannot begin to assess the impact or validity of the analytical data relied upon by ADEQ as it pertains to the 501 South 2nd Avenue facility without additional information regarding sampling methodology, conditions, and history, analytical methods, and well construction data. APS requests that ADEQ provide this additional information regarding the credibility and reliability of these data and for all other analytical data in the Final Summary Report and the Draft Phase I Report as is relied upon to infere APS' responsibility for groundwater contamination allegedly originating from the 501 facility.

V. SPECIFIC COMMENTS - EASTLAKE PARK AREA DRAFT PHASE I REPORT

It is unclear in the Draft Report how the ADEQ criteria for listing facilities suspected of contributing to groundwater pollution in the report has been applied. The Draft Phase I Report identifies the APS 501 South 2nd Avenue facility as being
C-19 within the "Central Avenue and Lincoln Street" area. This identification is consistent with the Final Summary Report, dated April 1988. Groundwater contamination in this area is suspected to arise from petroleum fuels.

C-20 The APS facility is the only "Highest Priority Facility" identified by ADEQ in the Draft Phase I report that lies within the Central Avenue and Lincoln Street area. However, a nearby facility, currently in a remediation program related to a confirmed fuel leak, is identified within the "Central Avenue between McKinley Street and Buckeye Road" area. This designated area is not identified or discussed in the Final Summary Report. Groundwater contamination in this area is identified as arising from chlorinated organic compounds.

APS is concerned by these apparent inconsistencies in facility classifications within the Draft Phase I Report. The report as written implies APS is the only suspected facility responsible for fuel-derived contamination that; 1) actually finds its source up gradient from the 501 facility, and 2) is based on a well and analytical data of unknown origin.

C-21 As previously discussed, Appendix A includes two listings for the 501 South 2nd Avenue facility. ADEQ has assigned different ratings to the same facility within this listing. The listing for "501 South 1st Avenue" indicates the facility is a "Highest Priority Facility". However, the listing for 502 South 2nd Avenue which is part of the 501 Complex (which includes the 501 South 2nd Avenue property) indicates the facility has not been assigned any priority. Moreover, the questionnaire APS submitted to ADEQ for the 501 Complex, clearly indicated the information was prepared for the entire complex (including both the 501 and 502 facilities). There is no substantial evidence supporting a differentiation between these two parts of the 501 Complex.

C-22 APS requests that ADEQ again review this information within the report to ensure designation of facilities within study areas accurately reflects and considers proper factual information, including that contained in these comments. APS further requests the Final Report include more detailed information identifying the rationale and matrix rating factors specific for all "Highest Priority Facilities" and other listed facilities than is presented in Appendix A of the Draft Phase I Report.

VI. THE DRAFT PHASE I REPORT FAILS TO ESTABLISH THAT THE 501 FACILITY IS PROPERLY IDENTIFIED AS A SOURCE OF CONTAMINATION

The following comments are presented specifically in response to information presented on page 5-16 of the report identifying the APS 501 South 2nd Avenue facility as one of the 22 "Highest Priority Facilities". They further establish the identity of inaccuracies and misplaced reliance on facts which do not legally establish or logically substantiate that APS is responsible for contamination of groundwater in the Eastlake Park Study Area. Each comment corresponds to the appropriate section heading contained in the report.

Literature and Records Search:

C-23 APS does store some miscellaneous equipment at the 501 South 2nd Avenue location. This equipment includes portable compressors, line trucks, fleet vehicles, emergency power supply equipment, etc. It is uncertain why the presence of this equipment on site is of concern to ADEQ and how the agency feels its presence has contributed to groundwater contamination.

Field Investigations:

C-24 APS stores drums at the 501 facility, containing motor oils, transmission fluid, and hydraulic fluids related to vehicle and equipment maintenance. The number of drums containing these materials stored on site is less than 20. The drums are placed on service racks or pallets on the site. The 501 facility is paved with asphalt and/or concrete, including all areas where drums and chemicals are stored. This information is confirmed in Table 4-3 of the Draft Phase I report.

C-25 The site does operate four underground storage tanks at 501 South 2nd Avenue (a fifth tank was previously abandoned). These tanks were tested in January and August 1987 and were found not to be leaking. APS maintains inventory controls as required by Arizona law governing underground storage tanks to identify any change in the integrity of the underground storage tanks at the 501 facility.

Questionnaire and Compliance:

APS does store and use an "extremely hazardous substance" on site as defined by EPA's regulations promulgated for the Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA). The substance at 501 South 2nd Avenue is sulfuric acid (H_2SO_4). In compliance with EPCRA, APS provided notice to the Maricopa County Department of Civil Defense and Emergency Services that the 501 facility stores and uses this "extremely hazardous substance".

C-26 Sulfuric acid at the 501 facility is contained in station batteries used in the emergency power supply system for the site. Sulfuric acid is also present in vehicle batteries. The facility does not, however, store sulfuric acid in large containers or drums.

The 501 facility does not store or utilize any other "extremely hazardous substances" on site at or above the regulatory "threshold planning quantities". Taken together with the fact that there have been no releases at the 501 facility, it is not possible that these small quantities could have contaminated groundwater.

C-27 APS has no record of any spills occurring at the 501 facility. The facility is paved with asphalt and/or concrete. Thus, any spill at the facility would be contained at or very near the surface and would not impact groundwater quality.

C-28 There are five underground storage tanks at the facility. One tank was slurried and abandoned in the early 1970s. The four active tanks have been tested and found not to be leaking.

C-29 A major repaving project at this facility provided the opportunity to conduct soil testing during 1987. These soil borings taken at the 501 facility did not indicate the presence of any volatile organic chemicals (VOCs) or leachables. This information has previously been provided to ADEQ on November 18, 1987.

Proximity to Elevated Chemical Concentrations:

The facility is located within the "Central Avenue and Lincoln Street" area described in the Eastlake Draft Phase I Report and the Final Summary Report prepared for ADEQ.

C-30 No monitoring wells exist on the APS property at this location or for that matter, on any APS property located within the Central Avenue and Lincoln Street area. The Draft Phase I report incorrectly identifies well (A-1-3)8caa as located within the boundaries of the 501 facility. APS requests this inaccuracy be corrected.

C-31 The Draft Phase I report identifies well (A-1-3)8caa as having yielded groundwater samples containing elevated levels of benzene, toluene, and xylene. This well is located on maps in the Draft Phase I and Final Summary reports approximately one hundred to two hundred feet (100-200′) to the east of the APS facility. The groundwater gradient in the area is reported to be west to southwest meaning that the 501 facility is down gradient from the well. Therefore contamination allegedly present in the well could not have been released from the 501 facility. Any conclusion to the contrary is premised on a misinterpretation of the data.

C-32 Furthermore, APS has not been able to locate a well registration for well (A-1-3)8caa with the Arizona Department of Water Resources at the location referenced in the Draft Phase I and Final Summary reports. APS conducted a field check of the area where the well is supposedly located but was unable to confirm its existence. We suggest ADEQ conduct a field check for well (A-1-3)8caa to assure correct registration and location.

APS requests that ADEQ remove all references to well (A-1-3)8caa and data purportedly collected therein from the report. Alternatively, if well (A-1-3)8caa is to be referenced

C-32 in the discussion of the APS 501 South 2nd Avenue facility, APS requests that; 1) the discussion clearly indicate the well is located up gradient from the 501 facility, and 2) all pertinent data regarding the well, sample history, and analytical data be included in the report or alternatively, that the sources of said data be clearly referenced.

C-33 Contrary to statements contained in the report, APS is not presently conducting an investigation its of underground storage tanks at the 501 facility and, to our knowledge, ADEQ has not required such an investigation at this time. Therefore, we request the reference to such study be removed from the report.

CONCLUSION

Based upon the foregoing, APS submits that the conclusion that APS is a party potentially responsible for groundwater contamination in the Eastlake Park Study Area is fatally flawed. Nowhere has the Agency established that a release of a hazardous substance took place at or on APS' 501 facility. In fact, the data presented tends to corroborate APS' position that if there is contaminated groundwater beneath the 501 facility, it results from migration of hazardous substances or contaminated groundwater or both originating elsewhere. In the absence of evidence establishing a release of hazardous substances from APS' 501 facility, APS is entitled to have its 501 facility "delisted" as one of the "Highest Priority Facilities".

ARVIN

ARVIN INDUSTRIES, INC., 1531 Thirteenth Street, Columbus, IN 47201 (812) 379-3000

Legal Department

NOV 1988
RECEIVED
Office of
Waste Program

15 November 1988

Mr. Jim McDonald
Department of Environmental Quality
Room 400A
2005 North Central Avenue
Phoenix, Arizona 85004

Re: "Draft Phase I Report/Eastlake Park Area"

Dear Mr. McDonald:

This letter is in response to Mr. Weiss' of 14 October. We have conducted considerable research with regard to the Arvin-related observations set forth in the above-captioned report (the "Report"). Our preliminary conclusions are that the probability of Arvin being a contributor to elevated levels of hazardous groundwater contaminates is extremely low. These conclusions are based on a number of factors.

D-1 First, as reflected by the Report, the highest concentration of groundwater chemicals appears to be north and northeast of Arvin and the underground water flows east-northeast to west-southwest. Water contaminants, in general, are higher in wells northeast of Arvin and decrease in wells southwest of Arvin. Areas north, east and northeast of Arvin are known contamination areas. If Arvin were contributing to the groundwater chemical level, this chemical level should hold steady or increase west and southwest of Arvin. This indicates that chemicals are entering groundwater northeast of Arvin and are being dissipated as they flow southwest through the water course.

D-2 Secondly, the Report observes (at p. 5-18) that: "The Arvin facility is approximately 2,000 feet upgradient from well (A-1-3) 9ada, which has previously contained VOCs ...". In fact, Figures 2&4 of the Report indicate that the Arvin facility is actually cross-gradient from well (A-1-3) 9ada, and therefore, groundwater flow beneath Arvin property would have no impact thereon.

D-3 Thirdly, Arvin's usage of the chemicals found in the water wells nearby is substantially limited to aerosol products employed by us. The volume of such usage is very modest and our disposal procedures are in compliance with applicable regulations. Accordingly, we believe that the probability of these chemicals contributing to significant levels of groundwater contamination is virtually nil.

D-4 In November, 1986, Arvin experienced a major fire which destroyed our Administrative and record storage facilities. In the process of our research, we have made considerable contact with several agencies in an effort to reconstruct documentation needed to respond to the items identified in the Report. However, we have been unsuccessful in obtaining from ADEQ such documentation. Names of personnel with whom we have made contact is available upon request.

In specific response to the observations raised by the "Questionnaire and Compliance" paragraphs of the "Arvin Industries, Inc." section of the Report (p. 5-17):

D-5 RCRA files indicated that, in 1982, the facility stored flammable liquids and solvents (kerosene type), and chlorethene on site: Although we believe this to be true, because of the fire we have no independent documentation, and ADEQ was unable to provide us with such documentation.

In addition, two underground storage tanks contained a total of 600 gallons of paint thinner: (See last "Questionnaires and Compliance" paragraph, below).

In 1983, Arvin stored 1,320 pounds of F001 waste plastic liquid and 440 pounds of F001 waste plastic solvent. In the same year, they were cited by ADEQ for numerous code violations, including manifest violations: Although documentation has not been provided by ADEQ, it is presumed that required corrective action was taken as no subsequent reference has been made to these code violations. Again, we have no documentation because of the above-referenced fire.

City of Phoenix Industrial Wastes Control files indicated that the facility has been granted a TTO permit and waiver, and that the analysis of discharge does not include VOCs: As indicated, this does not include VOCs and does not apply to groundwater chemicals.

In 1987, this facility was cited for non-compliance for excessive discharge into the sewer system of nickel and zinc: Corrective action was taken as memorialized in a
D-6 report sent to Phoenix Waste Water Operations. This again did not include VOCs.

In 1988, the facility was again charged with non-compliance for excessvie discharge of zinc: We had previously identified this and were in the process of taking corrective action when we were cited. Corrective action was taken and reported to Phoenix Waste Water Operations. This also did not include VOCs.

The returned questionnaire indicated that the Arvin facility underground storage tanks were used for storage of propane gas ..., etc.: As intimated by the "Literature and Records Search" section of the Report, at one time Arvin had six underground storage tanks on-site. Only two of these tanks are in current use, both for the containment of propane gas pursuant to an active EPA permit. A leak detection system
D-7 is scheduled to be installed in conjunction with these tanks in 1989. Two other tanks, both of which were used for gasoline storage were removed under the auspices of and with documentation from the Phoenix Fire Department in August, 1988. The two remaining containers were concrete pits, one of which was removed and one of which filled in in May, 1988, have been out of service since 1981, and have been so registered. We have requested appropriate documentation from our contractor.

In addition, our chemical storage building has been removed.
D-8 Earth core-samples were professionally taken in conjunction therewith, the analysis of which revealed no contamination.

In summary, the research which we have conducted is indicative that Arvin has not contributed to elevated chemical contamination levels in the Eastlake Park Area groundwater.

Sincerely,

Page E. Gifford
Counsel

PEG/vpm

AVIS RENT A CAR SYSTEM, INC. / 900 OLD COUNTRY ROAD, GARDEN CITY, NEW YORK 11530 / (516) 222 3000

AVIS

OVERNIGHT MAIL

RECEIVED
1988
KLEINFELDER
PHOENIX

2 November 1988

NOV 1988 RECEIVED Office of Waste Program

Mr. Jim McDonald
Arizona Department of Environmental Quality
Room 400-A
2005 North Central Avenue
Phoenix, Arizona 85004

RE: EASTLAKE PARK WQARF INVESTIGATION

Dear Mr. McDonald:

This letter is in response to Norm Weiss' letter of Oct. 14, 1988 identifying the Avis facility at 1440 South 23rd. Street, Phoenix, Arizona 85034 as a "potential source of environmental contamination" in the Eastlake Park area and transmitting a copy of the Kleinfelder Draft Phase I report, dated October 1988. Avis is extremely concerned because the Kleinfelder report substantially mischaracterizes the impact of the relatively minor Avis underground storage tank leak in relation to the entire WQARF study area. As you may not know, Avis has been working with DEQ since 1985 to contain any danger from this gasoline leak.

1. Avis should not be part of the Eastlake Park study because gasoline leaks are not subject to WQARF.

The circumstance at Avis is that in January 1985 there was a release of gasoline from a leak in an underground fuel line serving an automobile fueling dispenser. Our counsel advises that this leak is not subject to WQARF jurisdiction. The Arizona Superfund statute, the Water Quality Assurance Revolving Fund (WQARF), is closely modeled on the Federal Superfund law. The Arizona law specifically defines "hazardous substances" subject to WQARF jurisdiction with reference to specific federal laws. The federal laws specifically do not include petroleum products. Thus, WQARF coverage does not extend to the discharge of petroleum products. Since the Avis discharge was limited to a petroleum product, the Avis discharge is not subject to WQARF and should not be included in the Eastlake Park study.

E-1

2. <u>The Avis discharge should continue exclusively under under the jurisdiction of the DEQ UST Compliance Program of the Water Pollution Compliance Unit, rather than be subject to double jeopardy under DEQ's WQARF program</u>.

E-2 Since reporting the UST leak in 1985, Avis has worked with DEQ's UST Compliance Program, conducting a number of studies, including the use of eight new monitor wells. Avis has made periodic reports to DEQ regarding the status of the studies and the nature and extent of the plume. The latest report was submitted to Lisa Lund, Acting Manager, UST Compliance Program, on September 27, 1988. Our counsel advises that Avis has specific investigation and remedial action obligations under Arizona's UST law. It is unnecessarily duplicative to include the Avis situation as well in the WQARF program, as Kleinfelder specifically admits on page 3-16 of its October 1988 draft report. Therefore, I request that you remove consideration of the Avis UST leak from the WQARF program and let it continue to be dealt with thoroughly and comprehensively by the UST Compliance Program.

3. <u>Kleinfelder has mischaracterized the nature of the environmental problem connected with the Avis UST leak, in relation to the other sites, by listing Avis as a "highest priority site."</u>

E-3 On page 3-16 of Kleinfelder's draft report, the ongoing investigation regarding the Avis leak is described, and Kleinfelder noted the lack of necessity to investigate the site further. Thus, Kleinfelder considers that the Avis site is already subject to adequate investigation and concern and should not have been highlighted in the Eastlake Park draft study. The lack of immediate concern is highlighted by the reference on page 4-6 that Avis is cooperating with DEQ in the investigation. On the other hand, page 4-6 is a mischaracterization because Avis is not investigating the entire 20th Street and Interstate 10 subarea, which incorporates several "highest priority sites." Rather, the Avis investigation is limited to the narrow boundaries of its own plume, an area not exceeding two acres.

E-4 Additionally on Table 4-1, at page 4-9, Kleinfelder indicates that, regarding two Avis monitor wells, there is no sampling data. As DEQ's UST program knows, Avis has been submitting monitoring data since 1985. On Table 5-1, at page 5-10, Kleinfelder lists three wells in which VOCs are detected above the MCLs in the groundwater, but, as DEQ's

UST program knows, because Avis has provided the information in its periodic reports, four of the substances are from off-site contamination and are not a result of the Avis UST leak. On page 5-19, Kleinfelder indicates that Avis is upgradient of other wells containing high levels of BTX compounds in groundwater samples. As DEQ's UST program knows, the "other wells" are the Avis monitor wells in which Avis is tracking the plume from its own UST leak. Such "other wells" are on Avis and adjacent properties, no more than 200 feet from the site of the original Avis UST leak.

E-4

Finally, in the Appendix 9/30/88 listing of facilities within the study area, Kleinfelder identifies Avis with "practices indicated (pursuant to on-site investigation or file search) are questionable." The meaning of this reference is very unclear. Avis is conducting its investigation properly and with the full participation and oversight of DEQ. Avis is not aware of any part of its investigation that is "questionable." All of the foregoing characterizes Avis as a greater threat than the facts in DEQ's possession would demonstrate.

E-5

4. <u>Kleinfelder has ignored significant test data from several major wells in the 20th Street and Interstate 10 area</u>.

As DEQ is well aware, there were a number of large-capacity wells west of the Avis facility that were constructed and used as part of the ADOT East Tunnel construction and dewatering project. Water quality data is available from these wells, but Kleinfelder apparently was unaware of this information. In order to provide a complete report, even at this preliminary stage, Kleinfelder should include data from the ADOT wells.

E-6

Several of the foregoing issues illustrate a problem created by virtue of DEQ's consultant failing to conduct a thorough search of DEQ files. The problem is further exacerbated when data from an incomplete search reflects poorly on a company that is, in fact, cooperating fully.

E-7

Avis intends to continue working with the UST Compliance Program to deal with its UST gasoline leak. However, for all the foregoing reasons, Avis feels that it has been erroneously included in the WQARF Program and Avis requests that its matter be removed from the WQARF program. If this request should be denied and it is deemed that the Avis facility be retained in the Eastlake Park Study, then Avis requests that Kleinfelder correct the mischaracterizations and use all available data to show that Avis is a low priority source of contamination and that Avis is in full compliance with DEQ.

E-8

Please contact the writer at 516-222-4735 should you have any questions or wish to discuss this matter further.

Respectfully,

Jerry L. Pessah, P.E.
Director
Environmental Systems
Corporate Facilities

JLP:ls
cc: F.J. Accordino
J. Fitzsimmons
J. Kennedy
B. Stratford
G. Van Velsor Wolf Jr.

Received 11-17-88

LAW OFFICES
LANCY, SCULT & MCVEY
A PROFESSIONAL ASSOCIATION
SUITE 100
1313 EAST OSBORN ROAD
PHOENIX, ARIZONA 85014
FACSIMILE (602) 285-1390
(602) 266-4747

STEPHEN W. BAUM
KENNETH A. HODSON
RONALD A. KERSHAW, JR.
CHARLES R. KRANZ
GREGORY M. KRUZEL
JOHN S. LANCY
BARBARA HINSKE McDUGALD
JOHN M. McVEY
THOMAS H. RUTTEN
MORTON M. SCULT
JEANNE C. YOUNG

OF COUNSEL
ROBERT R. KAUFMAN
HOWARD C. MEYERS
SANDRA J. SCHALLER
DOUGLAS A. JORDEN

November 17, 1988

NOV 1988
RECEIVED
Office of
Waste Program

Mr. Donald Atkinson
Department of Environmental
Quality
Room 400A
2005 N. Central Avenue
Phoenix, Arizona 85004

Re: Draft Phase I Report East Lake Park Area -
Capitol Engineering Co.

Dear Don:

F-1 As we discussed, we are enclosing a report (the "Report") prepared by Water Resources Associates, Inc. ("WRA") on behalf of Capitol Engineering Company ("Capitol") regarding WRA's visual inspection of Capitol's facility. As the Report indicates, according to WRA there is "only a low probability" that any of the industrial activities carried out by Capitol at its facility have contributed to the contamination which is the subject of the Department of Environmental Quality's investigation in the East Lake Park Area.

Pursuant to your letter to Mr. David Porter, President of Capitol, dated October 14, 1988, this letter and the enclosure constitute Capitol's comments to the Draft Phase I Report, which we understand will be incorporated into the final report regarding the East Lake Park Area.

Because there appears to be little, if any, connection between the activities that take place on Capitol's facility and the groundwater contamination that is under investigation by the Department, we respectfully request that the Department consider deleting Capitol's facility from the Department's list of "highest priority facilities" for the East Lake Park Area.

As I have indicated, Capitol has been pleased to cooperate fully with the Department regarding this matter and appreciates the Department's decision to consider our request. If you have any questions or comments regarding any of the above or the enclosure, please feel free to call me.

Very truly yours,

Kenneth A. Hodson

KAH:jms

cc: Mr. David Porter
Mr. Edward Ricci

0705h:111788:1

Water Resources Associates, Inc.

Hydrologists - Hydrogeologists - Engineers - Forensic Hydrologists

November 17, 1988

Mr. David C. Porter
Capitol Engineering Company
724 E. Southern Pacific Drive
Phoenix, Arizona 85034

SUBJECT: PRELIMINARY SITE INVESTIGATION - CAPITOL ENGINEERING COMPANY (724 E. SOUTHERN PACIFIC DRIVE, PHOENIX)

Dear Mr. Porter:

The following letter report is intended to document Water Resources Associates, Inc.'s (WRA) preliminary observations recorded during a November 10, 1988 site visit of the subject property. The entire Capitol Engineering Company property was surveyed including 724 East Southern Pacific Drive, 415 South Seventh Street, and 419 South Seventh Street. The intent of this site visit was two fold:

1) to review historical and current usage of chemical solvents on the property; and

2) to survey the entire site for indications of spills, leaks, or disposal of chemical solvents or other potentially hazardous chemicals.

Capitol Engineering Company is involved in the fabrication of metal equipment. No bulk storage of solvents (except for waste paint and thinner as discussed later in the report) was observed on-site. The solvents used in metal fabrication were confined to aerosol cans or small volume containers (similar to paint cans).

The chemicals either observed or reportedly used on-site are shown in Table I.

The usage of the above solvents was apparently confined to the shop area where steel hardware is fabricated or painted. Aerosol cans and paint cans were reportedly used until empty and disposed of with other solid waste materials. Solvent usage records and material safety data sheets are included as Attachment I.

2702 North 44th Street, Suite 101-B
Phoenix, Arizona 85008
Phoenix, Arizona (602) 381-1844 Telefax: (602) 957-3936 Austin, Texas

1) to review historical and current usage of chemical solvents on the property; and

Paint remaining from application on the finished metal products is contained within spray guns. After painting is completed, the guns are washed with water and paint thinner and emptied in a sink in the shop area. Residual from the wash-out is reportedly containerized in a 55-gallon drum and transported off-site under manifested waste procedures. The 55-gallon drum labelled as D001 was observed on-site. The D001 designation is a general waste number assigned by EPA for non-specific ignitable wastes.

No floor drains were observed on the shop premises. Two sealed portals were identified at the southwest corner of the 724 address. These were associated with the sanitary sewage lines from two facility bathrooms. Two storm drains were located adjacent to the south side of the 724 address. Storm gutters were aligned directly into each of these drains. Two storm drains were observed at the 419 building, one storm drain was observed at the 415 address. No indication of paint or solvent spill or disposal were observed in the buildings, or in or near the storm drains. There is no indication of chemical mishandling or disposal on the property.

An underground storage tank was identified south on the subject property adjacent to East Southern Pacific Drive. Information on this tank and the applicable registration materials are attached (Attachment 2). At the time of the site visit, the fill area of the tank was exposed. A tank pressure measurement device was installed at the tank outlet. Monitoring of the pressure device over a several day period indicated that there was no loss in the tank's pressure. Therefore, no tank leak is expected. Capitol Engineering reported that they plan to excavate the tank during the month of December in accordance with ADEQ guidelines.

Previous uses of the site prior to Capitol Engineering were reportedly evaporative cooler manufacturing and light fixture and lamp post manufacturing.

There is potential impact on the Capitol Engineering Company property from adjacent industries. These include Chemonics (pesticides manufacturing) to the east, Economy Food Services (restaurant equipment) to the west, and Smith Pipe (steel fabrication) to the north. Numerous 55-gallon drums and petroleum product dispensers were observed on the Smith property. The Smith property may be a potential source of ground-water contamination in the area.

Based on this preliminary site investigation and records provided by Capitol Engineering Company, it is Water Resources Associates' opinion that there is only a low probability that Capitol contributed to ground-water contamination in the area. No bulk storage of solvents except paint thinner was observed. Solvent use was limited to aerosol cans or brush cans. There was no evidence of spills or disposal in or near the on-site storm drainage.

If there are any questions or further work is required, please call.

Respectfully Submitted,

WATER RESOURCES ASSOCIATES, INC.

Edward D. Ricci

Edward D. Ricci
Vice President
Director of Environmental Services

cc: Mr. Kenneth Hodson, Lancy, Scult & McVey

TABLE I

Item	Potentially Hazardous Constituents	Reported Annual Usage	Percentage of Hazardous Constituent	Use	Comments
1. Aluminum Coating	Xylene	12 gal.	37	Painting	Applied with brush; results in painted product
2. Blue Tool-Makers Ink	Methyl-ethyl Ketone	48 oz.	51-70	Pattern Painting	Infrequently used; applied by aerosol cans; results in painted product
	Toluene		1-10		
	Freon		1-10		
	Methyl-ether Acetate		1-10		
3. Dry Lube	TCA	1 gal.	4	Binds Metal Flakes	Infrequently used; applied by aerosol cans; volatizes in air with no residual
	Hexane		35		
	Methylene Chloride		6		
4. Anti-Spatter Aerosol	TCA	15 gal.	80	Elbow Welding	Applied by aerosol cans; volatizes in air with no residual
5. Mineral Spirits Spirits	Naptha			Paint Thinner	Contained and stored in gallon cans
6. Top Magic Cutting Fluid	TCA	3 gal.	80	Drilling and Tapping	Very little used; applied with squirt can; volatizes in air with no residual
	Methyl Chloroform				

TABLE I (CONTINUED)

Item	Potentially Hazardous Constituents	Reported Annual Usage	Percentage of Hazardous Constituent	Use	Comments
7. Cold Galvanizing Fluid	Zinc	2 gal.	51-70	Welding	Applied with brush; very seldom used; volatizes in air with no residual
	Toluene		11-30		
	Xylene		1-10		
8. Gasoline (Regular)	Toluene	250 gal. tank			Use about 3,000 gallons annually
	Xylene				
	Benzene				
	Lead				
9. Crack Check Developer	Ethyl Acetate	2 gal.	40	Welding	Very seldom used; applied with aerosol can; volatizes in air with no residual

D.A
S.S.
K.

November 17, 1988

CHEMONICS®

NOV 1988
RECEIVED
Office of
Waste Program

Mr. Jim McDonald
Arizona Department of Environmental Quality
2005 North Central Avenue
Phoenix, Arizona 85004

Dear Mr. McDonald:

After reviewing your letter dated October 14, 1988, and the Kleinfelder Eastlake Park Draft Phase I Report, some relevant preliminary information was gathered and is provided for your use.

Chemonics Industries has been at the 734 East Southern Pacific Drive location since the early 1940's, and operated a fertilizer blending plant here until 1960 when the operation was moved to Chandler, Arizona. The blended material consisted of fertilizer components and used no solvents or hazardous materials in the process. Since then, the site has been principally used as Chemonics Industries' corporate office, with the unused area being subleased to a number of lessees. To the best of my knowledge, there have been no solvents or hazardous materials on the property, with the exception of those outlined below and those mentioned in the letters attached.

The preliminary information indicates that Alameda Chemical & Scientific of Arizona, Inc., known as Chemonics Scientific from 1981 until September, 1988, has had no solvent releases. The warehouse and office buildings located at 922 East Southern Pacific Drive, were built to conform with the Environmental Protection Agency (EPA) and fire department requirements for handling potential spills inside the facility. From the inception of Chemonics Scientific to date, no releases have occurred; however, if a release were to occur, the material would collect in the spill containment system which was designed and installed according to EPA requirements.

Records pertaining to the Chemonics Industries laboratory, located at 734-A East Southern Pacific Drive, date back to 1981. The records indicate that certain products were disposed of according to standards that were set at that time by the Arizona Department of Health Services (ADHS). Other solvents, for which the quantity used has increased from approximately 0.5 to 1.5 gallons per day, were disposed of using an

evaporation pan very similar to the one used by ADHS's laboratory located on 15th Avenue. This method of handling waste was approved by ADHS. Since 1985, all solvents have been contained and transported by recognized hazardous waste management companies for disposal by incineration.

The preliminary information collected by Chemonics Industries also indicates that Government Innovators, one of Chemonics' tenants located at 734 East Southern Pacific Drive, has been containing waste products for disposal or re-use.

With regard to Kleinfelder's Eastlake Park Draft Phase I Report, it appears that insufficient historical research was conducted. The area directly south of the subject property was a cotton seed oil recovery plant operated by Anderson-Clayton, and solvents were used in the oil extraction process. The method of disposal of those solvents is unknown. In addition, a solvent recovery plant, previously located at approximately 10th Street and the river bottom, was not mentioned in the Eastlake Park Draft Phase I Report, nor was the fact that for many years the Southern Pacific railroad had a roundhouse and a large repair shop located in the vicinity of the railroad tracks, between 12th and 16th Streets. Other facilities such as International Metals, which was located north of Buckeye Road, between 13th and 16th Streets, used quite a few solvents, as did the U.S. Steel Plant located at 7th Street and the railroad tracks. Also, a number of other companies, such as Garland Steel and Pratt-Gilbert, were not mentioned in the Eastlake Park Draft Phase I Report.

In summary, the enclosed letters should clarify historical usage of chemicals at the facilities located at 734 and 922 East Southern Pacific Drive. Many other companies besides Chemonics Industries are also located at that address; however, documentation for each facility is available to show that these facilities are not likely contributors to the contamination in the Eastlake Park area. Several other properties having current and historical operations should be investigated before conclusions are drawn.

Sincerely,

CHEMONICS(R) INDUSTRIES, INC.

Frank M. Feffer, Jr.
President

FMF:lpb
Enclosure

ALAMEDA CHEMICAL & SCIENTIFIC
of Arizona, Inc.

formerly Chemonics Scientific

November 7, 1988

Chemonics Industries
Mr. Frank M. Feffer
734 E. Southern Pacific Drive
Phoenix, AZ 85034

Dear Mr. Feffer:

This letter is in response to our meeting of November 1st, 1988 regarding the Eastlake Park Project and the Department of Environmental Quality WQARF Investigation. Our company, Alameda Chemical and Scientific (previously Chemonics Scientific) has been listed as a potential source of contamination.

The report states that samples from an area well contained elevated levels of Methylene Chloride. While our company stores and resells Methylene Chloride, as well as other hazardous chemicals, we do not use, repackage, or manufacture in our facility. We are a distributor of sealed, unopened containers of these chemicals. Furthermore, in the nine years of operation here at 922 E. Southern Pacific Drive, we have never had a hazardous chemical spill. Therefore, we should not be listed as a potential source of contamination.

I believe that our company has been incorrectly listed among users of hazardous chemicals. We do inventory these products in our warehouse, but these items are in small, sealed containers, which are shipped intact, and unopened to our customers. We also have been routinely inspected by the Phoenix fire Department to assure our facility maintenance and to satisfy fire codes and regulations. Our facility was also constructed according to OSHA, State, and City regulations, and exceeds requirements for chemical warehousing.

Sincerely,

James N. DeVille
Vice President/General Manager
Alameda Chemical & Scientific

JND: rg
cc: R. Miller

NATIONAL METALS COMPANY

320 SOUTH 19TH AVENUE
PHOENIX, ARIZONA 85009
TELEPHONE (602) 258-8074
TELEX 668-320

MAILING ADDRESS
POST OFFICE BOX 6705
PHOENIX, ARIZONA 85005

November 17, 1988

NOV 1988
RECEIVED
Office of
Waste Mgt.

HAND-DELIVERED

Ms. Sandra Eberhardt
Superfund/WQARF Coordination Unit
Arizona Department of
Environmental Quality
2005 N. Central Avenue
Phoenix, Arizona 85004

RE: Draft Phase I Report, East Lake Park Area

Dear Ms. Eberhardt:

This letter contains National Metals Company's ("NMC") comments regarding the Draft Phase I Report, East Lake Park Area, Phoenix, Arizona, prepared by Kleinfelder. The Draft Report identifies a facility formerly operated by NMC at 443 East Buckeye Road as one of the "highest priority facilities" identified in Kleinfelder's study. For the reasons stated below, NMC believes that its designation as one of the "highest priority" facilities is arbitrary and unreasonable and, at best, premature.

J-1 The Draft Report is filled with inaccurate statements and unwarranted conclusions concerning NMC. The discussion regarding NMC on page 5-34 of the Draft Report states that the investigation indicated that NMC "was involved in metal recycling and fabrication." NMC has never conducted metal fabricaton at the Buckeye Road site. A portion of this site was used in connection with NMC's scrap metal recycling operations.

J-2 The Draft Report attempts to associate NMC with detected contamination from chlorinated solvents, including TCE and methylene chloride. This association is made even though there is no evidence presented in the report that NMC ever used these materials in its operation at the Buckeye Road facility or that these materials have ever been detected on the site. Indeed, NMC did not use such solvents in its Buckeye Road operations, and its policy was not to accept these materials at the site.

MEMBER
Institute of Scrap Recycling Industries, Inc.

AMIGOS SPONSOR

J-3 Furthermore, based on Kleinfelder's estimation of the regional groundwater flow to be nearly directly westward, the NMC facility is not even upgradient of well (A-1-3)8dcb, the well referenced in the discussion of NMC. Consequently, there is no basis whatsoever to suggest any connection between NMC and any chlorinated solvents detected in local groundwater.

J-4 The Draft Report's discussion of sampling results of materials at the Buckeye Road site are completely irrelevant to the study of local groundwater. These samples were taken from materials generated as a result of automobile shredding, not soil or groundwater samples. Indeed, there is no sampling to date that indicates that these materials have entered the soils, and there is no reason to believe that these materials might be present in groundwater.

J-5 The Draft Report states that "the facility was also given a notice of non-compliance for holes in fences and vagrancy in 1988." It is difficult to imagine how this matter could have any relevance to a study of groundwater quality.

J-6 The description of NMC contained in Appendix A also contains several inaccurate and misleading statements. The "observations" relating to NMC refer to "oil/sludge samples." The samples referenced were not of any "oil/sludge", and, indeed NMC is unaware that any such samples have been taken from the Buckeye Road facility. This statement also references a "deep pit on-site that accumulates water." NMC is not aware of any such pit on the site, and believes that this statement mischaracterizes the referenced report, which was prepared by ADEQ, not ADHS.

J-7 NMC currently is cooperating with ADEQ in an effort to resolve the compliance concerns of the waste compliance unit with respect to the Buckeye Road facility. Extensive investigation and regulation of this facility under both the regulations administered by the Waste Compliance Unit and the WQARF program is inconsistent with the Legislature's direction that ADEQ is to "integrate all of the programs affording water quality protection . . . for purposes of administration and enforcement and shall avoid duplication and dual permitting to the maximum extent practicable." NMC intends to cooperate with ADEQ in this matter and urges the ADEQ to acknowledge its obligation to avoid regulation of this facility under duplicative programs.

NMC is dismayed by the inaccurate statements made in the Draft Report relating to NMC as well as the unwarranted conclusions drawn in the Draft Report, which have no reasonable basis in fact. NMC strongly urges the ADEQ to consider these comments and requests that a copy of them be included in the final report.

Yours very truly,

NATIONAL METALS COMPANY

Barry Shapiro
President

BS:gh
131

PHOENIX AVIATION DEPARTMENT

Administrative Offices 3400 Sky Harbor Boulevard Phoenix, Arizona 85034-4420
(602) 273-3300

November 17, 1988

NOV 1988
RECEIVED
Office of
Waste Program

HAND DELIVERED

Mr. Jim McDonald
Eastlake Project Manager
Room 400A
Arizona Department of Environmental Quality
2005 North Central Avenue
Phoenix, Arizona 85004

Re: City of Phoenix Response to Draft Phase I
Eastlake Park Area WQARF Report

Dear Mr. McDonald:

Thank you for the opportunity to comment on the above-referenced draft report. The City of Phoenix ("City") shares the concern of the Arizona Department of Environmental Quality ("ADEQ") that the Water Quality Assurance Revolving Fund ("WQARF") area currently designated as "Eastlake Park" be fully studied and that the proper remedial action be undertaken by appropriate responsible parties. Our immediate concern, of course, is for the public health of the residents of the area, and our longer-term concern is to protect the public interest of City residents generally. Thus, the City has a strong, vested interest in this study and its results.

K-1 So that the ADEQ and the City are able to completely and quickly assess the Eastlake Park area, the City proposes to work cooperatively with the ADEQ as follows. First, the City believes that the former Estes Landfill site should be removed from the broader study process. The City is currently involved in a groundwater contamination investigation at the former landfill, and therefore would be an appropriate party to lead the study efforts in this area. Second, the City proposes to play a lead role in helping the ADEQ identify specific private facilities in the Sky Harbor Airport area who may be responsible for any contamination in the area. Subject to City Council approval and other appropriate conditions, the City offers to share the cost

K-1 of such efforts with the DEQ, provided matching funds are available to the City under Arizona Revised Statutes § 49-282(F).

Attached are the City's comments on the substance of the report, in addition to three corrected versions of Appendix A. One version corrects the RCRA ID numbers, one version the landfill information, and one the Sky Harbor facilities.

In addition to specific, technical comments on the report, we have the following general comments.

Quality of Information in the Report

K-2 The City's review of the report found both a large amount of erroneous information on City facilities and a number of unsubstantiated technical and legal conclusions which, if not corrected, will undermine the overall credibility of the study.

K-3 The City previously has volunteered to meet with the ADEQ or its consultants to ensure that information is accurate, and again offers to meet to discuss the City's comments. Please contact Susan Keith, City of Phoenix Water Quality Adviser, at 256-5669 if you wish to arrange this.

Sky Harbor Airport

K-4 The Sky Harbor Airport area, which includes both City-owned and private property, appears to be listed among the twenty-two highest priority "sources" identified in the draft report because of private industries in the area, some of whom may be City tenants, and not because of any City activities. The City insists that this point be clarified in the final draft. If the "City of Phoenix Sky Harbor Airport" is to be used in the report as a shorthand reference for the area (as opposed to a specific entity identified as an apparent source of contamination), this distinction must be clearly made.

K-5 As you know, the City is only the owner of some of the Sky Harbor land, and is not to our knowledge a generator or disposer of WQARF hazardous substances. We also understand, even assuming that some of the City's tenants are sources of contamination, that the City's mere land ownership is not sufficient to make the City a potentially responsible party ("PRP") under A.R.S. § 49-283(B).

K-6 It also would seem more appropriate for the report to identify any specific private facilities thought to be sources rather than the City. Some, such as City tenants Garrett, ITT, and Avis, are already identified. Other tenants have for some reason not been included

K-6 on the list. Among those omitted is the Arizona Air National Guard, which the report itself identifies as a source of contamination.

K-7 As set forth above, the City is willing to work with the ADEQ to help assess specific sources of contamination in the Sky Harbor Airport area. We would like to discuss with the ADEQ the possibility of the City receiving WQARF funding to carry out an investigation to determine if the area is contaminated, and, if so, to identify the sources of contamination. Because the Eastlake Park study area includes twenty-four square miles, segmenting specific areas is obviously necessary for study purposes, and the Sky Harbor area is one natural segment.

Estes Landfill

K-8 The City currently is undertaking a voluntary study of the environmental impact of the Estes landfill, a site purchased by the City in the early 1980's for the purpose of channelizing the river. The City has already begun a $500,000 groundwater investigation involving the gathering of information from six wells. The City will also be investigating potentially responsible parties at the site, and will share the information with the ADEQ for future pursuit.

All of the water quality data generated to date suggest that this site (along with the adjacent 40th Street Landfill, which is privately owned) could be considered separately from the rest of the potential source areas in the Eastlake Park area. We are concerned, though, about the status of the investigation at the 40th Street Landfill. We do know that water quality sampling is required at that landfill, but to date the only data we are aware of has been that recently generated by the City in September, 1988.

Study Process in General

K-9 Since only 281 of 995 facilities returned the study questionnaires, release of a "final" list of PRPs would be premature at this time. We would like to request that the ADEQ follow up on those facilities that did not respond prior to issuing a "final" list. If the list contained in the report is viewed as a final PRP list by either the public or by the facilities in the area, future investigation and clean-up efforts could be hampered. Should the current list of high priority study facilities later become a working list of potentially responsible parties, the ironic result will be to punish those who have assisted in the information-gathering process and to reward those who have not. Issuance of a final report with a list of high priority sites based on the current small number of

K-9 responses accordingly would be premature and possibly counter-productive. We suggest that the ADEQ use its authority to require that information be provided by those who neglected to return the questionnaire. Pursuit of the non-respondents is essential prior to issuance of any list of high priority sites which the public might interpret as comprehensive.

Petroleum Product Exclusion Under WQARF

K-10 There are a number of sites, particularly in the Sky Harbor area, that seem to be listed due to alleged petroleum product releases. We understand that petroleum products are not considered to be hazardous substances under either the federal Superfund or the Arizona WQARF programs. This will require that the ADEQ clarify the proper regulatory approach to these facilities.

The City appreciates the opportunity to comment and looks forward to discussing these issues with you further.

Sincerely,

Neilson A. Bertholf, Jr.
Aviation Director

NAB/slf
Attachments
cc (w/attachments): Dick Traill
Susan Keith
Craig Reece

CITY OF PHOENIX

TO: Sue Keith
Water Quality Advisor

DATE: November 9, 1988

FROM: Bruce Henning BCH
Environmental Engineer

SUBJECT: EASTLAKE PARK AREA - DRAFT PHASE I REPORT

The following comments are offered in review of Draft Phase I Report, Eastlake Park Area, Task Assignment K-3.

Appendix A - Prioritized Facilities List

PAGE 1

K-11 11th St. Landfill - This landfill was not owned or operated by the City of Phoenix. Ameron Pipe Co. and Maricopa County had a landfill that was bordered by 14st and Magnolia, and 11st and Gibson Lane. Ameron Pipe Company is the current owner of this land.

K-12 14th St. Landfill - This landfill was referred to as the Gibson Lane Landfill. It was bordered by 12st and Magnolia, and 16st and N. Bank of the Salt river. The landfill was owned and operated by the City of Phoenix. Contact person for the City of Phoenix is Bruce Henning from the Public Works Department.

K-13 16th St. Landfill - This landfill is also known as the Del Rio Landfill. Its boundaries are approximately 7st and South bank of Salt River to 16st and Watkins. Bruce Henning from the City of Phoenix Public Works Department should be the contact person. This facility closed in 1980.

PAGE 2

K-14 19th Ave. Landfill - This landfill should not be included in this report.

PAGE 3

K-15 7th Ave. Landfill/Del Rio Landfill - This landfill should be named 7th Avenue Landfill, it is not associated with the Del Rio Landfill. It was owned and operated by the City of Phoenix. The land is currently owned primarily by the City of Phoenix and Union Rock and Materials Company. Bruce Henning from the City of Phoenix should be the contact person.

PAGE 28

K-16 Co-op - In the 1940's and early 1950's, co-op also had oil and fuel tanks at 18th St. and Jackson.

K-17 PAGE 31

Del Rio Landfill - This is the same landfill listed under 16th St. Landfill on Page 1.

K-18 PAGE 50

There was a Lilly Ice Cream and ice plant located on the southeast corner of Central Avenue and Buckeye Road that is not on the list.

K-19 PAGE 52

Maricopa County had a gas tank at the old Court House located between 1st and 2nd Avenue just north of Jefferson Street.

K-20 PAGE 63

Phoenix Sanitary Landfill - No City of Phoenix landfill existed at this location. This landfill is the same as the 11th St. Landfill listed on page 1.

K-21 PAGE 68

The R.C. Cola Bottling Company had gas tanks located on their property on the Northeast and Southeast corners of 18th St. and Adams in the 1940's and 1950's.

K-22 PAGE 73

Southern Pacific Railway - During the late 40's and early 50's there were some large tanks south of the terminal located on 12th Street. Oil ponds were located at the end of the Crystal Ice plant docks. The ice plant also had fuel tanks located at about 10th Street.

K-23 GENERAL COMMENTS

Gas stations were located at the following locations:

1) Southwest corner of 18th Street and Washington
2) Southeast corner of 17th Street and Washington
3) Southeast corner of 16th Street and Lincoln
4) Southeast corner of 16th Street and Sherman
5) Southeast corner of 16th Street and Washington
6) North side of street in the middle of the block of 18th Street and Buckeye.

K-24

- Contact person for landfills that are linked to the City of Phoenix Public Works Department should be:

Bruce Henning
City of Phoenix, Public Works
101 South Central, Suite 500
Phoenix, AZ 85004
(602) 256-5621

K-24

- The 40th St. Landfill currently will accept most small size waste that can be worked with their equipment. They do not accept food, tires, or liquid waste, or large bulky items. Their fee structure is as follows:

Minimum charge -	$30.00	(Pickup truck)
	$37.00	Small vehicle and trailer
	$57.00	12 ft. bed, 8-10 ft. high
	$82.00	10 wheel vehicle
	$98.00	Semi trailer loads

- Attached are Appendix A pages with corrected information.

BH/DN/co/1380e

Attachment

CITY OF PHOENIX

Technical Comments

November 14, 1988

COP Comments on Draft Phase I Report
Eastlake Park Area

	Page/Paragraph	Comment
K-25	2-5/6	The minimum depth to the upper subunit (500 feet), if this refers to the Lower Conglomerate Unit, is too large. ADHS (40th Street Landfill Open Dumping Report) reported that the depth to this unit 3/4-mile south of the Estes/Bradley Landfill complex was 172 feet below ground level.
K-26	2-7/2	50 ft/mi results in a gradient of 0.009.
K-27	2-7/3	Units for hydraulic conductivity are inconsistent with those used previously (page 2-5). The wide range in both hydraulic conductivity and hydraulic gradient allows computation of groundwater flow velocities that could vary by more than an order of magnitude. This presents difficulties in assessing the velicity of the extent of contaminant transport given in Section 4.
K-28	4-4/2	The report states that affected groundwater extends approximately 6,000 feet downgradient. Data provided are insufficient to confirm or refute this claim. As mentioned above, the wide variability in hydraulic conductivity and gradient would allow calculation of a wide range of downgradient contaminant migration estimates. A statement at the beginning of the section should be added to show the assumptions that were made for these and other variables, including the potential impact of retardation of chemicals on maximum extent of affected groundwater. The maximum extent of contamination related to the Estes/Bradley Landfills, if 6,000 feet downgradient, would encompass (due west) well (A-1-3) 15 cad. Tetrachloroethene in well (A-1-3) 15 cad was reported at 32 ppb. This compound was not detected at Estes and was found at 23 ppb in the downgradient Bradley Landfill well. Additionally, vinyl chloride, which has been detected in high concentrations in the vicinity of the landfills, has not bee detected downgradient. This suggests that another source may be responsible for the contamination observed due west, and about 6,000 feet, from Estes.

K-29	4-4/3	Describing a detection of 811 ppb methylene chloride as the result of laboratory contamination should be accompanied by an explanation as to why this occurred. This value is about 20 times higher than any other reported value for this compound and thus justifies additional discussion.
K-30	4-4/4	The range of variation in time versus concentration plots should be quantified in order to assess its representativeness (i.e., this variation, if small, could be explained by analytical error, especially for values near the analytical reporting limit).

NOTE: The comments regarding extent of groundwater contamination and the representativeness of reported temporal variations in contaminant concentrations apply to all sites, not only Estes Landfill.

K-31	4-5/2	Well (A-1-3) 10 aaa was referred to; is this the same well listed in Figure 2 and Table 4-1 as (A-1-3) 10aa? This well, according to Appendix D analytical data, had fuel hydrocarbons at 230,000 ppm. Other compounds were not detected but this may be due to the large dilution factor (1000).
K-32	4-13/1	The presence of floating product in the well makes collection of an uncontaminated water sample impossible. Therefore, quantification of fuel hydrocarbons in water on the basis of the analysis of such a sample is suspect.
K-33	5-10/Table 5-1	Vinyl chloride has been detected above MCLs.
K-34	5-22 Sky Harbor Airport	<u>Literature and Records Search</u>: We have no records of actual disposal of solvents and fuels, though there are records of petroleum product spills. <u>Field Investigation</u>: We understand that samples of soil and surface water were collected at Sky Harbor. The results of those samples should be included here. Also, please identify the "numerous facilities" that could be considered sources. <u>Questionnaires and Compliance</u>: We are unaware of any ADEQ investigation of main facilities; please identify these. The City is investigating the old fire burn pit, and has done several LUST investigations of soils. The "Airline Maintenance Facility": is this Dynair Tech?

K-35		The so-called "Sky Harbor surface impoundments" probably include an irrigation pond which is no longer there and certainly was never a source of contamination.
K-36		General Comment: It is not clear what is actually being discussed here. For example, Garrett is discussed here, and elsewhere. Are the data for identifying Garrett as a separate PRP also being used to identify Sky Harbor as a PRP. Or is the Sky Harbor discussion restricted to only that area/those facilities not discussed elsewhere? Please specify exactly what is being referred to.
K-37	5-26/Estes Landfill	Literature and Records Search: Please change "and has used portions of the property to expand Sky Harbor Airport" to and has moved part of the landfill to channelize the Salt River. Field Investigations: Landfill operations have ceased. The landfill has not been operated since the City purchased it. Questionnaires and Compliance: The City of Phoenix is investigating the site, with ADEQ and ADWR oversight. No questionnaire was received by the City for the site.
K-38	5-27/40th Street Landfill	Proximity to Elevated Chemical Concentrations: This section should be the same as the one for Estes.
K-39	5-40/Table 5-2	The COP wells are all out of the study area, as follows: Well 196 (abandoned) - 83rd Ave. & Van Buren Well 179 (abandoned) - 402 S. 59th Avenue Falcon Park - 35th Avenue and Roosevelt Alkire Park - 17th Avenue and Pima University Park - 10th Avenue and Van Buren Wells 179 and 196 are abandoned not inactive.
K-40	5-41/2	Change: "The primary route of exposure is ingestion through drinking . . ." to There is no exposure to these chemicals through ingestion of drinking water, as there are no drinking water wells in the area and the water served by the COP to residents in the area comes from the Salt and Verde Rivers.

0649S

Cannon
Integrated Specialty Connectors Division

2801 Air Lane
Phoenix, AZ 85034
(602) 275-4792
Telex 66-7327

16 November 1988

NOV 1988
RECEIVED
SITE
DISCOVERY

Mr. Jim McDonald
Department of Environmental Quality
Room 400A
2005 North Central Avenue
Phoenix, AZ 85004

Dear Mr. McDonald:

Reference: Eastlake Park Area Report, Task K-3

ITT Cannon has been in existence at its present location for over twenty-five years. During that time, the company has pursued a dedicated commitment to the preservation of the environment by being a leader in environmental technologies, including wastewater treatment, state-of-the-art incineration, biodegradation and closed loop systems for the future. In short, it is our opinion that ITT Cannon is a community model for environmental compliance and advanced thinking. As a responsible corporate citizen, we have fully cooperated with every survey and inquiry initiated by State and Federal agencies to insure a pollutant-free environment.

It is the purpose of this letter to detail our cooperative efforts which reflect our care and concern for the environment and to correspondingly respond to certain implications contained in the Eastlake Park Area Report, Task K-3 (hereinafter referred to as the "Report") which we believe to be erroneous or misleading.

Because of our record of environmental concern and compliance, we were obviously startled and disturbed by the analyses in the Report which concluded that ITT Cannon is being considered as a possible contributor to ground water contamination in the Eastlake Park area. Obviously, we do not share any such conclusions.

I-1 The Kleinfelder Report addresses remediation to a potable status of water in an area where natural materials in that water make it non-drinkable. We question whether the removal of the contaminants listed in the Report would, in fact, accomplish this purpose. ITT Cannon is named in the Report based upon the fact

that certain of the suspected chemicals were used in our manufacturing processes. Neither the Report nor our records can support that these chemicals (nor any of
I-1 their expected breakdown products) have been found downstream in excess of safe drinking water standards.

The Report cites a TTO, Cn, CD, Cr release in violation of the City of Phoenix's wastewater pretreatment requirements. The Report fails to reflect that ITT Cannon was not in violation of City pretreatment levels at the point of discharge to the City sewer system (an important point that distinguishes the nature of the violation), nor does the Report reflect the fact that the water
I-2 in question never entered the ground water; rather, it is diverted to a treatment plant. We hope you agree that the only sound conclusion that can be reached from the Report's inaccuracies is that there is no contamination in the ground water that can be attributed directly or indirectly to our POTW discharges.

The Report also cites hydrocarbon releases attributable to ITT Cannon without the added information that the materials in question have not been in common use at ITT Cannon for many years. With this in mind, we question why the reporting technique used by Kleinfelder ignores blank measurement information which the Department has at its disposal and why the Report focused on well sampled measurements alone. Simply stated, the lack of consideration given
I-3 to routine details raises questions in our minds as to the accuracy of the laboratory analysis reports. Neither the report nor the history of environmental compliance at ITT Cannon permits a conclusion that ITT Cannon has contributed to well contamination based on past material use, water flow and plume dispersion. For your information, we have included Attachment I to provide an overview of contamination levels and associated remarks.

About seventeen years ago, industrial facilities in general abandoned the use of TCE in favor of TCA. ITT Cannon was one of those industrial facilities that discontinued TCE at that time. Only TCA has since been used and this chemical has been totally regulated in a controlled manufacturing environment. Prior to 1970, TCE was used freely in non-factory environments. This included the use of TCE as an oil cutting agent. As a point of interest (and perhaps public concern), the Department should be aware
I-4 of the fact that TCE and oil had been sprayed through the Phoenix Valley for dust control on non-surfaced roads. We believe it is common knowledge (and a matter of City and State records) that, as a result of this practice, TCE and its breakdown components (DCE and Vinyl Chloride) are found throughout the ground water in the Valley. I am sure that governmental records would more accurately determine the use of TCE during that period.

Many chemicals on the list in the Report have never been used at ITT Cannon. Others have been used only in extremely small quantities. As an example, one pound of Chloroform was purchased fifteen years ago for laboratory use.
I-5 Eighty percent (80%) of the original volume still exists at our facility. Again, in the last ten years, less than 200 gallons of Methylene Chloride

I-5 have been used in the fabrication of parts. The unconsumed portion was incinerated, biodegradated and buried at approved sites. Our own analysis indicates that other contaminants found in the wells sampled in the Report are breakdown compounents of TCE, whose origins and use were noted above.

I-6 As an indication of our continuing concern for the environment and our responsibilities as a corporate citizen, ITT Cannon recently contracted to have three monitoring wells drilled on our site to evaluate ground water. It may be of interest that the results of the samples taken from these wells show the water to contain the same levels of contaminants as those found throughout the Valley.

The conclusions we have drawn from the results of the three monitoring wells is that materials foreign to ITT Cannon's manufacturing operation are flowing into our area from other industrial facilities. The details of the monitoring well water analysis is being forwarded to you under separate cover. We trust that this information will be helpful to the Department in further analyzing releases from other companies and possibly plume projections which we believe to be a matter of record.

In conclusion, we again wish to emphasize not only our reaction as responsible citizens to inquiries by governmental agencies, but the proactive and preventive measures which ITT Cannon has consistently initiated in the past - measures of which we are justifiably proud. We are not a contributor to environmental pollution. We are concerned that the implications of the Report tend to denigrate the positive steps taken by this company to assure a pollution-free environment. Although we will continue to remain a cooperative ally of the Department in its efforts to further promote a pollution-free environment, we respectfully resist any implications in the Report that ITT Cannon is a potential pollution source.

Very truly yours,

ITT CANNON-PHOENIX
INTEGRATED SPECIALTY CONNECTORS DIVISION

Sam Sutton
Comptroller

ATTACHMENT I

Contaminant	State /Max Action/Contam. Level /Level	Actual Readings	Pump Number	Remarks
Benzene	5.0 PPB	5.0 PPB	3012	Don't have any
*Methylene Chloride	4.7 PPB	4.3 PPB	3050	<220 gallons used. Destroyed in use.
*Chloroform	3.0 PPB	6.0 PPB	3054	Only 1 lb. in 15 years
Dibromochloromethane	[illegible] PPB	.3 PPB	3016	Doesn't exceed SAL or MCL
1,1, Dichloroethane	5.0 PPB	3.1 PPB	3012B	Doesn't exceed SAL or MCL
1,2, Dichloroethane	5.0 PPB	.6 PPB	3016	Doesn't exceed SAL or MCL
*1,1, Dichloroethene	7.0 PPB	15.0 PPB	3012B	Breakdown of TCE. Only 59 gals. on property since 1961. All accounted for.
Bromodichloromethane	100 PPB	<.2 PPM		Never used.
Trans 1,2, Dichloroethene	70.0 PPB	22.8 PPB	3012B	Breakdown of TCE. Only 59 gals. on property since 1961. All accounted for.
1,1,1, Trichloroethane	200 PPB	.5 PPB	3016	Doesn't exceed SAL or MCL
*Trichloroethylene	5.0 PPB	58 PPB	3012B	TCE - abandoned use in 1961. Only 59 gallons on property since and accounted for.
*Tetrachloroethene	1.0 PPB	5.0 PPB	3015B	Never used.
Vinyl Chloride	2.0 PPB	<.2 PPB		Never used.

(*Exceeds State action level)

D.A
K
S.

Handy & Harman
Fairfield Plant: 1770 Kings Highway, PO Box 610, Fairfield, CT 06430 • Telephone (203) 259-8321

November 16, 1988

NOV 1988
RECEIVED
Office of
Waste Programs

Jim McDonald
Department of Environmental Quality
Room 400A
2005 North Central Avenue
Phoenix, AZ 85004

Re: Draft Phase 1 Report, **Eastlake Park** Area, Phoenix
Handy & Harman Electronic Materials Facility
2113 East Mohave Street, Phoenix

Dear Mr. McDonald:

Handy & Harman is the corporate parent of Handy & Harman Electronic Materials Corporation (HHEM), which has received notice that it is considered a potential source of chlorinated solvent contamination in the area of I-10 and 20th Street. Recognizing that the Arizona Department of Environmental Quality has not yet made a finding of responsibility or liability, we nevertheless object to the inclusion of HHEM as a "highest priority" potential source of groundwater contamination.

I. HHEM Operations Cannot Have Been the Source of Chlorinated Solvent Contamination Found in the Area of Its Plant.

H-1 The Kleinfelder Draft Report[1] groups evidence which cannot be attributed to all parties in the I-10 and 20th Street area, and which should not be used to implicate HHEM. Kleinfelder asserts, for example, that HHEM "is located adjacent to well (A-1-3)15a, which has observed concentrations of solvents above Arizona Action Levels in ground water samples." (Kleinfelder, p. 5-30) The only wells designated as located at (A-1-3)15a are on the Avis property. HHEM is neither adjacent to nor upgradient of that property, and cannot be the source of any contaminants found in such wells. Kleinfelder also asserts that groundwater in the I-10 and 20th Street area "includes elevated levels of trans 1,2-dichloroethene (up to 24 ppb), [and] trichloroethene (up to 14 ppb)" (Kleinfelder, p. 4-5). This statement is misleading with regard to HHEM, because these levels were found in ADOT Well D-9, located north of HHEM and not downgradient of it. The location of all wells in the immediate vicinity of HHEM, including ADOT wells D-7, D-8 and D-9, is more

[1] Kleinfelder, "Draft Phase I Report, Eastlake Park Area, Phoenix, Arizona," October, 1988, cited hereafter as Kleinfelder.

H-1 precisely shown on a map prepared in the Avis investigation[2] (Schmidt Figure 1, included here as HHEM Appendix Figure 1; ADOT wells are labeled W-7, W-8 and W-9). Neither the normal west-northwesterly groundwater flow (See Graf[3], Figures 4-7, Water Table Contours, September 1983 and January, May and September 1984, included here as HHEM Appendix Figures 2-5) nor the southwesterly flow under ADOT pumping conditions would draw groundwater from the HHEM site to ADOT Well D-9. The groundwater flow during ADOT pumping conditions, shown on Schmidt Figure 2 (included here as Appendix Figure 6), would make it impossible for HHEM to be the source of contaminants in ADOT Well D-9.

H-2 Evidence of groundwater contamination which might, at first glance, point to HHEM, comes only from Arizona Department of Transportation Wells D-7 and D-8, located within ten feet of the west boundary line of the HHEM property. Sampling of these wells on January 31, 1985 indicated the presence of trichloroethylene (TCE), dichloroethylene (1,1-DCE) and trans-1,2-dichloroethylene (t-1,2-DCE):

ADOT Well	ENVIS number	sample date	TCE	1,1-DCE	t-1,2-DCE
D-7	3058	1/31/85	7.3	2.6	<.4
D-8	3059	1/31/85	5.4	2.6	1.2

[2] The Avis investigation has been conducted by Kenneth D. Schmidt & Associates, and is reported in three reports: "Report on First Phase of Hydrogeologic Investigation at Avis Sky Harbor Airport Facility, Phoenix, Arizona," August 27, 1985 (Schmidt 1); "Report on Second Phase of Hydrogeologic Investigation at Avis Sky Harbor Airport Facility, Phoenix, Arizona," February 27, 1986 (Schmidt 2); and "Update of the Hydrogeologic Investigation at Avis Sky Harbor Airport, Phoenix, Arizona," December 4, 1987 (Schmidt 3). See also letter, G. Van Velsor Wolf, Jr. to Lisa C. Lund, ADEQ, dated September 27, 1988, from ADEQ UST Hydrology Section Files.

[3] Graf, Charles G., "East Lake Park Site Inspection Report," Office of Emergency Response and Environmental Analysis, Arizona Department of Health Services, 1985

Only the TCE level exceeded the EPA drinking water maximum contaminant level (MCL) and state action level of 5 micrograms. The levels of other contaminants did not exceed MCLs or action levels.

HHEM purchased the 2113 Mohave Street property on April 1, 1985, after these samples were taken, and therefore cannot be the source of that contamination. Furthermore, HHEM has never used either trichloroethylene or tetrachloroethylene at that location, so cannot be a source of those contaminants or their
H-2 dichloroethylene isomer degradation products. HHEM has used only 1,1,1 trichloroethane (under the Dow Chemical tradename Chlorothene). (Kleinfelder notes the presence on site of this chemical, including the trade name (Kleinfelder, Table 4-3, p. 4-16).) Trichloroethane was not found in ADOT wells D-7 and D-8. Furthermore it does not degrade into a dichloroethylene isomer. We believe the final report should indicate that HHEM, as a corporate entity, cannot be the source of chlorinated solvent contamination found in the I-10 and 20th Street area.

II. The HHEM Property is Not a Likely, Much Less a "Highest Priority" Potential Source, of Chlorinated Solvent Contamination.

We recognize that HHEM may be liable for contamination upon our property created by predecessor owners, but there is no evidence of any such condition, and we do not believe it exists. The property has been used only for plating computer lead frames, by HHEM and all of its predecessors. That operation uses only small amounts of chlorinated solvent. HHEM's immediate predecessor at the property, Met-Tels, Inc., also used 1,1,1 trichloromethane.
H-3 This was the only solvent in Met-Tels' inventory when HHEM purchased the property, including that inventory. HHEM employees who were previously employed by Met Tels, have stated that Met-Tels used only 1,1,1 trichlormethane. These employees, and employees from Met-Tels predecessor Motorola, also state that Motorola used only 1,1,1 trichloromethane after the mid 1970s. Motorola purchased the property in 1970, and was apparently the first company to use the facility. Therefore there was apparently no use of TCE on the property for ten years prior to the sampling of ADOT wells. Furthermore we know of no spill or release of trichlorethylene to the environment during the years Motorola used that chemical.

In the absence of TCE use or release at the property, it is inappropriate to attribute any TCE and DCE contamination to HHEM or conditions upon its property, or to label HHEM as a "highest priority" potential source. This is particularly so because the direction of a source of a contaminant found in a high volume production well cannot be determined. ADOT wells D-7 and D-8 each pumped continuously at a rate of approximately 1200 gpm (1.7 mgpd) for a year and a half. The Avis investigation showed the extent of groundwater flow diversion from the north, and also found that even under non-ADOT pumping conditions the "[a]verage rate of groundwater flow in November 1987 was calculated to be about 800 feet per year." (Schmidt 3, p. 17) A similar diversion, with rapid transmission of groundwater and contaminants, would have occurred from all other directions, including from the west in a reversal of normal flow direction. Thus the contaminants found in wells D-7 and D-8 could have come not just from the east, the normal groundwater flow direction, but from any direction within a broad zone of influence created by those wells.

H-4

Moreover, a likely direction of such contaminants has been found. The Avis onsite monitoring wells showed the same contaminants:

Avis Well	ENVIS number	sample date	TCE	PCE	t-1,2-DCE
MW1	3039	1/12/87	890	1	43
		4/15/87	500	2	47
MW2	3040	1/12/87	860	ND	32
		4/15/87	410	1	28
MW3	3041	11/1/85	9	ND	20
		1/12/87	540	ND	110
		4/15/87	43	1000	500
MW4	3042	1/1/86	ND	ND	11

The Avis-investigated groundwater flow diversion from its property toward ADOT wells D-7 and D-8 should lead to the conclusion that the chlorinated solvent contamination in the ADOT wells and in the Avis wells came from the same source, a location to the northeast and upgradient of HHEM under any conditions.

III. Conditions in the Area of HHEM Do Not Present a Threat to Public Health.

We recognize that chlorinated solvents should not be in ground water, but also know that some groundwater conditions are more serious than others. The public often fails to make that distinction. It should be emphasized in the Kleinfelder report that, at least in the HHEM part of the I-10 and 20th Street area, solvent contamination does not present a threat to health or the environment.

There have been no drinking water supply wells discovered in the area (Graf), and the water is generally unsuitable for a drinking water supply because of natural salinity:

> "The electrical conductivity of the groundwater in the Eastlake Park area is between 1,000 and 2,000 micromhos per centimeter (umhos/cm), qualifying it as too saline for widespread domestic use (Maricopa Association of Governments, 1978)" (Graf)

H-5

> "TDS concentrations of ground water samples from wells within the study area generally exceed the EPA recommended drinking water standard of 500 mg/L." (Kleinfelder)

Graf also stated that "[n]o important biological resources or fragile natural settings are believed to exist in the Eastlake Park area." (Graf)

Contamination previously found at the I-10 and 20th Street site is decreasing. Kleinfelder reports that concentrations of TCE, t-1,2-DCE, PCE and chloroform peaked in late 1986, and have steadily declined since then. After the initial sampling on January 31, 1985, further sampling in the immediate area of HHEM showed only one chlorinated solvent contamination above MCLs or state action levels:

ADOT Well	ENVIS number	sample date	TCE	1,1-DCE	t-1,2-DCE
D-8	3059	6/9/85	4.6	2.0	6.7
		6/24/85	4.0	<5	4.7
		7/26/85	4.1	<1	6.6
		8/27/85	5.6	2.0	8.9
State Action Levels			5	7	70

As of August, 1988, the most recently reported monitoring by Avis indicated no TCE or DCE contamination above federal drinking water maximum contaminant levels or state action levels, including in wells previously heavily contaminated:

Avis Well	sample date	TCE	PCE	t-1,2-DCE
MW2	8/12/88	1.6	<.5	<.5
MW3	8/12/88	4.6	.7	<.5
MW4	8/12/88	1.5	<.5	<.5
MW6	8/12/88	1.1	(.5	<.5
State Action Levels		5	1	70

H-5 (Letter, G. Van Velsor Wolf, Jr. to Lisa C. Lund, ADEQ, dated September 27, 1988, from ADEQ UST Hydrology Section Files)

We do not mean to minimize the concern for groundwater protection, or HHEM's responsibilities in that regard, but believe that the evidence points to a safe and improving ground water quality in the area of HHEM. We believe that should be made clear in the report, and should have significant bearing upon decisionmaking with regard to additional investigation.

IV. Conclusion

The Eastlake Park area obviously has a number of contaminated ground water sites, which are properly matters of public and agency concern. But that concern should be directed in accordance with available evidence, with equal concern to avoid unfair accusation and stigmatization. The parties named as "highest priority" potential sources of contamination will stand accused in the eyes of the public, and will be subjected to public H-6 and agency pressures to expend considerable resources. Kleinfelder has already described them in criminal terms, while casting the burden of proof upon the accused: "If a listed facility cannot demonstrate, beyond any reasonable doubt, that it is not a contributor of chemicals to the ground water, then it should cooperate with any additional sampling at its facility." (Kleinfelder, p. 7-1, emphasis added) The designation of HHEM as such a criminal, as a "highest priority" potential source, cannot be supported by evidence known to date, and is an unfair accusation.

Handy & Harman

We do not believe that HHEM, or its predecessors at the site, can be the source of Eastlake Park contamination. Notwithstanding that belief, we will cooperate with the ADEQ in taking reasonable, feasible steps to investigate and ascertain the environmental condition of the HHEM facility at 2113 Mohave Street.

Very truly yours,

John C. Bullock
Environmental Counsel

cc: PGDeuchler
BWayne
DHare
GPEkern
RHZimmermann
KJohnson

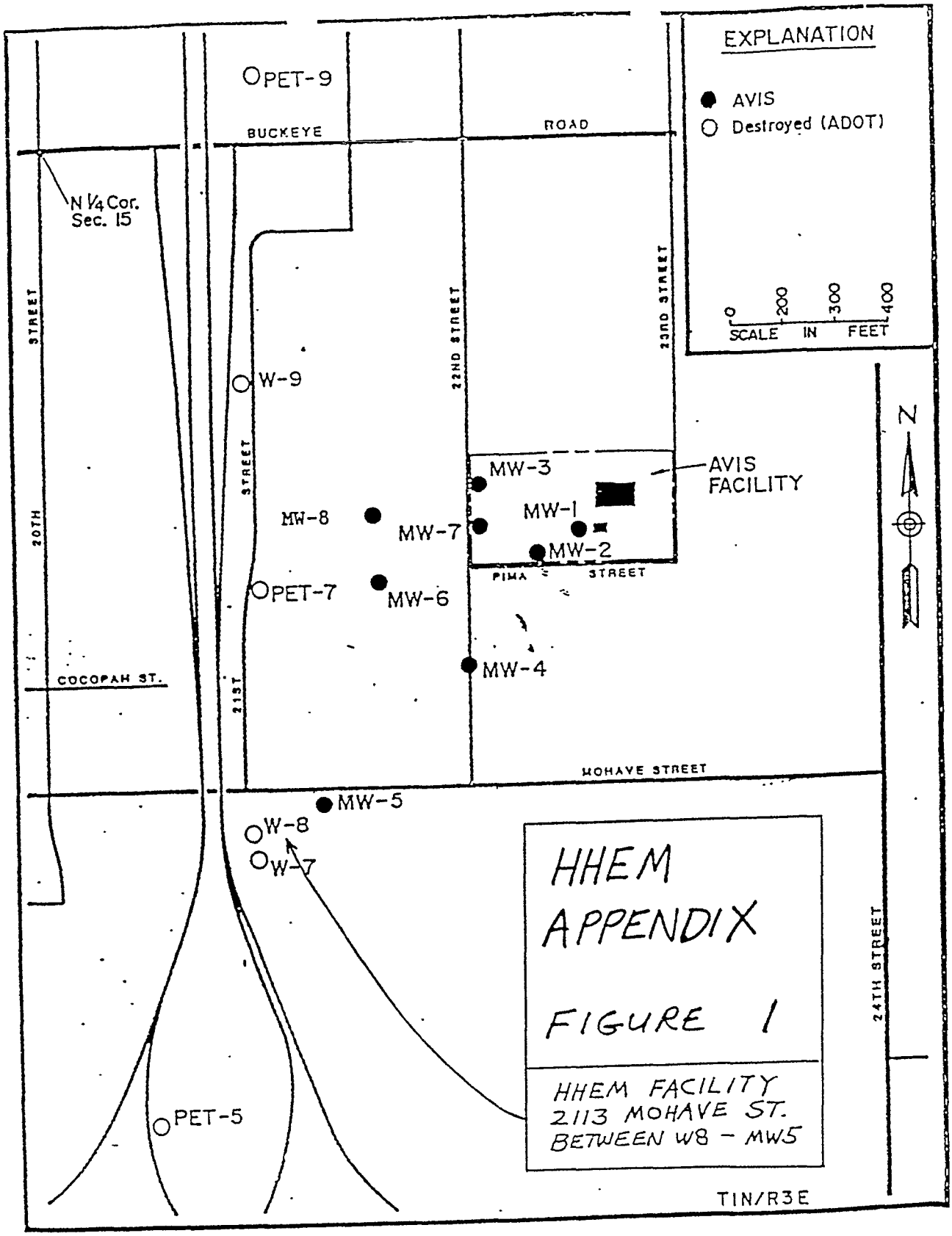


FIGURE 1-LOCATIONS OF WELLS IN THE VICINITY OF THE AVIS FACILITY

HHEM APPENDIX

FIGURE 2

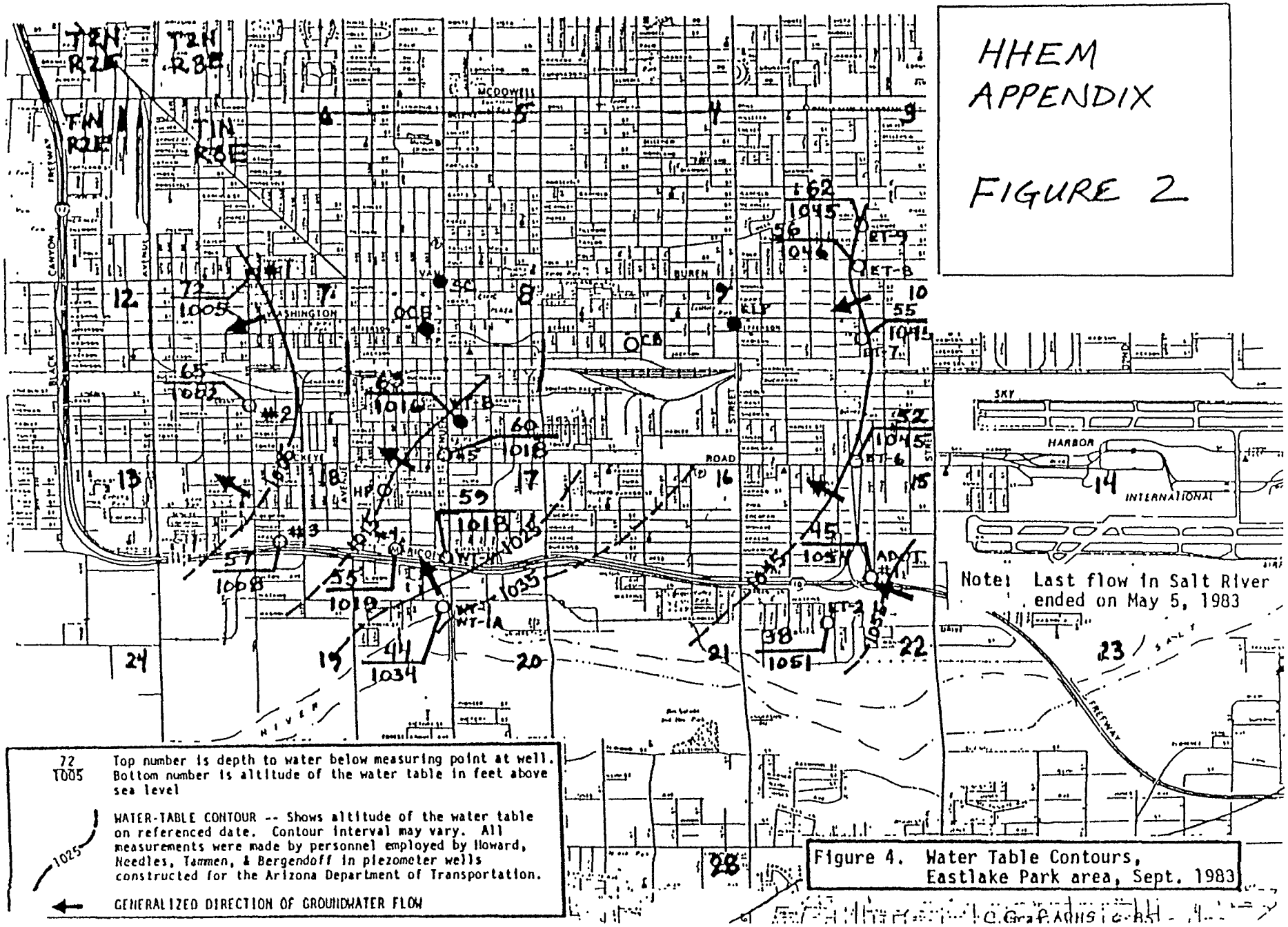


Figure 4. Water Table Contours, Eastlake Park area, Sept. 1983

HHEM
APPENDIX
FIGURE 3

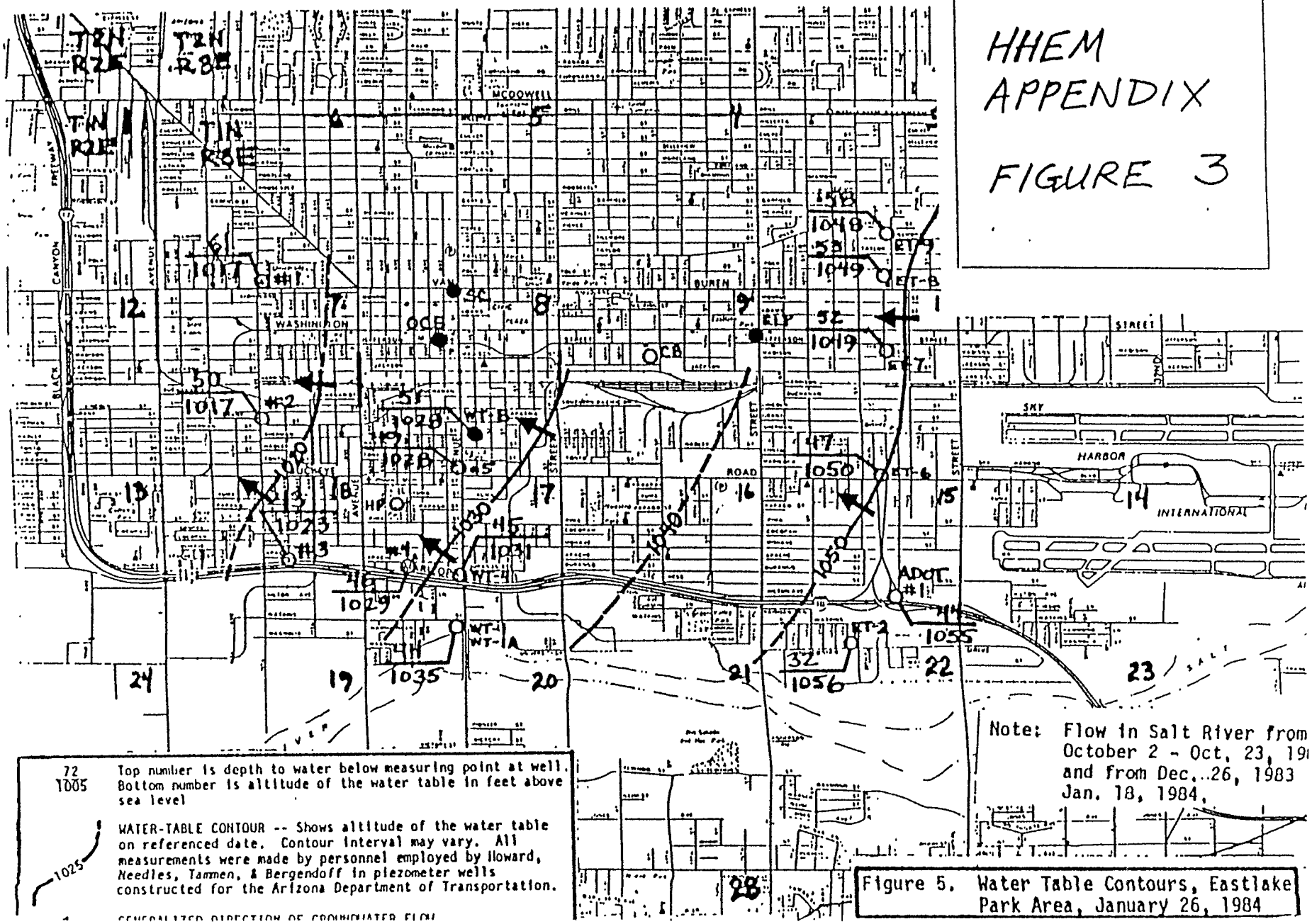


Figure 5. Water Table Contours, Eastlake Park Area, January 26, 1984

HHEM APPENDIX

FIGURE 4

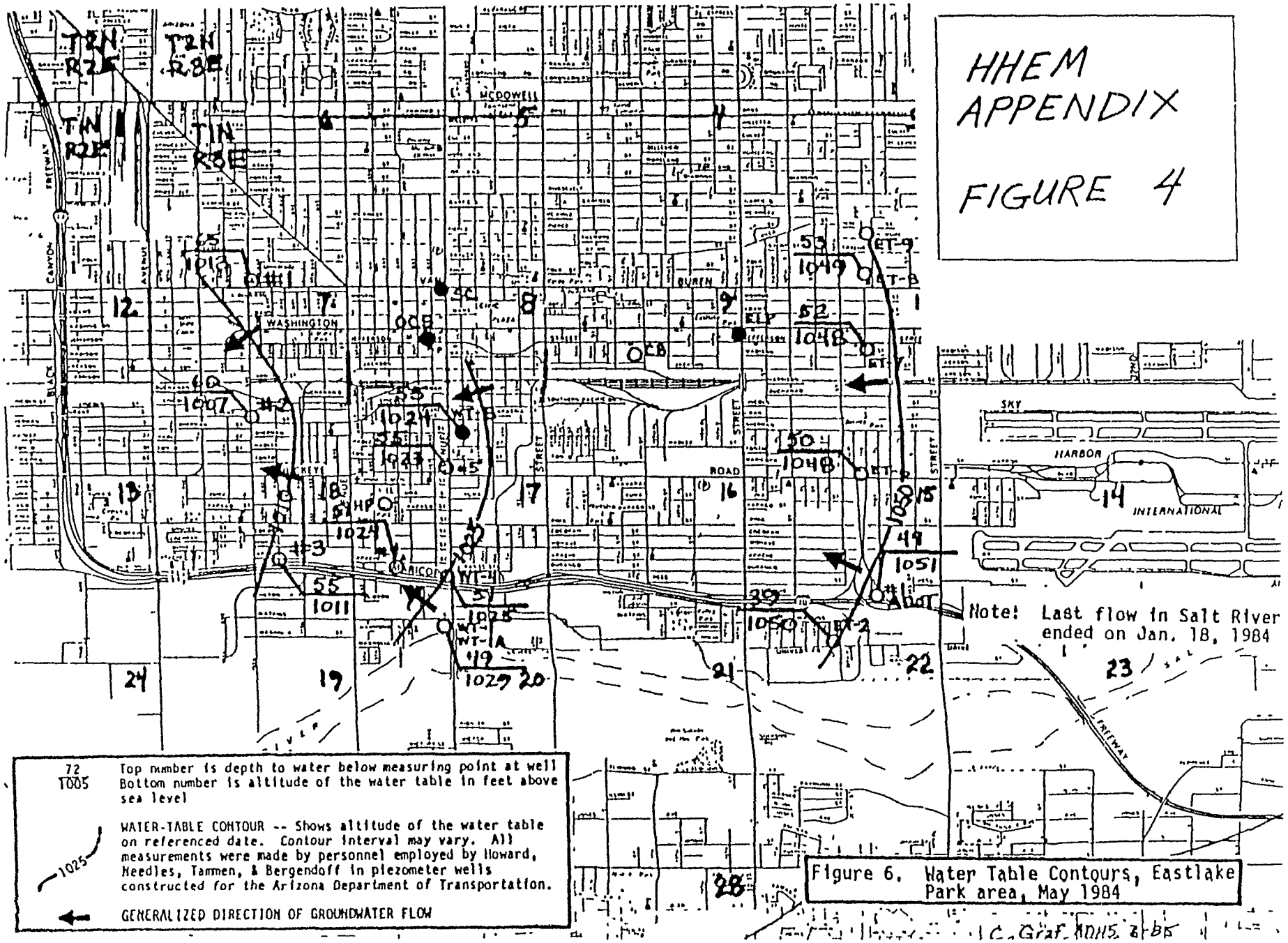
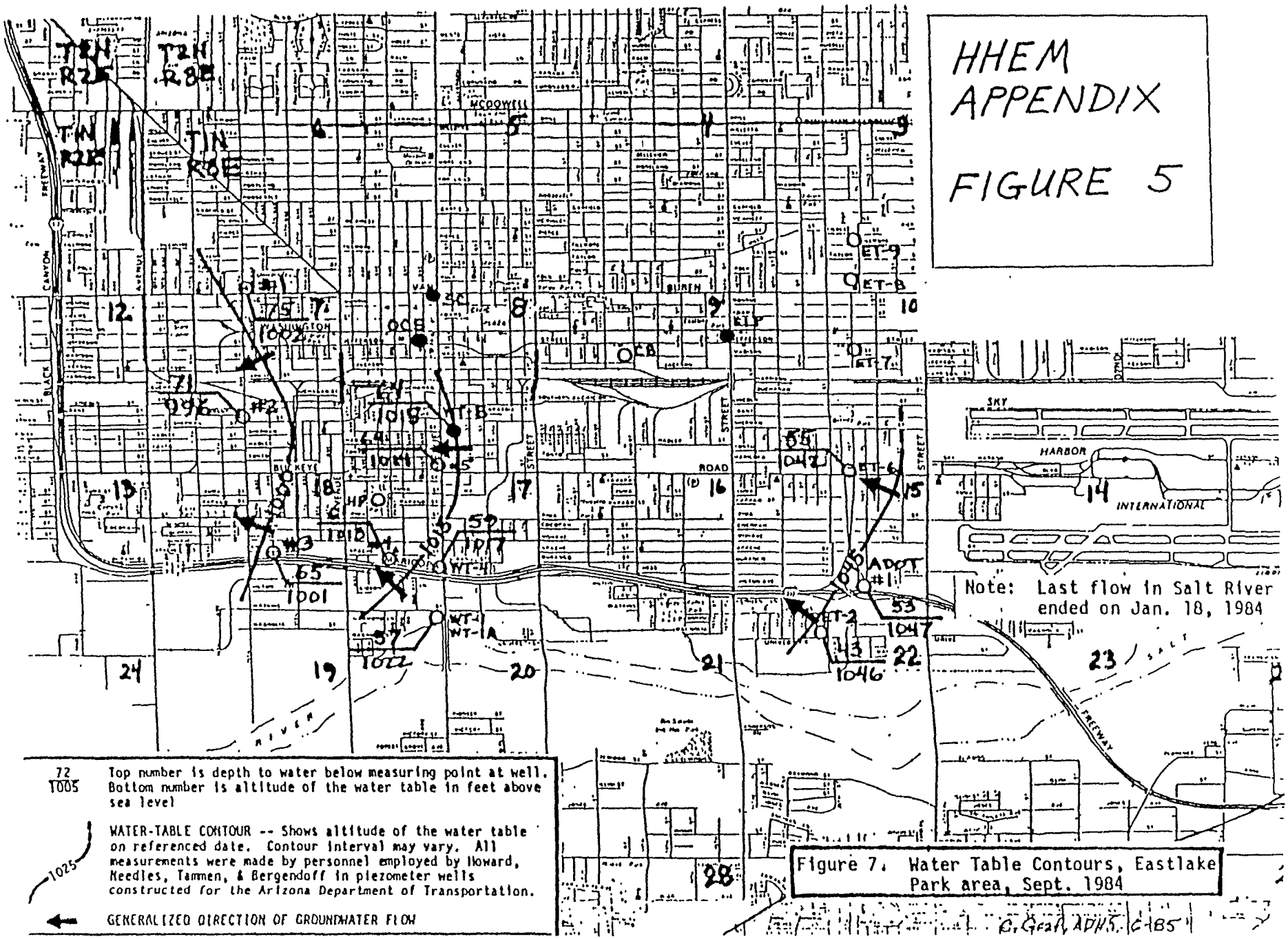


Figure 6. Water Table Contours, Eastlake Park area, May 1984

HHEM APPENDIX

FIGURE 5



72
1005 Top number is depth to water below measuring point at well. Bottom number is altitude of the water table in feet above sea level

1025 WATER-TABLE CONTOUR -- Shows altitude of the water table on referenced date. Contour interval may vary. All measurements were made by personnel employed by Howard, Needles, Tammen, & Bergendoff in piezometer wells constructed for the Arizona Department of Transportation.

GENERALIZED DIRECTION OF GROUNDWATER FLOW

Figure 7. Water Table Contours, Eastlake Park area, Sept. 1984

G. Grant ADWR. C-185

McKenzie Laboratories, Inc.

734 A East Southern Pacific Drive
Phoenix, Arizona 85034
(602) 253-0933

TO: Frank Feffer

FROM: Kathy Lacey

RE: Eastlake Project

DATE: 11/7/88

As per your request I have reviewed our solvent usage for the length of time that we have retained documentation and found the only solvent on the list of hazardous materials included in the Eastlake Project Report to be methylene chloride (dichloromethane). Our usage was one gallon per day maximum for the last 12 month period, which was a much higher usage period than in previous years. Prior to 1975, little or no dichloromethane was used in the laboratory; our waste at that time was primarily petroleum ether and acetone.

Prior to May of 1986, we disposed of our solvent via two methods: Laboratory waste was placed in an evaporating pan located outside the building. It was protected from rain by the overhang of the building. Any residue left in the pan after the solvent evaporated was packaged in 55 gallon drums and shipped off-site. On at least one occasion I was aware that Stu Evans (employed by Chemonics) showed the evaporating pan to an Arizona Department of Health Service employee (Norm Gumenik, I believe) and was told we could continue this operation until told otherwise. Mr. Evans also alleged to me that he discussed the evaporating pan with someone from EPA and received the same response. Because I was knowledgeable that the ADHS lab was evaporating solvent in a hood in their lab, the assumption was made that our laboratory was operating within the required parameters. During an inspection conducted by Norm Gumenik on 10/10/80, the pan was inspected and no corrective actions were required by ADHS. A copy of this report is in our files.

On 2/19/86 a facility inspection was conducted by Gail Clement of ADHS. Many of the violations listed were only violations if the laboratory was a large quantity generator. I responded to <u>all</u> allegations on June 5, 1986 and no further action was taken. This response included copies of all manifests for disposal of the waste dating back to 3/7/83 as well as annual reports, facility inspections, laboratory analysis and facility maps. It should be noted that the inspection was performed in my absence and Ms. Clement indicated to me on the phone that it was conducted as if the lab was a large quantity generator because she was provided some misleading information. My presence at the inspection would probably have clarified the laboratory's status and resulted in a different outcome in the report.

Currently the laboratory wastes are disposed by Rinchem (2/87 thru present), prior to that CTI was used (10/86 thru 12/86) as well as Chemical Waste Management (9/82 thru 6/86). Copies of the manifests for all shipments made from these premises, using these three companies, are available. All drums disposed of through CTI and Rinchem were incinerated.

Further, to my knowledge there has never been a release of solvents on the premises other than minor spills within the laboratory building (from a couple of milliters to a couple of liters maximum). When the lab began using solvents in 1972, usage was probably not more than 1-2 gallons per day of all solvents combined. No chlorinated solvents have ever been disposed of down the sink.

Copies of the above referenced documents are available. Please contact me if additional information is needed.

KL/vc

RAPID RAIL SYSTEMS

November 16, 1988

Mr. Frank Feffer
Chemonics Industries
734 E. Southern Pacific Dr.
Phoenix, AZ 85034

Dear Mr. Feffer:

The following is a description of Government Innovators, Inc. dba Rapid Rail Systms, including historical and present operations:

The history of Government Innovators, Inc. includes the first sale of a truck in 1974. We contracted all of the manufacturing until our own manufacturing began in 1981. During that year, eight trucks were produced; therefore, hazardous waste production would have been minimal. Since 1984, production has roughly doubled each year, and waste generation has increased at approximately the same rate.

Government Innovators, Inc. fabricates mechanized refuse collection trucks, including both the compacting truck bodies and the automated loaders. Government Innovators, Inc. manufactures most of the parts for these units on the premises.

Operations include machining, welding and assembly of all of the parts. The finished trucks are painted in a commercial paint booth, sized to enclose the largest finished units which are manufactured.

Wastes which might be considered hazardous, and which are generated in the above processes are as follows:

1. Paint
2. Paint reducer
3. Paint solvent -EPA #D001

4. Hydraulic oil (Dexron II Automatic Transmission Fluid identical to that used in all automobiles).

5. Water soluble machining oils (coolants).
6. Parts cleaning solvent (used in two small parts cleaning units). These commercial cleaning units are owned and maintained by Safety-Kleen Company of Elgin, IL. Safety-Kleen picks up the containers of spent solvent and leaves fresh solvent about twice a month.

Most of the hazardous materials are generated from the painting operation when the paint spray equipment is cleaned by rinsing it in solvent. After these liquids are collected, they are run through an electric distilling machine to reclaim the solvents for re-use. The still-bottoms from the distilling operation have been handled exclusively by Southwest Solvents Corp. of Chandler, AZ, and all manifests are on file at Government Innovators' office.

The other major source of liquids is the repair-during-manufacture process which occurs along the assembly line. This is entirely hydraulic oil which "bleeds" off during hose-changes and cylinder-rebuilding. This oil is collected in drain pans and is recycled into our Dexron oil storage tank (being carefully filtered as it is pumped back to storage).

Government Innovators, Inc. also purchases diesel fuel in 55-gallon drums, which when empty, are returned to the vendor, and/or refilled.

Since 1986, Government Innovators, Inc. has reported to the state and federal agencies as a hazardous waste generator (U.S. EPA identification number AZD-981673544). Documentation since that time is available and can be provided at your request.

Sincerely,

Marshall Macy
Asst. General Manager

MM/nv

QUALITY PRINTED CIRCUITS, CORP.

ROBERT L. GONZALEZ
PRESIDENT

4837 South 16th Street
Phoenix, Arizona 85040
(602) 276-2761

1829 South Central
Phoenix, Arizona 85004
(602) 252-4688

November 15, 1988

NOV 1988
RECEIVED
Office of
Waste Program

Mr. Jim McDonald
Department of Environmental Quality
Room 400A
2005 North Central Ave.
Phoenix, AZ 85004

Dear Mr. McDonald,

We are in receipt of your letter of October 14, 1988 and the accompanying Draft Report. Naturally we are extremely disappointed in being designated as a potential source of environmental contamination in the report. After reviewing the report, we are concerned that such a superficial and incomplete study would be used to assert a determination of responsiblity for the ground water problems and would claim, beyond it's charter and scope, to have identified 22 polluters from the nearly 1000 business located within the study area.

L-1 We share your concern for the protection of the environment and in turn, we expect a responsible and scientific approach in such studies. Budget limitations do not justify acceptance of inferior work yet, several aspects of the Kleinfelder study are second rate, i.e.; the new testing and sampling is so limited that it is superfluous; the "drive-by" field reconnaissance is a poor substitute for on-site inspections; the determination of environmental attitudes from compliance records is inferior to in-depth interviews; and at one level of the screening process, Kleinfelder appears to have ignored his own hydrologic studies while including our facility in the final priority list.

Our facility passed through the screening process to the priority list because of six assertions or assumptions made by Kleinfelder, these are;

1. Our industry is known to use chemicals,
2. His staff observed drums which "appeared" to be leaky,
3. We listed use of VOCs in the questionaire,
4. We were accused of a Wastewater violation,
5. We have a TTO permit and waiver for some VOCs,
6. He claimed we are "up-gradient" from contaminated well #3027.

L-2 However, Kleinfelder fails to apply a litmus test to indicate if our facility should be included in the priority list. Since the ground water flows westerly, is that ground water more contaminated west of our facility than it is east of our facility? Nothing in the report indicates such a condition exists, and in fact nothing in the report indicates that chemicals we use have been found in the water to the west of our plant. In addition, we feel that the above allegations are not valid:

L-3 Item 1.
Our industry does use chemicals but the technology of the industry turned away from the use of VOCs in the early 1980s. At that time, our facility quit using the VOC,s which are targeted as ground water contaminates. According to Kleinfelder's report, that time frame coincides with the low level of VOC contamination in many of the wells in the study area therefore, we would not expect to have contributed to the recent increase in VOC pollution.

L-4 Item 2.
We do not allow drums to leak onto the ground. If Kleinfelder had asked for a site inspection, we would know what led his staff to assert that some drums "appeared" to be leaky. Either they were leaking or they were not. The staff does not assert observing stained ground (as they did in relation to other facilities) which would be expected if leaky drums were habitually stored on site. We believe that the staff saw "stained" drums. We empty and refill some drums which are then returned to the manufacturer for recycling. The emptying and refilling process is done in containment areas and some material occasionally spills on the sides of the drums. Once dried, the stains are difficult to remove; we believe these stains maybe the source of this false assertion.

L-5 Item 3.
In completing the questionaire, we used information from the MSDSs which are provided by the shippers of the products we buy. We used their percentages to total up the amounts of each of the chemicals included on the lists Kleinfelder provided, without regard to the product's physical state. Many of the VOCs that we listed are contained in photosensitive emulsions and represent no greater threat to ground water than the film in your favorite camera. The questionaire is deficient for not recognizing the physical state of the chemicals, so intelligent conclusions could be reached concerning their actual threat to the environment.

L-6 Item 4.
Kleinfelder makes two serious errors when he uses other agency's citations as a guide to a company's compliance or non compliance attitude for environmental regulations.

1. He pre-empts the assumption of innocence because a citation is not a final finding of guilt.
2. Equipment failure or operator errors are more likely causes of non-compliance citations than corporate attitude.

He reports that we were cited for a wastewater violation on March 29, 1988 - we denied the violation. The city did not press the issue so no judgement of guilt was reached. The city claimed to have detected a violation from samples taken in the street below our tap. Since they did not have concurrent samples from above and below our tap - there is no undisputable evidence that we were the source of the violation. Our internal records indicated that we did not have an excursion on that date.

L-7 On November 10, 1988, Mr. Michael Rose, Senior Inspector in the Phoenix Wastewater Department confirmed in a phone conversation that his records and recollections indicate we were amoung the first three or five companies to install a pretreatment facility. That fact is far more indicative of our corporate attitude for cooperation and willingness to comply with environmental regulations than any of the information presented by Kleinfelder. An interview with knowledgable members of our management would have disclosed that fact to his staff.

L-8 Item 5.
Applying for and receiving a TTO permit and a Waiver for discharge of some VOCs from the Industrial Wastewater Department is not uncommon. We were granted the permit and waiver because our total usage of VOCs has historically been so small that they are easily handled. Our purchases of some VOCs never exceeded a single 55 gal. drum per year, and as indicated above, the purchases of most organic solvents in liquid form ceased in the early 1980s. Citing the permit and waiver as a reason for including us on the priority list is questionable when one considers that our purchases of the solvents are probably smaller than the purchases of a typical dry-cleaning establishment (none of which are included on the final priority list).

L-9 Item 6.
According to page 2-6 of the Kleinfelder report, the direction of the ground water is "... generally westerly, parallel to the salt river". According to plate 2 included with the report, the sub-soil either directly below our facility or just east of our facility appears to be non-waterbearing. And finally in figure 3 of the report, the well identified as ENVIS site #3027 is clearly shown to be 1 mile north and slightly west of our facility. This well is not at all in the westerly flow of the ground water (if any exists) moving away from our facility. The major contaminants in the well include chloroform which is a substance that we have never used, but it was commonly used in the cleaning industry. In view of the facts, how can our facility remotely be considered an up-gradient source of pollution to well #3027? On the other hand, if Kleinfelder had applied the above mentioned litmas test, he would not have found an increase of chemical contamination to the west of our plant. Such blatent disregard for his own geologic and hydrologic facts in order to include our facility in his priority list is alarming.

L-10 In view of the factual errors, misrepresented and incomplete information used by Kleinfelder to justify our inclusion on the final priority list, we urge you to delete our facility from that list. At the very least, DEQ should reject the Kleinfelder Report because it fails to meet a goal of including a priority list of all potential contributors of the ground water problem. Discussions with members of the DEQ staff clearly indicate dissatisfaction-with the attempt to limit the list to 22 companys. Such a far reaching determination would be expected only after an exhaustive study including sampling and testing to confirm the conclusions drawn from the data. This study clearly was

not sufficiant for such determination but publication of the allegations will burden the listed companies with damaged reputations and heavy costs. Therefore, it appears that the Kleinfelder
L-10 Report can represent nothing more than a starting point for your next study of the problem. We are confident an in-depth and responsible study will absolve our facility from being considered a source of the water pollution.

The reversal of ground water pollution is a vital interest to all of us, therefore if you require any additional information or clarification of our practices and uses, please contact me immediately.

Respectfully,

Roger L. Olander
Environmental Coordinator

SALT RIVER PROJECT

POST OFFICE BOX 52025
PHOENIX, ARIZONA
85072-2025
(602) 236-5900

November 17, 1988

NOV 1988
RECEIVED
Office of
Waste Program

Mr. Jim McDonald
Department of Environmental Quality
Room 400A
2005 North Central Avenue
Phoenix, AZ 85004

Dear Mr. McDonald:

Following are the Salt River Project's (SRP's) comments on the "Draft Phase 1 Report, Eastlake Park Area, Phoenix, Arizona, Task Assignment K-3", prepared for the Arizona Department of Environmental Quality (ADEQ) by Kleinfelder. SRP appreciates the opportunity to review the draft report and to provide comments to ADEQ.

SRP wishes to make clear that these comments are being submitted by SRP in its capacity as a regional water manager; understandably interested in the quality of groundwater in the Phoenix metropolitan area. Furthermore, SRP is commenting on this report from a technical perspective, utilizing its environmental, water quality, and geohydrology expertise, in a spirit of cooperation with ADEQ. These comments should not be deemed an indication that SRP considers itself an involved or responsible party with respect to any future investigative or remedial activities that may be undertaken in the Eastlake Park Area. As recognized by ADEQ in its letter dated October 14, 1988, inviting SRP comments on the draft report, the report does not represent an administrative finding of culpability or liability against SRP or any other party.

General Comments

M-1 The report appears to be a good beginning in defining the nature and extent of groundwater contamination in the Eastlake Park area. As a general overview of existing information (with limited collection of new data), it represents an initial step in what is a very involved and technically complex process. Because future activities of the Water Quality Assurance Revolving Fund (WQARF) process will build from this report, it is imperative that the report be an accurate and representative presentation of pertinent and factual information.

The contractor that prepared the report properly acknowledges within the report that although the document is appropriate for the specific scope of work, it is neither comprehensive nor exhaustive. Therefore, it is very

M-1 important that people who interpret and utilize the report also recognize these limitations when determining future actions.

Specific Comments

More specifically, SRP would offer the following input:

M-2 Section 2, "GEOLOGIC AND HYDROGEOLOGIC CONDITIONS". The report states that the bedrock units underlying the alluvial deposits are "encountered at depths of approximately 2,000 feet in wells in the eastern portion of the study area". (Page 2-2). The report also states that there is a saturated thickness of 150 feet in the eastern area. (Page 2-6). In reality, the alluvial sediments are relatively thin, particularly on the eastern portion of the study area. This is illustrated by the crystalline and volcanic bedrock which crops out just east of the study area. The depth to bedrock is estimated to be between 50-100 feet around 48th Street along the eastern margin of the study area. The depth of bedrock (and thickness of alluvial units) increases from east to west (basinward). The saturated thickness in the eastern portion of the study area is expected to be on the order of 10 to 60 feet. This section should be reviewed and appropriate corrections made.

M-3 Page 3-6, Section 3.2.19. The correct acronym for the Water Resources Research Center is WRRC.

M-4 Page 3-16. The word "the" at the start of the last sentence on this page should be deleted.

M-5 Page 4-3 and following. There are several references within the document of concentrations of "Chevron S-350 solvent" being reported in groundwater analyses. These references are confusing, since specific commercial products are not normally analyzed for or reported. An explanation of why the specific product was investigated and reported would be helpful and would add credibility to the statement. Any future studies and analyses should be directed towards the chemical constituents and not a commercial blend or product. Based on information from Chevron headquarters, there is no product named "Chevron S-350". Chevron does market products designated "350B" and "350H".

M-6 Page 4-10, Table 4-2. The "1" should be dropped from the legal well designation of Well (A-1-3) 8cdd.
The legal well designation for the last well in this table should be corrected to read (A-1-3) 9ddc.

M-7 Page 4-13. The last two paragraphs of this page describe the VOCs present in samples from "Well (A-1-3) 8bda(A)" and "Well (A-1-3) 8bda(B)". Elsewhere in the text these wells are identified as "Well (A-1-3) 8bda1" and "Well (A-1-3) 8bda2". A consistent numbering or reference system should be maintained throughout the document.

M-8 Page 4-15. The address for the "SRP Yard" is 1616 E. Lincoln Street.

M-9 Page 5-35, Questionnaire and Compliance Section. The spelling of "methylene ethyl keytone" in the last sentence of this section should be corrected to methyl ethyl ketone.

M-10 Page 5-36. The correct facility address is 1616 E. Lincoln Street, Phoenix, AZ 85034.

M-11 While the statement that no questionnaire was returned for the facility is true, on August 23, 1988 Mr. Richard Jenkins of ADEQ granted SRP an extension of time to submit the several questionnaires SRP had received. (See enclosed letter from Cynthia Parker of SRP to Mr. Jenkins, dated August 25, 1988). At that time, SRP had received five questionnaires, and has since received three more, for a total of eight. SRP has been diligently working to compile the requested information, but the magnitude of the eight nearly simultaneous requests has prevented SRP from responding sooner. The questionnaire has now been submitted and SRP requests that the draft report be amended to indicate this fact.

M-12 The well number on this page, "(A-1-3) bdd", should be corrected to read (A-1-3) 9bdd.

M-13 Page 6-4. The address for the Salt River Project Facility is 1616 E. Lincoln Street.

M-14 Appendix A, bottom of page preceding Page 1. The description of the meaning of the asterisk designations should be clarified and made consistent with the text in Section 5. Specifically, the text states that facilities were given two asterisks based on review of compliance files and their response to the questionnaire. The key at the beginning of Appendix A makes no reference to the questionnaire.

M-15 Also, the text states that facilities were rated with three asterisks based on their proximity to known areas of elevated contamination and/or previously established potential source identification, these criteria are not properly reflected in the Appendix.

M-16 Plate 1. The legal well designation for ENVIS Database Well Number 3050 reads "(A-1-3) 9bd", this should be corrected to read (A-1-3) 9bdd.

Thank you for your consideration of our comments. If you have any questions concerning the comments, please contact Ray Hedrick of the Environmental Services Department at 236-2828.

Sincerely,

Alfred H. Qöyawayma, Manager
Environmental Services Department

AHQ/RDH/laf
Attachment

SALT RIVER PROJECT

POST OFFICE BOX 52025
PHOENIX ARIZONA
85072 2025
(602) 236-5900

August 25, 1988

Mr. Richard Jenkins
Environmental Engineer Specialist
Superfund Coordination Unit
Arizona Department of Environmental Quality
2005 N. Central Ave.
Phoenix, AZ 85004

Dear Mr. Jenkins:

In confirmation of our conversation of August 23, 1988, Salt River Project's Environmental Services Department has received five Water Quality Assurance Revolving Fund questionnaires for SRP facilities within Study Areas. As the forms were originally sent to various addresses, some of which did not reflect particular site names and addresses, those sites receiving the questionnaires were unsure of their obligation in this matter.

As we discussed, due to these problems, the twenty-one day period requested by Arizona Department of Environmental Quality (ADEQ) for return of the completed form can not possibly be met. From our conversation, it is my understanding that SRP has been given an indefinite, but reasonable, time extension to send in the completed questionnaires, and that you will notify Sandra Eberhardt and Donald Atkinson concerning this.

Where possible, it would be preferable for ADEQ to send such communications to the Environmental Services Department, to alleviate similiar delays. In this matter, I will be the SRP contact, and can be reached at 236-2077.

Salt River Project supports ADEQ's efforts in maintaining water quality in Arizona, and hopes to assist in any way possible.

Sincerely,

Cynthia Parker

Cynthia Parker
Environmental Services Department

CLP:ja

cc: F. T. Darmiento
D. E. Guzmán
R. L. Hutzel
A. H. Qöyawayma

KF

Tiernay Turbines

NOV 1988
RECEIVED
Office of
Waste Programs

November 17, 1988

HAND DELIVERED

Mr. Jim McDonald
Arizona Department of Environmental Quality
Room 400A
2005 North Central Avenue
Phoenix, Arizona 85004

RE: Draft Phase I Report, Eastlake Park Area,
Phoenix, Arizona, Task Assignment K-3

Dear Mr. McDonald:

In response to Mr. Norm Weiss' letter dated October 14, 1988, Tiernay Turbines Inc has prepared the enclosed comments on the above referenced report. We request that ADEQ give these comments consideration in the preparation of the final version of this report. If you have any questions please contact me.

Sincerely,

Chris Walker

Chris Walker
Manager-Environmental, Safety & Security

Enc.

Comments of Tiernay Turbines Inc on
"Draft Phase I Report, Eastlake Park Area, Phoenix, Arizona
Task Assignment K-3"

INTRODUCTION

By letter dated October 14, 1988 from Mr. Norm Weiss, Assistant Director, Office of Waste Programs, Arizona Department of Environmental Quality (ADEQ), Tiernay Turbines Inc (Tiernay) was notified that it had been identified as a potential source of environmental contamination in the Eastlake Park area in the report entitled "Draft Phase I Report, Eastlake Park Area, Phoenix, Arizona, Task Assignment K-3" (hereinafter referred to as the "Report"). The Report was funded by the Water Quality Assurance Revolving Fund (WQARF) and was prepared by Kleinfelder (as consultant) and Malcolm Pirnie (as sub-consultant) to ADEQ. Tiernay was invited to review the Report and provide comments to ADEQ. Tiernay appreciates the opportunity to provide input to ADEQ concerning this highly important matter. For the reasons which are discussed below, Tiernay believes that the consultant's recommendation to focus further attention on a very limited number of facilities is premature and does not adequately consider the significant limitations in the methodology used for identifying potential sources of contamination.

DISCUSSION

1. Methodology

The screening methodology used by Klienfelder is discussed in Section 3 of the Report. The screening procedure was used to develop the prioritized listing of existing facilities within the study area. Kleinfelder recommends

that further investigation should be made with respect to these facilties to determine whether any additional sampling should be conducted. If the facility is found to be a contributor of chemicals to the groundwater, Kleinfelder recommends that the facility should proceed with remedial design.

The clear upshot from Kleinfelder's methodology and recommendations is that the existing facilities identified in the prioritized listing will receive the full attention of ADEQ with respect to further investigations within the study area. The far-reaching implications of this approach cannot be justified considering the admitted limitations of the methodology.

The described methodology consists of four basic steps. The steps were: literature and records searches; field investigations; distribution and processing of questionnaires; and evaluation of proximity to known concentrations of chemicals in the groundwater. A brief review of some of the limitations associated with this methodology is set forth below.

a. Literature and Records Search.

This step primarily involved the contact of a number of agencies and a review of information acquired as a result of these contacts. However, the quantity of useful information obtained in this step depends on the scope of knowledge of the individual agency contact(s). (See Report at 8-1). Depending on who the contact was, and the efforts undertaken by such contact, there may be more information available within the agency than was actually made available to Kleinfelder. Furthermore, the information which was acquired may itself be incomplete. For example, among the most useful sources

of information would be the RCRA, CERCLA and SARA files on entities located within the Eastlake Park area. However, as ADEQ is well aware, such files do not necessarily cover all facilities which use, generate, store or dispose of hazardous waste or hazardous substances. This is because such files would only exist for facilities (i) which have informed the agency (EPA or ADEQ) of their activities falling within these regulatory programs or (ii) which have otherwise been identified by the agency as being subject to such programs.

b. Field Investigations.

This step involved a reconnaissance of properties and wells, and the sampling and analysis of soils and ground water. With respect to the reconnaissance of properties, the Report acknowledges that there was only limited access to many of the private and commercial facilities during the field investigations. (Report at 3-7). Needless to say, if there is no or only limited access to a facility, there is little hope of making an accurate assessment of drums located at the facility, stained soil areas, disposal practices, storage tanks, dry well locations and chemical use. With respect to the sampling of wells, the Report acknowledges that only eight of the 17 proposed wells were actually sampled. The absence of area-wide sampling increases the risk of inaccurate assessments of the relationship, if any, between different points of known contamination.

c. Distribution and Processing of Questionnaires.

The Report states that only 281 out of 995 recipients of the questionnaires actually responded. (Report at 4-14). The importance of the missing responses to a sound assessment in the Eastlake Park area is obvious.

d. Proximity to Known Areas of Groundwater Contamination.

The final step in the methodology is subject to question for at least two reasons. First, it apparently only applied to facilities that were assigned a high priority status following completion of the first three steps. Second, due to the limited ground water quality data, the step would not be comprehensive as to facilities located in areas of little or no sampling.

Based on the foregoing limitations, some of which have been directly acknowledged by the consultant (see Report at 6-4), it is premature for ADEQ to limit its further investigations to the 22 facilities which have been identified in the Report. Rather, ADEQ should undertake a more complete investigation of facilities where chemicals may be used and for which there does not exist a RCRA or SARA file, make more complete field investigations of such facilities, and obtain responses to the questionnaires distributed by ADEQ for such facilities. Only after more complete information is available would it make sense for ADEQ to narrow its focus to a limited number of facilities.

2. <u>List of Facilties</u>

The Report contains a discussion of each of the 22 facilities which are identified on the agency's highest priority list. Tiernay is identified as one of the 22 facilities. However, a review of the description concerning Tiernay reveals numerous errors and misstatements which raise serious questions concerning the accuracy of the information presented not only for Tiernay, but also for the other facilities listed in the Report. Tiernay's comments concerning the description are as follows:

N-1 a. The report states that Tiernay presently has 28 registered dry wells on site. The facts are that there are 26 dry wells on the property; two dry wells were closed in January, 1985 following prior notification to ADEQ.

N-2 b. The Report states that Tiernay has been listed as a potentially responsible party in the ADEQ RCRA Eastlake Park investigation. Tiernay is not aware that there is such a classification as a "potentially responsible party" under RCRA. Tiernay had been notified in 1987 that it was identified on a preliminary basis as a potential responsible party in connection with "existing or potential" environmental pollution at the Eastlake Park area. The notification from ADEQ did not specify the basis upon which Tiernay was identified as a potentially responsible party.

N-3 c. The Report states that Tiernay uses certain identified solvents on site for degreasing, including TCE, PCE, carbon tetrachloride and chlorofluorocarbons. As Tiernay has explained to ADEQ on previous occassions, Tiernay does not use TCE as part of its operations and has not for more than 10 years. Furthermore, as previously described to ADEQ, Tiernay has not used PCE since 1982. The total quantity of PCE used by Tiernay was 55 gallons. With respect to carbon tetrachloride, Tiernay purchased two gallons in 1987, and has not otherwise purchased or used this substance. With respect to chlorofluorocarbons, Tiernay consumed 55 gallons between 1977-83, but has not otherwise used this substance.

N-4 d. The Report states that in 1985 Tiernay had denied the use of TCE at its facility. A review of documents provided by Tiernay to ADEQ in 1985 clearly shows that Tiernay acknowledged the use of TCE at its facility between the years

N-4 1975 and 1978, but has not used TCE at its facility since that time.

N-5 e. The Report states that in 1985 dry wells at the facility were sampled and found to contain TCE and DCE. The record shows that TCE and DCE were found in sludge-type material from one dry well at the facililty and that, following the receipt of such sample results, Tiernay removed the contents of the dry well and closed the dry well following prior notification to ADEQ.

N-6 f. The Report states that Tiernay's facility is located approximately 1,000 feet from the Eastlake Park well (A-1-3) 9ada, which has been observed to contain levels of TCE and other contaminants above Arizona action levels. The Report fails to note that the Eastlake Park well is located upgradient to the Tiernay facility.

CONCLUSION

Based on the foregoing, ADEQ should make more extensive investigation of facilities located in the Eastlake Park area prior to narrowing its focus to a limited few. Furthermore, ADEQ should be more sensitive to the accuracy of the information that it publishes concerning facilities within the Eastlake Park area.

DA
55
KLN
File

November 16, 1988

NOV 1988
RECEIVED
Office of
Waste Program

Mr. Jim McDonald
Arizona Department of Environmental Quality
Room 400A
2005 North Central Avenue
Phoenix, Arizona 95004

Dear Mr. McDonald:

We have completed our review of the document titled "Draft Phase I Report, Eastlake Park Area" dated October 1988 by Kleinfelder. We were assisted during this review by Michael Harris of Roy F. Weston, Inc. Based upon our review, we would like to make the following observations and comments:

O-1 • On page 5-27 there is a typographical error, it should be Bexon Equipment not Bexton. Also there has been an address change in the last few months due to an office/entrance location change. The new address is 4346 E. Magnolia, Phoenix, Arizona 85034. The old address was 2425 South 40th Street.

O-2 • It is not clear how the water quality of the shallow aquifer was factored into the evaluation process, or if it was even considered. It is well documented that the groundwater in the shallow aquifer in the 40th Street and Salt River Channel area is of poor quality and utilized for industrial purposes only.

O-3 • Many of the chemical compounds listed throughout the report, including the section specific to the 40th Street and Salt River Channel area, have never been detected at the 40th Street Landfill monitoring wells.

O-4 • Documents exist which indicate that Estes Landfill is the source of the majority of chemical compounds in this area and that at times the groundwater flow direction is such that this would impact the water quality of the 40th Street Landfill monitoring wells.

O-5 ● It needs to be emphasized that, as stated, the 40th Street Landfill has only received municipal and commercial refuse (i.e., bulk trash, construction and demolition wastes and household trash). It has never received industrial waste liquids or chemicals. Pages 5-7 and 5-8 make general statements about the sources of these chemicals compounds none of which apply to the 40th Street Landfill. Borings performed during the installation of the methane gas monitoring and collection system indicated in place wastes of the types described previously.

O-6 ● We take exception to the words "contributors of chemicals to the groundwater" contained on page 6-2. This infers disposal or spills of industrial wastes and subsequent migration to the layman. This is a theme that is prevalent throughout the report.

O-7 ● We take exception to the classification of the 40th Street Landfill as a "highest priority facility" and for the reasons presented above, feel that the lower classification of high or higher is warranted.

O-8 ● An observation that leads to questions concerning the thoroughness and accuracy of this effort is that it appears a lot of time and budget were expended on researching, preparing and reviewing sampling plans; yet when it came time to implement the plans 50 percent of the locations could not be sampled because wells could not be found, wells were inoperable, or areas were paved. It would seem to have been prudent to check out the proposed sampling locations as part of the plan preparation.

We appreciate the opportunity to review and comment on this report. As always we will be glad to cooperate in whatever way is deemed proper and prudent. We have always allowed access to the facility and the obtaining of samples as long as we were notified in advance and allowed to receive copies of the field trip reports and subsequent data. We do reserve the right to take splits.

If you have any questions pertaining to the above observations and comments please do not hesitate to contact me at (602) 437-3111.

Very truly yours,

Ken Bradley
Manager
40th Street Landfill

KB/dg

APPENDIX F

Response to Comments

This appendix contains the responses to the comments included in Appendix E. The alphanumeric designation of the responses corresponds with the alphanumeric index for each comment.

DRAFT

Response to Comments
from
Allied-Signal Aerospace Company
(Garrett)

Comment A-1

The current zipACIDS List developed by ADEQ lists Garrett Pnuematic Systems, 2801 E. Washington, with an I.D. number of 371 AZD 982007213.

Comment A-2

This information has been used in preparation of the current list of facilities included as Appendix A of this report.

Comment A-3

This final report does not include a prioritized list of facilities but merely a list of facilities for continuing evaluation.

Comment A-4

This information has been corrected. Facility descriptions are no longer included in the final report.

Comment A-5

These terms were not used in the draft report nor are they used in this final report.

Comment A-6

Part of the goal of Phase I of this investigation was to gather available historic data. The results of Phase I will enable ADEQ to sub-divide the East Washington Study Area into smaller areas for more intense study. These smaller areas will be the subject of more intensive site-specific investigations as part of Phase II.

Comment A-7

The airport area will be the subject of more intensive investigation as part of Phase II.

Comment A-8

The financial information as well as the "prioritized" list of facilities is not included in this final report.

DRAFT

Comment A-9

See response to comments A-22 through A-40.

Comment A-10

It is intended that the East Washington Study Area be sub-divided into smaller areas, as suggested, for Phase II of the investigation.

Comment A-11

See response to comments A-42 through A-51.

Comment A-12

The methodology is clarified in this final report.

Comment A-13

The ADEQ document was improperly referenced in the draft report. The actual title of the document is "Preliminary Responsible Party Survey." Inferences such as this have been clarified in this final report.

Comment A-14

This statement has been corrected in the facility description.

Comment A-15

The ground water flow direction given in the report is based on regional data published by ADWR. This may vary from site to site and seasonally. More intensive investigations to determine site-specific hydrogeologic characteristics are recommended for Phase II. References to ground water flow directions have been better qualified in this final report.

Well (A-1-3)10aa was not only contaminated but was found to contain 0.9 feet of floating product when sampled as a part of this investigation. The floating product was analyzed and the results are presented in this final report.

Comment A-16

Sufficient data were not available to positively link ground water contamination to particular facilities. For that reason the facilities listed in the draft report were listed as

facilities which "warranted further investigation." These further investigations will be conducted during Phase II of this study.

Comment A-17

This is a very good suggestion and is, in fact, what ADEQ plans to accomplish during Phase II of the study. Allied-Signal Aerospace Company's willingness to work with other companies in the area to determine the source of contamination is commendable.

Comment A-18

A detailed investigation of all the facilities at the airport is beyond the scope of this first phase of study. Some facilities were listed because of existing information found in ADEQ files. Other facilities, such as the Arizona Air National Guard, were not ranked in the draft report but were being considered at the time the draft was released. The final report lists facilities for which available data show that their inclusion is warranted.

Comment A-19

ADEQ used the EPA document as a guideline. However, there were insufficient data available to give facilities a numerical ranking. The methodology used in this investigation is described in greater detail in Section 5 of this report.

Comment A-20

Kleinfelder's subcontractor was unable to find financial information for all facilities from the same source. However, the various sources used are typically considered reliable sources.

Comment A-21

Kleinfelder's subcontractor was unable to acquire this information in time for the draft report. Financial data are not reported in the final report.

Comment A-22

The sampling method was consistent. It was decontamination of sampling equipment, not sampling procedures, for which two methods were employed. Both methods are acceptable to the EPA and ADEQ. As stated on page 3-15 of the draft report "equipment rinsate samples were collected in order to verify the effectiveness of the decontamination." Travel blanks were also included as part of the QA/QC procedures.

DRAFT

The use of methanol as an equipment rinse is widely accepted because other organic contaminants are soluble in methanol and are subsequently driven off as the methanol evaporates. Samples of the final rinse water were analyzed for indications of residual contamination.

Comment A-23

Stainless steel sampling equipment is widely used and accepted. It is unlikely that the chrome contained in the stainless steel will find its way into the soil sample and be solubilized by the extraction procedure (EP). If it did it would be accompanied by high levels of other metals such as nickel.

Comment A-24

This was a typographical error and should read 1,2-dichlorobenzene.

Comment A-25

Page 4-3 does not list 1,1-dichloroethane but does list 1,1-dichloroethenes. The three dichloroethenes listed under "40th Street and Salt River Channel" were discrepancies that appeared in the historical data and have been resolved since the draft report was issued.

Comment A-26

These issues have been corrected and clarified in this final report.

Comment A-27

The possible introduction of iron has been taken into account when interpreting the data. Iron was one constituent included in the suite of analyses.

Comment A-28

This error has been corrected in this final report.

Comment A-29

This inconsistency has been resolved in this final report.

Comment A-30

ADEQ has planned more detailed and site-specific ground water sampling during Phase II. Phase I sampling was limited due to time and budgetary constraints.

DRAFT

Comment A-31

This was an attempt to see if the runoff contained any organic contaminants. The results were negative.

Comment A-32

Since VOCs are not naturally occurring, then any detected level would be considered elevated. The phraseology has been clarified in the final report.

Comment A-33

This inadvertent inclusion has been corrected in this final report.

Comment A-34

This was a typographical error and has been corrected in this final report. The detection limit is actually 0.01 mg/kg.

Comment A-35

There are insufficient data to draw isoconcentration contours.

Comment A-36

Indeed the sample matrix was not indicated on two of the chain-of-custody sheets. However, the laboratory data sheets all identify the matrix. In addition, all samples selected for analyses of EP Toxicity metals were analyzed and the results were included in Appendix C of the draft report.

Comment A-37

Neither the draft Phase I report nor the sampling plan stated that the soil samples were analyzed for "primary drinking water standard metals" and "general minerals" (see page 3-14 of the draft report).

Comment A-38

The laboratory did use mg/L on its reporting sheets. However, mg/L and mg/kg are both equal to ppm (parts per million).

The sample labeled 808135-18 for which TDS was analyzed was identified as an "aqueous" sample on the first page of the laboratory report included in Appendix C of the draft report. Thus, analysis of TDS is appropriate.

DRAFT

Comment A-39

The first page of the laboratory report presents the key to the lab I.D. numbers. This sheet was in the draft report.

Comment A-40

The hardness calculation used by Analytical Technologies is:

(2.497 x calcium concentration) + (4.118 x magnesium concentration).

The conversion factor is that used to convert concentration of an element to concentration as $CaCO_3$. When summing hardness components, it is appropriate to express them in terms of $CaCO_3$.

Comment A-41

The study area boundaries were originally defined by ADEQ in an effort to include all potentially contaminated areas. One goal of this first phase of study was to assimilate the historic data and recommend more pertinent boundaries. Revised boundaries for the East Washington Study Area are recommended in Section 7 of this final report.

Comment A-42 through A-51

These comments will be used to clarify and correct the information gathered by Kleinfelder's subcontractor and presented in the facility description. The facility descriptions are no longer included in the final Phase I Report.

DRAFT

Response to Comments
from
Arizona Plating and Anodizing Company, Inc.

Comment B-1

The questionnaire response submitted by Arizona Plating and Anodizing stated that it both "treat(s)" and "store(s)" "hazardous materials, mixtures containing hazardous materials, or hazardous wastes."

Comment B-2

The draft report stated that "the facility stored drums containing hazardous liquids." No conclusions were made. The "miscellaneous metals" were as described in the comments. Again, no conclusions were drawn from this observation.

Comment B-3

This information will be incorporated into the facility description. Facility descriptions are no longer included in this final Phase I Report.

Comment B-4

The letter from the Attorney General was found in ADEQ files. The draft report did not state that it was sent to Arizona Plating and Anodizing.

Comment B-5

This information will be clarified on the facility description.

Comment B-6

The questionnaire response from Arizona Plating and Anodizing stated that "4,000 pounds" of "chromium" were spilled. This information will be modified as requested.

DRAFT

Response to Comments
from
Arizona Public Service Company

Comment C-1

In the draft report it was not intended to infer that facilities had been positively identified as having released hazardous substances into the ground water. The facilities listed were those where "further investigation is warranted". This final Phase I report has clarified that point.

Comment C-2

Again, this is a misinterpretation of the draft report, and has been clarified in this final Phase I report.

Comment C-3

Requires no response. (see also response to Comment C-1)

Comment C-4

This information will be incorporated in the updated facilities list.

Comment C-5

The methodology for listing facilities has been clarified in this final Phase I Report.

Comment C-6

Requires no response. (see also response to Comment C-3)

Comments C-7 through C-11 and C-13

This information will be added and appropriate clarifications made to the facility description. Facility descriptions are no longer included in this final Phase I Report.

Comments C-12 and C-14 through C-17

See comment C-1.

DRAFT

Comment C-18

Ground water gradient data used in Phase I of this study were regional data published by the ADWR. The use of upgradient and downgradient has been clarified in this final Phase I Report. More detailed site-specific studies are planned for Phase II.

Many of the wells in the area have been destroyed or covered up but are still referenced in the available data. Well construction details, historic sampling procedures, and other data and information many times do not exist in the historic data. Phase II of this study recommends acquiring more detailed, site-specific data.

Comment C-19

The criteria for listing "facilities for continuing evaluation" have been clarified in this final Phase I Report.

Comments C-20

The Phase I Report includes revisions based on additional data since the Summary Report was prepared. In addition, this final Phase I Report differs from the draft Phase I Report due to the resolution of data discrepancies which exist in the historic data sources.

Comment C-21

This information has been incorporated where appropriate.

Comment C-22

Requires no response.

Comments C-23, C-24, and C-25

These statements were made simply to describe the facility. No conclusions were made.

Comments C-25 through C-33

This information will be added to and used to clarify the facility description.

DRAFT

Response to Comments
from
Arvin Industries, Inc.

Comment D-1

Phase I of this study did not include site-specific hydrogeologic characterization. Detailed investigation of specific sites within the study area is recommended for Phase II of the study.

Comment D-2

The use of the terms upgradient and downgradient have been clarified and qualified in this final Phase I Report.

Comment D-3

This information will be included in the facility description. Facility descriptions are no longer included in this final Phase I Report.

Comment D-4

Requires no response.

Comment D-5

This information will be added to the facility description.

Comment D-6

It was realized that the analysis of discharge did not include VOCs. This information was included in the facility description as an indication of in-house environmental controls.

Comments D-7 and D-8

This information will be added to the facility description.

DRAFT

Response to Comments
from
Avis Rent-A-Car Systems, Inc.

Comments E-1 and E-2

ADEQ realizes that petroleum products are included under the UST Compliance Program and not WQARF. (Section 1 of.this Phase I Report has been added to clarify the intent and purpose of the WQARF Program.) The description of the ground water contamination from the Avis facility is for documentation purposes only. Oversight of the work at this facility will continue to be conducted by ADEQs UST Compliance Program.

Comment E-3

This inference was not intended in the draft Phase I Report. Detailed investigation of that area is recommended for Phase II of the study.

Comment E-4

Table 4-1 is a summary of locations considered for sampling as part of this first phase of study. Kleinfelder wanted to sample the Avis wells for VOCs other than the BTEX constituents. However, Kleinfelder was told that Avis had already sampled for other VOCs and the data would be available from ADEQ.

This final Phase I Report includes the most current data available from ADEQ. It was not intended to infer that these other VOCs originated from the Avis facility.

Comment E-5

The format of Appendix A has been modified to reduce improper interpretations.

Comment E-6

This final Phase I Report includes as much of the data from ADOT wells as could be found. Few records of these wells are available from ADOT or ADEQ and, in fact, many of these wells have been destroyed.

Comment E-7

In general, it was the files that were incomplete rather than the search. In addition, the draft stated that Avis is cooperating with ADEQ.

DRAFT

Comment E-8

See response to comments E-1 and E-2.

DRAFT

Response to Comments
from
Capitol Engineering Company

Comment F-1

ADEQ appreciates and encourages such environmental assessments. The information will be assessed in the subsequent phase of the project.

DRAFT

Response to Comments
from
Chemonics

Comment G-1

The information provided by Chemonics will be useful in evaluating its site. There are no specific comments, therefore no responses were deemed necessary.

DRAFT

Response to Comments
from
Handy & Harman Electronic Materials Corporation

Comment H-1

Based on the information provided by Handy & Harman Electronic Materials Corporation (HHEM), the Phase I Report was modified where appropriate. In addition, the use of "upgradient" and "downgradient" has been limited and clarified in the Phase I Report.

Comment H-2

Even though it was not clarified in the draft Phase I Report, ADEQ is attempting to locate the sites where releases of chemicals into the ground water may have occurred. These "sites" include previous owner/operators of facilities which have operated on those sites.

Comment H-3

This information is appreciated. During Phase II of this study it will be useful to estimate the chemical usage at the site prior to the "mid 1970s."

Comment H-4

This information will be used in ADEQ's continuing evaluation of facilities.

Comment H-5

ADEQ is aware of the ground water conditions and use in the area and takes this type of information into consideration when evaluating areas for study. However, in addition to drinking contaminated water, inhalation of organic vapors and dermal exposure from contaminated water also pose health threats. In addition, ADEQ is also concerned about the migration of contaminants downgradient.

Comment H-6

Kleinfelder has reformatted and clarified the information and conclusions in this final Phase I Report in an effort to minimize any further misinterpretations.

DRAFT

Response to Comments
from
ITT Cannon

Comment I-1

Drinking contaminated water is not the only health threat of concern. Inhalation of organic vapors and dermal exposure to contaminated water are also potential pathways of exposure to the chemicals observed in the ground water.

Comment I-2

It was not meant to be inferred that ground water contamination could be attributable to POTW discharges. This information was included as an indication of general environmental monitoring and compliance practices.

Comment I-3

The report does not "cite hydrocarbon releases attributable to ITT Canon." The information submitted with this comment is appreciated and has been used in further evaluation of the facility.

Comment I-4

This information is appreciated. An evaluation of the impact of this historic use of TCE is planned during Phase II of this study.

Comments I-5 and I-6

This information is appreciated and will be used in subsequent phases of this study.

DRAFT

Response to Comments
from
National Metals Company

Comment J-1

The statement that National Metals Company (NMC) was involved in metals "fabrication" has been corrected in the facility description. Facility descriptions are no longer included in this final Phase I Report.

Comment J-2

This information is being used for continuing evaluation of the facility.

Comment J-3

Detailed site-specific investigations relative to the hydrogeologic conditions are planned for Phase II of this study. The gradient discussed in the draft report is regional, and not site-specific.

Comments J-4 and J-5

These observations were included in the facility description as an indication of general environmental practices at the site. For example, there should be an adequate fence around the facility to reduce the risk of vandalism and consequential release of hazardous materials.

Comment J-6

This information was taken from ADEQ RCRA files.

Comment J-7

No response required.

DRAFT

Response to Comments
from
the City of Phoenix

Comment K-1

Opinion. Requires no response.

Comment K-2

The amount and significance of erroneous information is debatable. For example, in checking the EPA I.D. numbers that the City refutes, they were all correct as they appear on the State Zip ACIDS list. "Unsubstantiated technical and legal conclusions" is an opinion and requires no response.

Comment K-3

Prior to these comments Kleinfelder was not approached about meeting with the City. Subsequent to these comments, meetings between the City and Kleinfelder have occurred to discuss City concerns.

Comment K-4

The Sky Harbor Airport was not listed as a highest priority "source" but as a highest priority "facility" ... where "further investigation is warranted". Nowhere in the text did it state that the ranking of this facility is "because of any City activities". The text, however, has been revised to clarify that the named facilities include current and past occupants.

Comment K-5

Opinion. Requires no response.

Comment K-6

A detailed investigation of all the facilities at the airport is beyond the scope of this phase of study. Some facilities are listed because of existing information found in ADEQ files. Other facilities, such as the Arizona Air National Guard, were not ranked in the draft report but were being considered at the time the draft was released. This final report lists facilities for which available data show that their inclusion is warranted.

Comment K-7

Studying the Sky Harbor area as a separate segment is the intent that was alluded to in the draft report. As mentioned earlier, there are so many facilities within the Sky Harbor area that a detailed investigation in the first phase of study was beyond the scope of work and budgetary allowances. Phase II activities may include the segmenting of specific study areas, such as the Sky Harbor Airport area.

Comment K-8

This information regarding the study at Estes Landfill has been considered in the preparation of this final Phase I Report.

Comment K-9

Kleinfelder agrees with the comment, and in fact ADEQ is planning to follow up on those facilities that did not respond to the questionnaire. In addition, the facilities list is not intended to be final, even with the publication of this final Phase I Report; investigations are and will be continuing and facilities may subsequently be added or deleted from the list. The list also is not a "PRP" list, but instead a list of facilities for continuing evaluation.

Comment K-10

It is understood that petroleum products may not be considered hazardous substances. However, they are regulated substances (under ADEQ's UST program) and, in many cases, are responsible for degradation of the ground water quality. Those facilities working under the UST program are noted in this report.

Comments K-11 and K-12

This information has been incorporated, where appropriate, into this final Phase I Report.

Comment K-13

Questionnaire response stated "Now closed and subject of ground water study. No records exist to answer the questions in this survey." The new information submitted with the comments is included in this final Phase I Report.

Comments K-14, K-15, K-16, K-17, K-18, K-20, K-22 and K-24

This information has been included, as appropriate, in this final report. Corrections will be made as appropriate.

Comments K-19, K-21, and K-23

UST information reported in the draft Phase I Report was limited to that contained in ADEQ files. If more information is available, this should be reported to the ADEQ UST group.

Comment K-25

This comment is an interpretation based on data from one borehole. This first phase of study did not include a detailed analysis or collection of lithologic data. Instead, published information was summarized and reported. The information presented was taken from Laney & Hahn (USGS, 1986) and other unpublished USGS information.

Comment K-26

The estimate of the regional gradient in the draft report was taken from ADWR Hydrologic Map (Report No. 12) which is at a scale of 1 inch equals 2 miles with a contour interval of 50 feet. At 50 feet/mile the computed gradient would precisely be 0.00946969697. This was rounded up, to 0.01. The difference between 0.010 and the suggested value of 0.009 is 2 feet/mile. Considering the map scales from which this was derived, the difference between these two numbers seems insignificant.

Comment K-27

Although the units are inconsistent (i.e., gpd/ft^2 vs. ft/day), the reported values are equivalent.

Determination of ground water velocities on a site by site basis was not included in the scope of work for Phase I. Instead, Phase I used regional data as a starting point for understanding the area's hydrogeology. The wide range of hydraulic conductivities and ground water gradients are not uncommon for an area so large. The velocities and extent of contamination given in Section 4 were not intended to be precise, but only order-of-magnitude as interpreted from a review of available regional data. As stated in Chapter 6 of the report, site specific investigations are recommended for subsequent project work.

Comment K-28

Kleinfelder agrees that these statements should be better qualified by using phrases such as "appears to". In addition, the discussion of areas with observed chemicals in the ground water has been revised to better qualify apparent trends.

DRAFT

Comment K-29

As referenced at the end of this sentence, this opinion was given by ADEQ personnel. No other speculation is warranted or possible at this time.

Comment K-30

The current historic database is insufficient for such an examination. Consequently, the suggested degree of quantification was beyond the scope of work for Phase I of the investigation.

Comment K-31

The available data listed this well as (K-1-3)10aa. It is not appropriate to arbitrarily assign the third letter to this legal well designation. (The third "a" added in the text is a typographical error.)

Comment K-32

The point that is being made in this comment is not clear. When sampling personnel encountered the floating product, a sample was taken in an effort to determine the nature of the floating product. The results of that analysis are reported in the text.

Comment K-33

This omission has been corrected in this final Phase I Report.

Comment K-34

Information given in the comment has been used to revise the facility description. Facility descriptions are no longer included in this final Phase I Report.

Comment K-35

Reference to the impoundments has been clarified in the facility description. (Point in fact: environmental site audits performed by Kleinfelder in other areas do indeed find irrigation ponds which act as sources of ground water contamination.)

Comment K-36

Nowhere in the text of the draft or final report is anyone or any facility referred to as a "PRP". Garrett, among others, is pointed out because of the notable data which are readily

available for this particular facility. As discussed in the text, all of these facilities are listed for continuing evaluation.

Comments K-37 and K-38

This information has been included in the facility description.

Comment K-39

It is recognized that these wells are outside of the study area. However, they still appear to be downgradient, as the narrative indicates. The information for wells 179 and 196 has been amended per this comment.

Comment K-40

This statement has been clarified in the final report. The intention was to indicate that "the primary route of exposure (if any exist) is ingestion through drinking". As stated in the first paragraph of Section 6.3.2 "...wells in the area are not generally used for municipal supply...".

DRAFT

Response to Comments
from
Quality Printed Circuits, Corporation

Comment L-1

Phase I, which this final Phase I Report describes, was an economical approach to summarizing the historical data and narrowing down the list of facilities for continuing evaluation. It is intended that clarifications in this final Phase I Report will alleviate the misinterpretations of the draft report. More intensive site-specific investigations will be carried out during Phase II of the study in order to estimate the contaminant plumes and identify the sources of the chemicals observed in the ground water.

Comment L-2

The screening process was to narrow the list down to the facilities which "warranted further investigation." If a facility appears not to be a source of ground water contamination the "further investigation" (i.e. Phase II) will conclude that. The draft report does not conclude that ground water west of the facility is more contaminated than ground water east of the facility. This is primarily because such historical data do not exist.

Comments L-3 through L-5

The facility description will be revised, where appropriate, to reflect this information. Facility descriptions are no longer included in this final Phase I Report.

Comment L-6

Opinion. Requires no response.

Comment L-7

Interviews with facility personnel were not included for this first phase of study. This type of activity is planned as part of Phase II of this study.

Comment L-8

The wastewater discharge permit and waiver were not a reason for including Quality Printed Circuits on the priority list.

DRAFT

Comment L-9

The ground water flow directions in the draft Phase I Report are taken from regional data published by ADWR. Flow may vary from site to site as well as seasonally. During periods of recharge from the Salt River the local ground water flow may be more northwesterly. On Figure 4, the Quality Printed Circuits facility appears to be less than one-half mile from the well identified by ENVIS number 3027.

Comment L-10

This comment suggests that the Phase I Report should "represent nothing more than a starting point for [ADEQs] next study...". This is precisely the goal of the Phase I Report. As the draft report stated - the list of facilities was a list of facilities which "warranted further investigation." The Phase I Report does not conclude that these facilities are the sources of the contamination.

DRAFT

Response to Comments
from
Salt River Project

Comment M-1

No response necessary.

Comments M-2, M-3, and M-4

This information has been included in this final Phase I Report.

Comment M-5

This information was taken from a report submitted to ADHS by Clayton Environmental Services in March, 1987.

Comments M-6 through M-16

These corrections have been made, where appropriate, in this final Phase I Report. This input of additional data is appreciated.

DRAFT

Response to Comments
from
Tiernay Turbines

Comments N-1 and N-2

This information has been incorporated into the facility description. Facility descriptions are no longer included in this final Phase I Report.

Comments N-3 and N-4

TCE was reportedly detected in a soil sample taken near one of the dry wells at approximately 15 feet below ground level. The information provided by Tiernay Turbines in its comments will be used during planned activities for Phase II.

Comment N-5

Requires no response.

Comment N-6

Site-specific hydrogeologic data were not reported in the draft Phase I Report. It is recommended that such data be collected during Phase II.

DRAFT

Response to Comments
from
40th Street Landfill

Comment O-1

These changes have been made in this final Phase I Report.

Comment O-2

Current water use does not justify the release of contaminants into the aquifer. As noted in this report, there are other routes of exposure (e.g., inhalation of vapors and dermal exposure) besides drinking of contaminated water.

Comment O-3

These data in the draft report have been clarified in this final Phase I Report.

Comment O-4

The scenario described in the comment is possible. Subsequent Phase II activities should assist with an understanding of the sources and extent of the observed ground water degradation.

Comment O-5

This information has been incorporated into the facility description. Facility descriptions are no longer included in this final Phase I Report.

Comment O-6

These types of statements have been clarified in this final Phase I Report.

Comment O-7

Opinion. Requires no response. (The final Phase I Report no longer classifies facilities as high/higher/highest priority.)

Comment O-8

Well locations and status were used in the development of sampling plans. However, some of the information was obsolete or in error.