REDACTED VERSION

CAPITOL METAL FINISHING, INC.
AUSTIN, TRAVIS COUNTY, TEXAS
EPA CERCLA I.D. NO.: TXD048452064

ABBREVIATED SITE INSPECTION REPORT

Prepared for:

U. S. Environmental Protection Agency
Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Contract No.: 68-W5-0019
Technical Directive Document No.: 06-97-03-0009
Document Control No.: 02/06-F-S004

Submitted by:

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September 1997

90126031

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ABBREVIATED SITE INSPECTION REPORT

CAPITOL METAL FINISHING, INC.
AUSTIN, TRAVIS COUNTY, TEXAS
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August 1997

SIGNATURE PAGE

Bart Canellas U.S. Environmental Protection Agency Task Monitor	Date
Robert B. Beck, P.E. Roy F. Weston, Inc. Site Manager	Date
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ABBREVIATED SITE SELECTION REPORT

CAPITOL METAL FINISHING, INC.
AUSTIN, TRAVIS COUNTY, TEXAS
EPA CERCLA I.D. NO.: TXD048452064

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ABBREVIATED SITE INSPECTION REPORT

CAPITOL METAL FINISHING, INC.
AUSTIN, TRAVIS COUNTY, TEXAS
EPA CERCLA I.D. NO.: TXD048452064

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ABBREVIATED SITE INSPECTION REPORT

CAPITOL METAL FINISHING, INC.
AUSTIN, TRAVIS COUNTY, TEXAS
EPA CERCLA I.D. NO.: TXD048452064

APPENDICES

APPENDIX	TITLE
A	Photographs
B	References

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SECTION 1
INTRODUCTION

Under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), Roy F. Weston, Inc. (WESTON®) has completed an Abbreviated Site Inspection (ASI) of the Capitol Metal Finishing, Inc. site (EPA CERCLA Identification Number TXD048452064) located in Austin, Travis County, Texas. A Site Location Map is included as Figure 1-1. The U.S. Environmental Protection Agency (EPA) Region 6 retained WESTON to complete this investigation under EPA Contract Number 68-W5-0019 and Technical Directive Document 06-97-03-0009.

This document represents the final report for the ASI. The scope of the investigation included a review of site files, obtaining additional site information from regulatory agencies, a comprehensive target survey, and a site reconnaissance.

EPA will use the information obtained during the SI to help prioritize further work for the site. Based on the results of the ASI, EPA may decide that additional investigation of the site is required, or assign a No Further Remedial Action Planned (NFRAP) status to the site.

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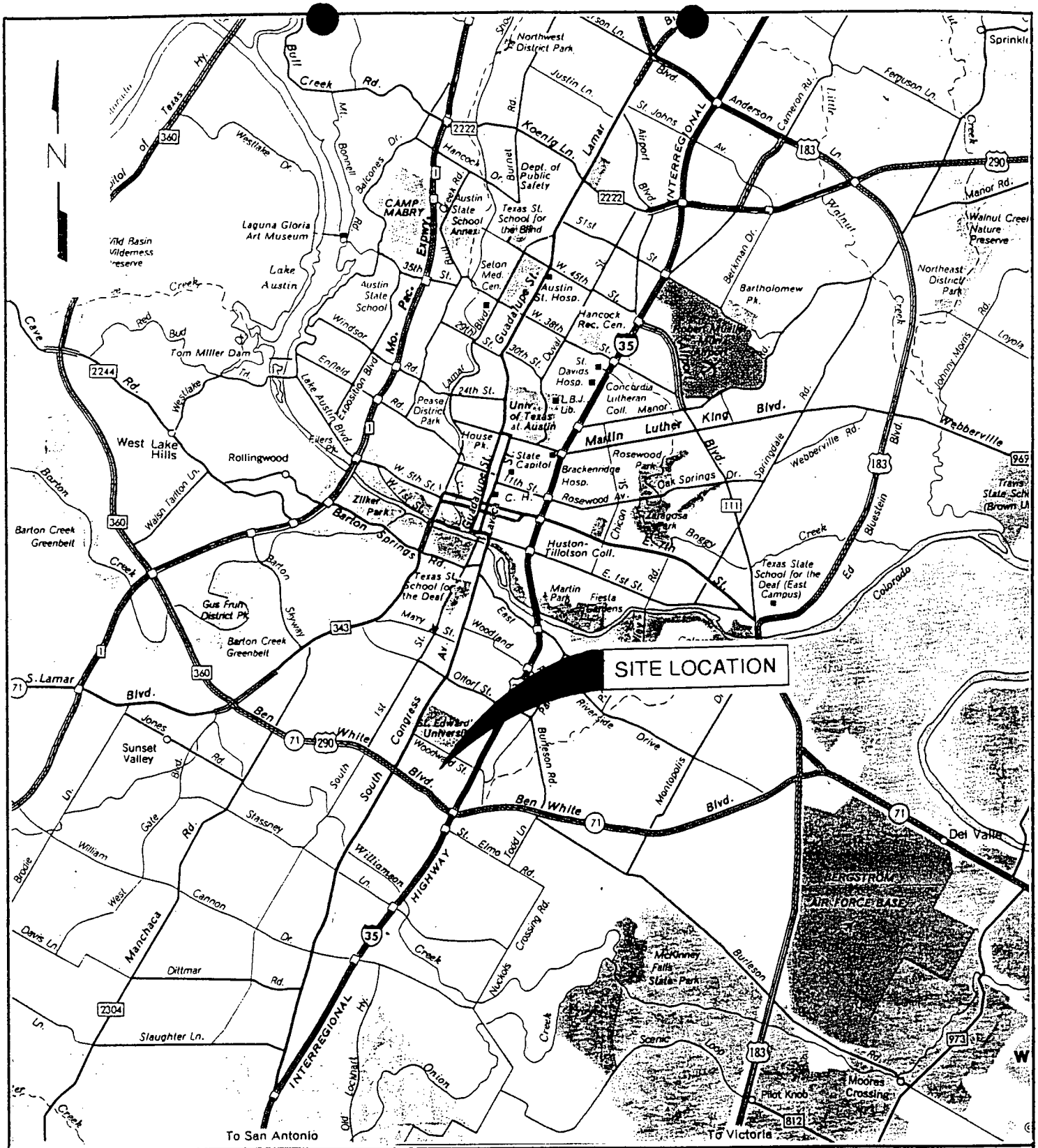

MAP PREPARED FROM
RAND McNALLY STATE MAP
TEXAS
1992 EDITION

0 .85 1.7
SCALE IN MILES

WESTON
MANAGERS DESIGNERS/CONSULTANTS

FIGURE 1-1

SITE LOCATION MAP
CAPITOL METAL FINISHING, INC.
AUSTIN, TRAVIS COUNTY, TEXAS
CERCLA ID. NO. : TXD048452064

EPA REGION 6
START PRELIMINARY ASSESSMENT

W.O. NO. : 11098-112-035-0001

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SECTION 2
SITE CHARACTERISTICS

WESTON collected and reviewed available background information regarding the location, ownership, description, operational history, site regulatory compliance, and nearby land use of the site. The discussion in this section of the report is based on this background information, which is referenced throughout the text.

2. 1 Site Location

The Capitol Metal Finishing, Inc. (CMF) site is located at 3909 Warehouse Row in Austin, Travis County, Texas. The geographic coordinates of the site are approximately 30° 13' 20" north latitude and 97° 45' 25" west longitude. The 0.3-acre site is located in an industrial and residential area (Reference 1).

The site and can be reached from the intersection of Interstate Highway 35 and State Highway 71 (Ben White Boulevard) in Austin by traveling approximately 0.5 mile west on Ben White Blvd., then turning right (north) on Warehouse Row. The site is located approximately 0.2 mile north, and on the right side of Warehouse Row. A Site Area Map is provided as Figure 2-1.

2. 2 Site Ownership

The site is currently owned by Twin Oaks Associates of Austin, Texas. WESTON contacted Mr. Joe Jung of Twin Oaks Associates in April 1997 to gain access to the site to perform a site reconnaissance and sampling visit. A site access agreement was signed by Mr. Jung on 12 May 1997 (Reference 2).

2. 3 Site Description

WESTON conducted a reconnaissance of the site on 5 June 1997. Mr. Dusty Rhodes of Twin Oaks Associates accompanied the WESTON field team during the on-site reconnaissance. Observations were recorded in a field log book (Reference 3). CMF is an inactive plating facility situated on approximately 0.5 acre of land. Site features include a 15,000 square foot warehouse that formerly contained the site office and plating shop. South of the warehouse is an asphalt paved area which was formerly the location of a waste pile. Information on the contents of the waste pile is not available. East of the warehouse is an area formerly used for equipment storage, chemical storage, wastewater treatment facilities, and the location of the loading dock. The site is surrounded by a 6-foot chain link fence. Currently the site is in disrepair. The warehouse was apparently gutted during previous remedial activities and the internal walls were removed. Similarly, a large portion of the back wall of the warehouse has been removed. There are excavations created during the remediation process which have not been backfilled. However, there is backfill material that has been stockpiled in the warehouse for this use. Twin Oaks Associates intends to restore the warehouse and lease the property in the future. A photographic log of site conditions is provided in Appendix A. A Site Sketch is provided as Figure 2-2.

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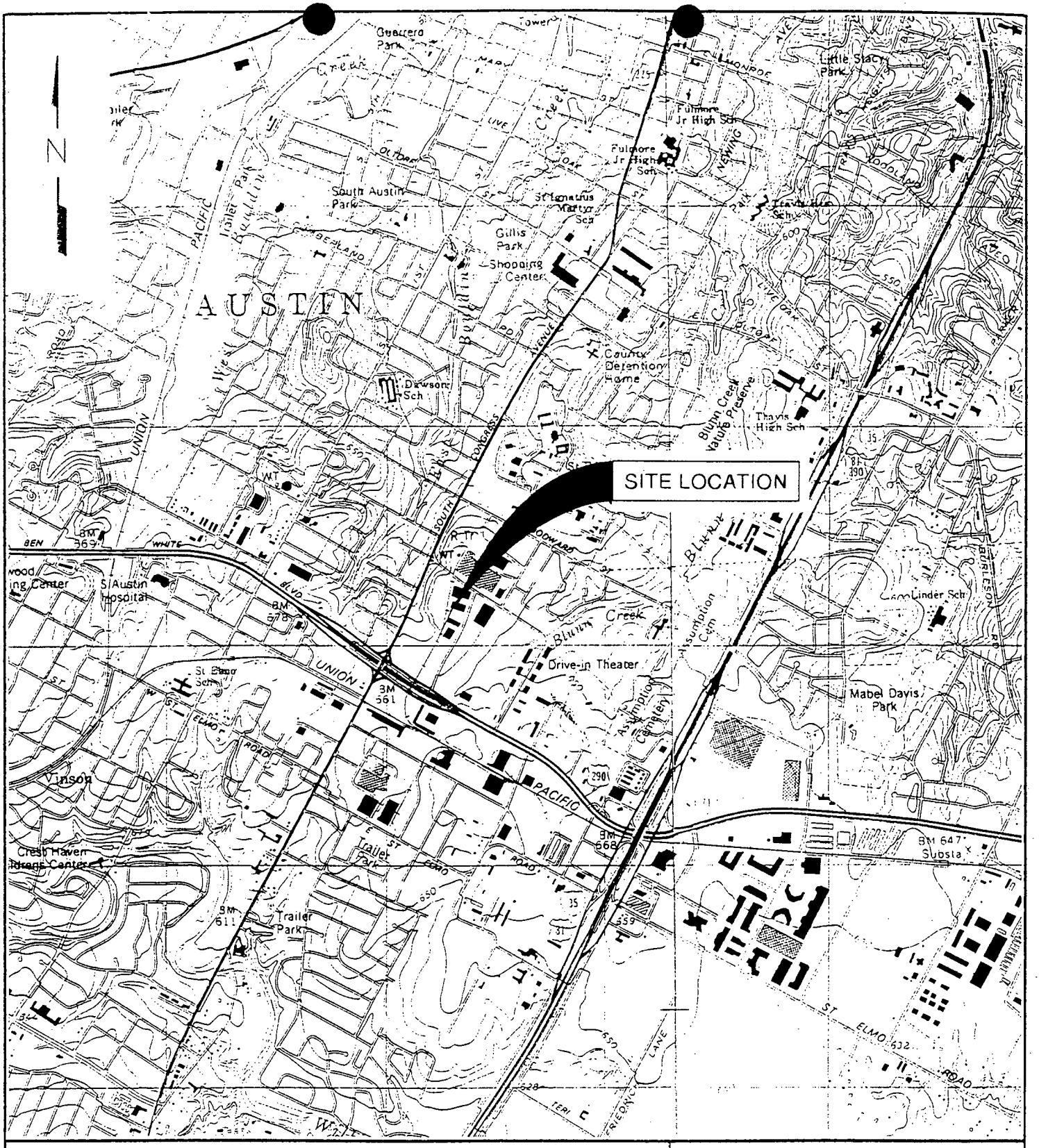

BASE MAP FROM:

U.S. DEP. OF THE INTERIOR
GEOLOGICAL SURVEY

OAKHILL, TEXAS
MONTROPOLIS, TEXAS
QUADRANGLES

7.5 MINUTE SERIES (TOPOGRAPHIC)
1988 SERIES

0 1000 2000

SCALE IN FEET

WESTON
MANAGERS DESIGNERS/CONSULTANTS

FIGURE 2-1

SITE AREA MAP
CAPITOL METAL FINISHING, INC.
AUSTIN, TRAVIS COUNTY, TEXAS
CERCLA ID. NO. : TXD048452064

EPA REGION 6
START PRELIMINARY ASSESSMENT

W.O. NO. : 11098-112-035-0001

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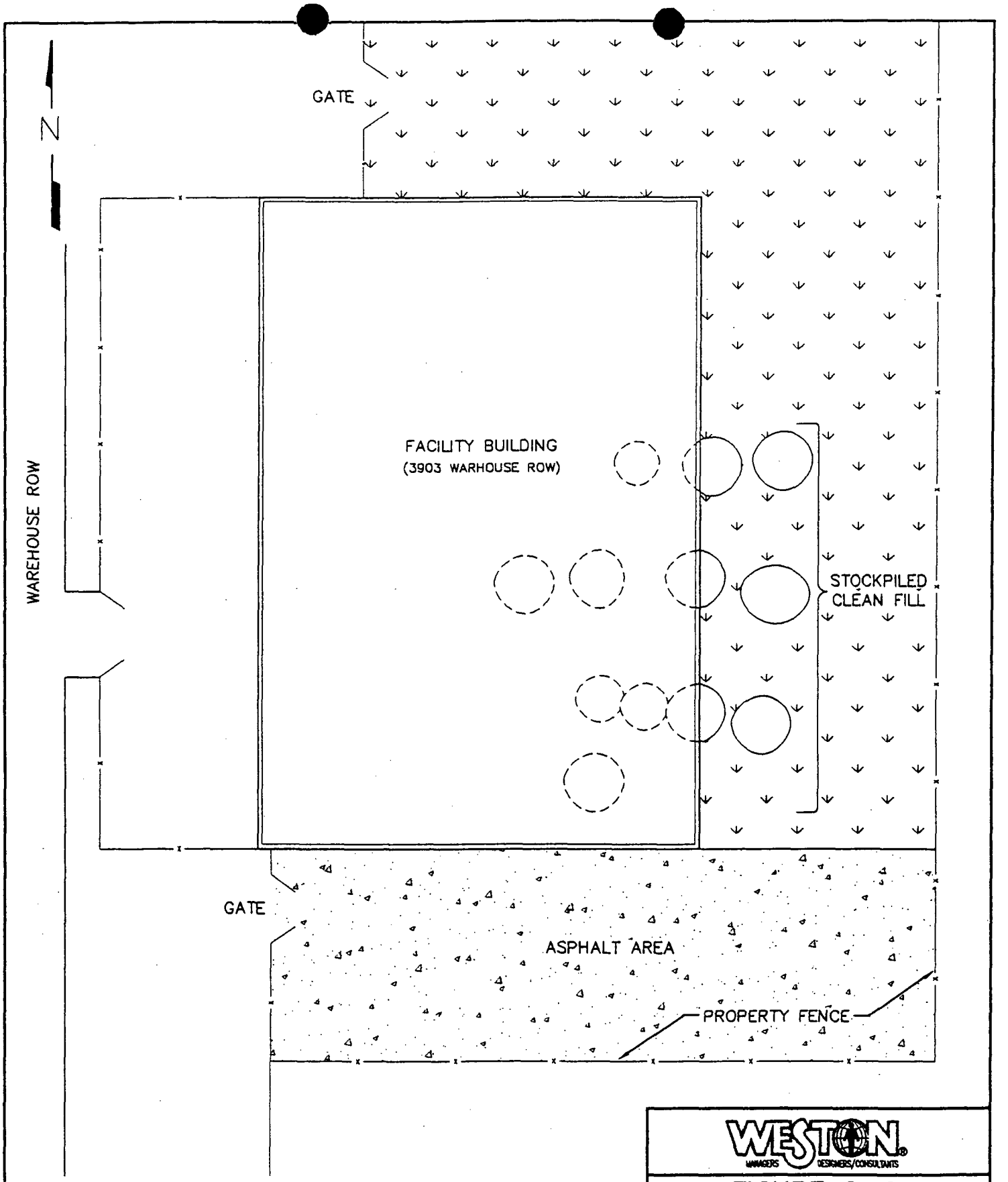

WESTON
MANAGERS DESIGNERS/CONSULTANTS

FIGURE 2-2

SITE SKETCH
CAPITOL METAL FINISHING, INC.
AUSTIN, TRAVIS COUNTY, TEXAS
CERCLA ID. NO. : TXD048452064

EPA REGION 6
START PRELIMINARY ASSESSMENT

W.O. NO. : 11098-112-035-0001

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2. 4 Site Operational History

CMF operated the site as a plating facility continuously from 1968 through the late 1980s. Site operations have included aluminum anodizing and various other specialty electroplating processes utilizing zinc, cadmium, nickel and cyanide.

2. 5 Site Regulatory Compliance History

A review of available site files and interviews with authorities from regulatory agencies were conducted to collect background information regarding the regulatory compliance history of the site.

There is evidence that an application for a RCRA permit was submitted for the CMF site. A 6 January 1982 letter from the EPA to the applicant, James Long at 3909 Warehouse Row, indicated additional information was needed from the applicant to continue processing of the permit application. It is unknown if the application process was completed or if CMF operated under a RCRA permit (Reference 4).

On 7 March 1990, a Potential Hazardous Waste Site Identification was completed identifying CMF as a Karst Environment Site Discovery (Reference 5).

A Preliminary Assessment dated 30 August 1991 indicated the surface water pathway was the major pathway of concern base on the proximity of Town Lake which is the municipal water supply for the City of Austin, Texas. The distance from the site to the lake was reportedly (and has been confirmed to be) approximately 2.8 miles, thus minimizing potential impact of this site on the surface water pathway. Groundwater was of minor concern because the City uses surface water for municipal supply and because there were no domestic supply wells identified within one mile of the site. Soil and air pathways were of minor concern because the site was surrounded by a six-foot fence, the fact that the contaminants of concern were heavy metals and not likely to volatilize, and the lack of a large nearby population. The potential for particulate migration was mentioned as an unknown (Reference 1).

An internal EPA Inspection Report Review was submitted for approval and signed on 8 October 1991. It reflected the conclusions of the report and indicated an SSI was anticipated. This document was resubmitted and signed on 13 March 1992 (Reference 6).

The site registration number with Texas Natural Resource Conservation Commission (TNRCC) is 31593. There has been action through the Texas Attorney General's office and TNRCC Enforcement Division that required site closure activities. The site was subsequently remediated to Texas Risk Reduction Standard 1 which requires remediation to background concentrations or to concentrations below detection limits. Twin Oaks Associates submitted their Final Closure Completion Report to the TNRCC in November 1995 (Reference 7). This report documented that the closure of the CMF site was completed in accordance with the TNRCC-approved closure

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plan and Texas Risk Reduction Standard 1 described in 30 TAC Section 335 Subchapter S. TNRCC approved the Final Closure Completion Report in a letter dated 1 February 1996 (Reference 8).

2. 6 Nearby Land Use

Land use in the vicinity of the site is both commercial and residential. The immediate vicinity of the site is primarily commercial while residential areas are generally outside of a 1/4-mile radius from the site.

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SECTION 3
POTENTIAL SOURCE AREAS AND SITE CONCERNS

WESTON reviewed available documentation to develop this summary of past and current conditions of potential source areas and site concerns.

3.1 Potential Waste Source Areas

CMF generated EPA Characteristic Wastes types F001, F006, F007, F008, F009, F019, D002, D003, D006, and D007. Potential waste sources included the vessels used to hold plating solutions and other vessels used in the storage of unused and spent product associated with the plating operation. Analytical results of on-site soil and of the warehouse structure samples indicated areas of heavy metal and cyanide contamination. Remediation activities resulted in the removal of the waste sources and the identified contamination to a clean-up level satisfying Texas Risk Reduction Standard 1, requiring remediation to background or non-detectable concentrations.

3.2 Site Concerns

The impact of the results of site activities results on the quality of the local groundwater, surface water, and air, as well as the concern over human or environmental exposure to contaminated soil, are summarized as follows:

- The groundwater migration pathway is of minor concern. Groundwater is shallow (less than 20 feet) and may be recharged at the site area, however, the City of Austin municipal supply is from surface water and there are no water supply wells within one mile of the site.

- The surface water pathway is not of concern. The overland segment of the surface water pathway is 2.8 miles. The site has been remediated to background or nondetectable contaminant concentrations, and release of site-attributable contaminants to this pathway has not been documented

- Soil exposure is not of concern. Analytical results of previous investigations indicate that an area of contaminated soil existed on site. However, the site has since been remediated to background or nondetectable contaminant concentrations, and there is a six-foot fence surrounding the site.

- A release to the air pathway has not been documented and is not of concern. The contaminants of concern are heavy metals and have no potential to volatilize at ambient conditions. Although the potential for exposure to contaminated airborne particulates may have existed, the site has been remediated to background concentrations thus eliminating the potential for present-day disbursement of contaminated airborne particulates.

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SECTION 4
CONCLUSIONS

The Capitol Metal Finishing site is an inactive aluminum iodizing and metal plating facility in Austin, Texas that is owned by Twin Oaks Associates of Austin. Site activities have resulted in heavy metal and cyanide contamination of the on-site soil and building structure. Twin Oaks Associates was directed by the Texas State Attorney General's Office to remediate the site. Twin Oaks Associates has removed the sources from the site and remediated the site to meet Texas Risk Reduction Standard 1, closure to nondetectable or background concentrations. TNRCC approved the closure by letter on 1 February 1997. Results of site reconnaissance indicate the site has not yet been restored but Twin Oaks has plans for restoration of the site to be utilized for warehouse purposes.

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SECTION 5
REFERENCES

Copies of the listed reference documents are provided in Appendix B.

1. Preliminary Assessment of Capitol Metal Finishing, ICF Technology, 30 August 1991.

2. Site Access Letter and Consent for Access to Property Agreement, from Mr. Joe Jung to Environmental Protection Agency, 12 April 1997.

3. Field Log Book, Capitol Metal Finishing, WESTON. John Warren. 5 June 1997.

4. Correspondence, US EPA to James Long, 3909 Warehouse Row. 6 January 1982.

5. Potential Hazardous Waste Site Identification, US EPA. 8 March 1990.

6. Inspection Report Review Potential Hazardous Waste Site. US EPA. 8 October 1991 and 13 March 1992.

7. Final Closure Completion Report. Prepared for Twin Oaks Associates by ENTRIX, Inc. November 1995.

8. Correspondence. TNRCC to ENTRIX, Inc. 1 February 1996.

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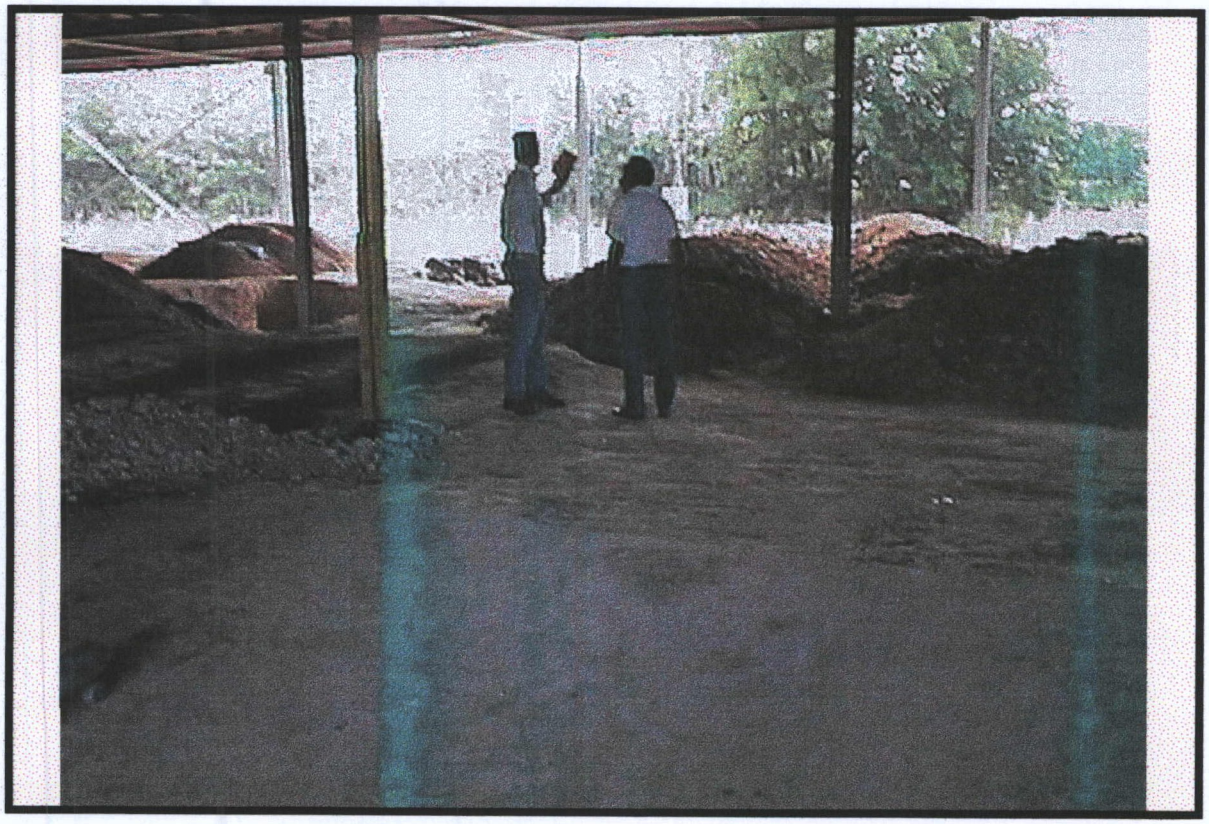
APPENDIX A

PHOTOGRAPHS

Photograph: 1

Site Name:	Capitol Metal Finishing (ASI)
Site Location:	Austin, TX
CERCLIS ID:	TXD048452064
Weston Work Order:	11098-112-034-0001
Photographer:	Robert Beck
Witness:	John Warren
Date of Photograph:	06/05/97
Description:	Photograph of construction debris inside Capitol Metal Finishing warehouse building.

Photograph: 2



Site Name:	Capitol Metal Finishing (ASI)
Site Location:	Austin, TX
CERCLIS ID:	TXD048452064
Weston Work Order:	11098-112-034-0001
Photographer:	Robert Beck
Witness:	John Warren
Date of Photograph:	06/05/97
Description:	Stockpiled clean backfill material is stockpiled inside warehouse building. Notice that portions of the back wall and of the concrete slab have been removed.

Photograph: 3

Site Name:	Capitol Metal Finishing (ASI)
Site Location:	Austin, TX
CERCLIS ID:	TXD048452064
Weston Work Order:	11098-112-034-0001
Photographer:	Robert Beck
Witness:	John Warren
Date of Photograph:	06/05/97
Description:	Portions of the slab and of the east (back) wall of the warehouse were removed during site remediation activities.

Photograph: 4

Site Name:	Capitol Metal Finishing (ASI)
Site Location:	Austin, TX
CERCLIS ID:	TXD048452064
Weston Work Order:	11098-112-034-0001
Photographer:	Robert Beck
Witness:	John Warren
Date of Photograph:	06/05/97
Description:	Looking down into an excavaion at a new footing for a column installed to support the roof of warehouse as part of the site restoration.

Photograph: 5

Site Name:	Capitol Metal Finishing (ASI)
Site Location:	Austin, TX
CERCLIS ID:	TXD048452064
Weston Work Order:	11098-112-034-0001
Photographer:	Robert Beck
Witness:	John Warren
Date of Photograph:	06/05/97
Description:	Clean backfill material is stockpiled east (behind) of the warehouse.

Photograph: 6

Site Name:	Capitol Metal Finishing (ASI)
Site Location:	Austin, TX
CERCLIS ID:	TXD048452064
Weston Work Order:	11098-112-034-0001
Photographer:	Robert Beck
Witness:	John Warren
Date of Photograph:	06/05/97
Description:	A portion of the north fence line is east of the building located immediatly north of the site. The south face of this building acts as the remaning portion of the north fence line. The electric wire in the photograph is suspended between a utility pole on the right (not pictured) and the warehouse.

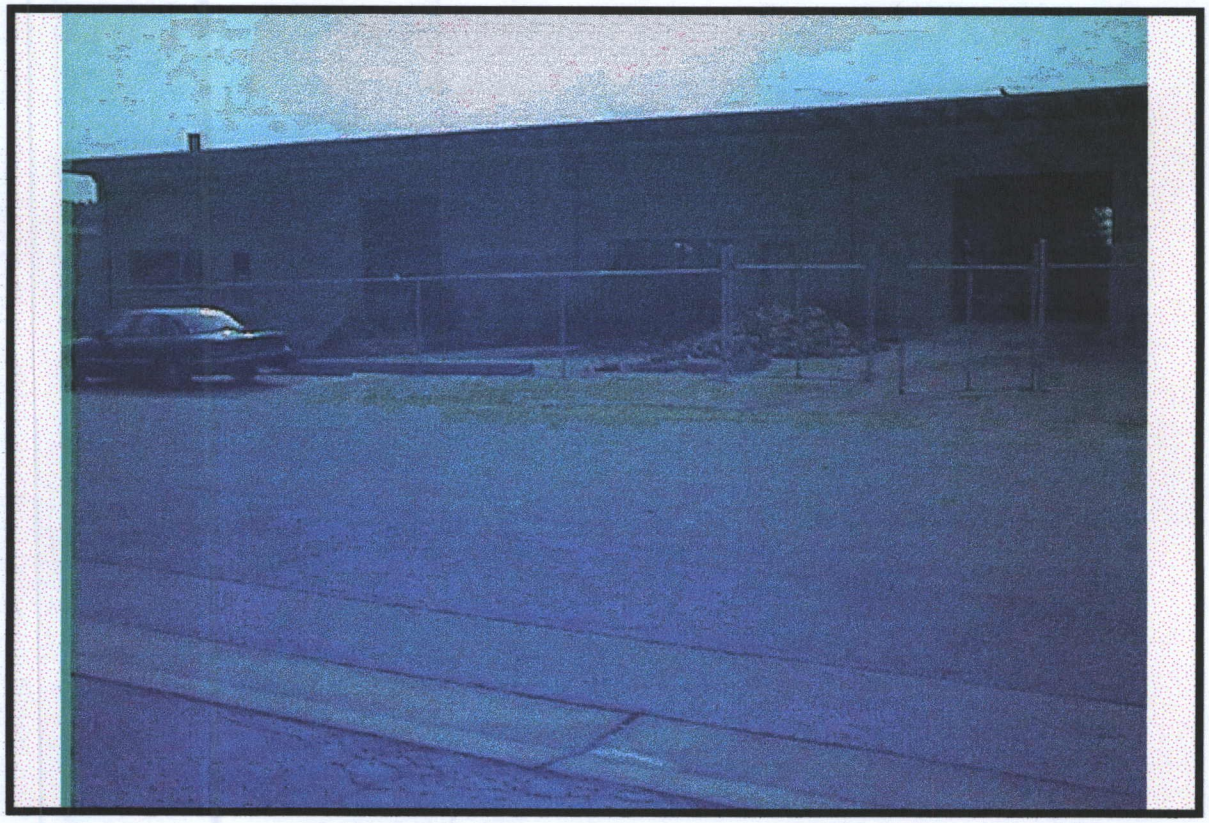
Photograph: 7

Site Name:	Capitol Metal Finishing (ASI)
Site Location:	Austin, TX
CERCLIS ID:	TXD048452064
Weston Work Order:	11098-112-034-0001
Photographer:	Robert Beck
Witness:	John Warren
Date of Photograph:	06/05/97
Description:	This is a view of the pipe supply company located south of the site as seen from the east side of the site. The retaining wall is coinsident with the site's south fence.

Photograph: 8

Site Name:	Capitol Metal Finishing (ASI)
Site Location:	Austin, TX
CERCLIS ID:	TXD048452064
Weston Work Order:	11098-112-034-0001
Photographer:	Robert Beck
Witness:	John Warren
Date of Photograph:	06/05/97
Description:	The delivery truck in front of the warehouse is owned by a Twin Oaks employee. The pile of bricks is from an unknown source.

Photograph: 9



Site Name:	Capitol Metal Finishing (ASI)
Site Location:	Austin, TX
CERCLIS ID:	TXD048452064
Weston Work Order:	11098-112-034-0001
Photographer:	Robert Beck
Witness:	John Warren
Date of Photograph:	06/05/97
Description:	This photograph, with Photograph 8, creates a panoramic view of the front of the warehouse building. The west fence is shown. The gate was open at the time of the photograph but is locked when the site is unattended by authorized persons.

APPENDIX B

REFERENCES

REFERENCE 1

PRELIMINARY ASSESSMENT

of

CAPITOL METAL FINISHING

(TXD048452064)

Prepared By

Warren P. Mitchell, FIT Biologist

ICF Technology, Inc.
Region VI

August 30, 1991

PRELIMINARY ASSESSMENT
of
CAPITOL METAL FINISHING, INC.

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FIGURES

FIGURE	TITLE
1	SITE LOCATION MAP
2	SITE SKETCH

APPENDICES

APPENDIX	TITLE
A	PHOTO-DOCUMENTATION

1. SITE INFORMATION

The Region VI Field Investigation Team (FIT) was tasked by the U.S. Environmental Protection Agency (EPA) under Technical Directive Document (TDD) F-06-9010-03 to conduct the Preliminary Assessment (PA) of Capitol Metal Finishing, Inc. (TXD048452064) in Austin, Travis County, Texas.

1.1 SITE LOCATION

Capitol Metal Finishing, Inc. (CMF) is located at 3909 Warehouse Row in Austin, Travis County, Texas. The site is located on Block A, Lots 7 and 8 in the Twin Oaks Industrial Subdivision (Ref. 2, p. 2). The site is located in a commercial and residential area (Figure 1) (Ref. 1; Ref. 3, p. 1). Geographical coordinates are 30°13'20" north latitude and 97°45'25" west longitude (Ref. 1).

1.2 SITE BACKGROUND

CMF has had several owners. The property is currently owned by Twin Oaks Association with a reference to Odas Jung, (b) (6) [redacted], Austin, Texas 78767-0068. CMF was incorporated on March 29, 1983 by William B. (Dusty) Rhodes, who is the President and registered agent. His mailing address is (b) (6) [redacted] Round Rock, Texas 78680. The daily management of the business is executed by Carl Booth. The owners of CMF have purchased a site in Round Rock and have moved the Austin operations there. The name of the new Round Rock business is Consolidated Metal Finishing, Inc., of which Carl Booth is part owner (Ref. 4, pp. 1-2).

2. BACKGROUND AND OPERATING HISTORY

This section addresses site history and operations, known and potential problems, and regulatory involvement of federal, state or local agencies.

2.1 SITE HISTORY

Plant operations began in approximately 1980 (Ref. 2, p. 2). In 1983, the zinc and nickel plating operation at Austin Painting & Plating (APP) merged with CMF (Ref. 3, p. 1). CMF operated as an aluminum anodizing and electroplating facility for zinc, cadmium, nickel and cyanide plating, and various other types of specialty metal plating (Figure 2) (Ref. 2, p. 2; Ref. 3, p. 1; Ref. 4, p. 1). CMF received and generated hazardous materials. The site is currently inactive (Ref. 3, p. 1; Ref. 5).

The hazardous wastes generated from the electroplating operation are toxic due to solvent, heavy metal and cyanide content (Ref. 3, p. 1). Hazardous waste 1,1,1-trichloroethane is generated in a degreasing process (Ref. 2, p. 3).

The FIT conducted an off-site reconnaissance inspection on November 16, 1990. The treatment facilities, chemical storage areas, and waste piles are secured by a chain-linked fence (Figure 2). There are warning signs posted on the front fence. The main building appears to be in good shape (Ref. 5). The site was photographed during the inspection (Appendix A).

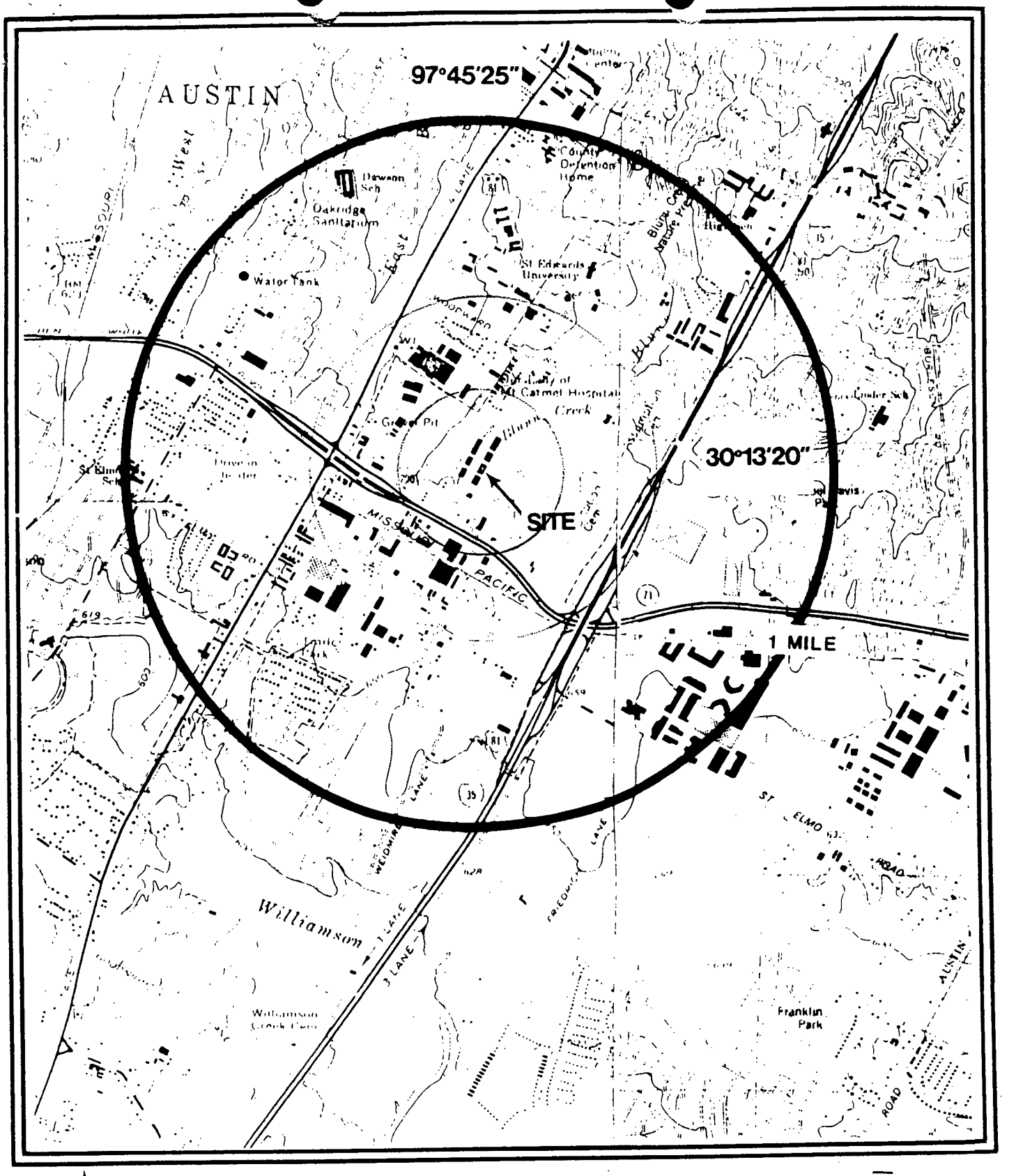

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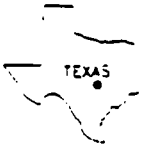
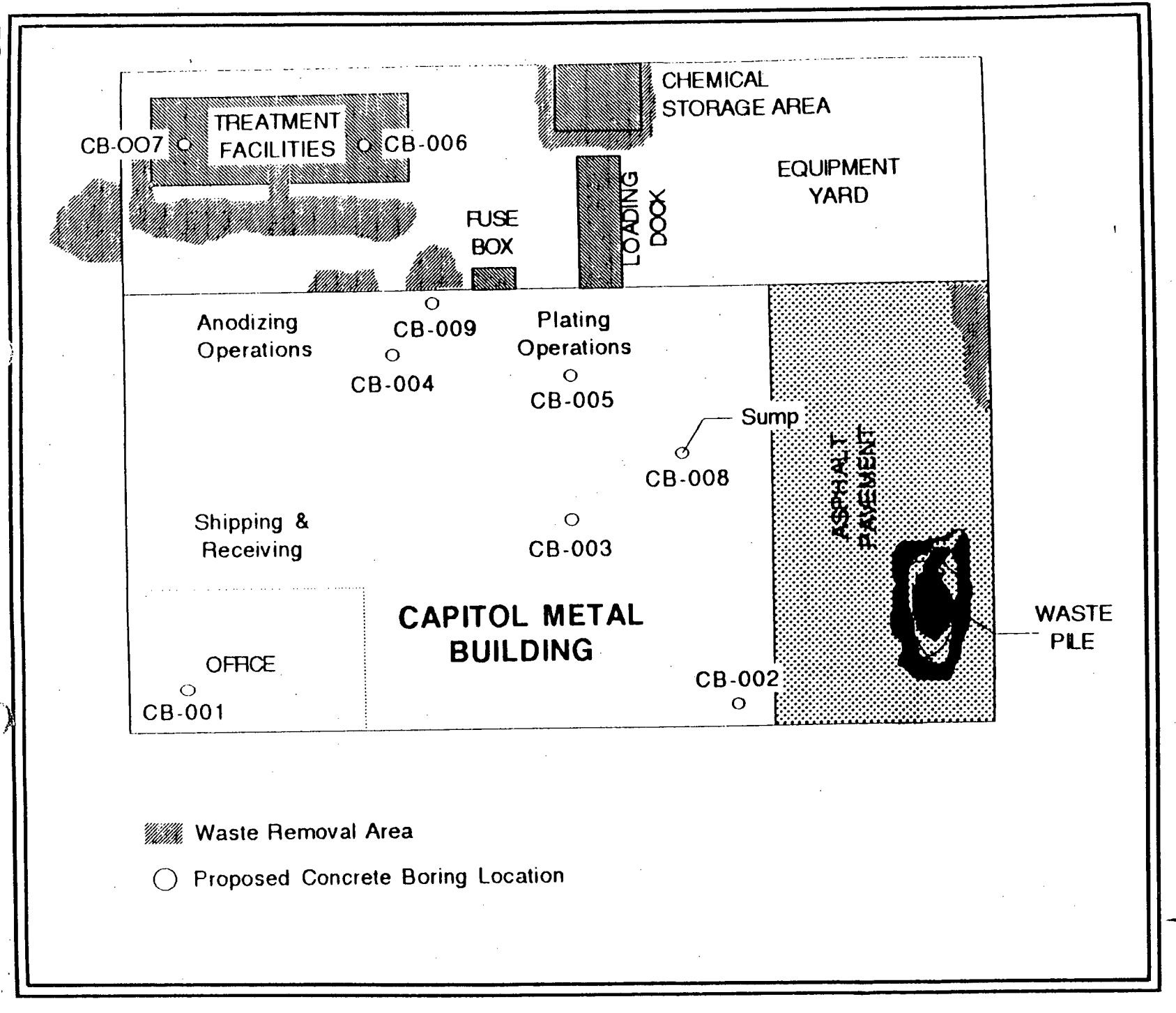
FIGURE 1
Site Location Map
Capitol Metal Finishing, Inc.
Austin, TX
TXD048452064



QUADRANGLE LOCATION
MONTOPOLIS
OAK HILL



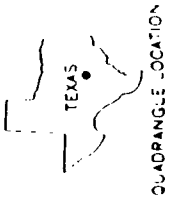


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FIGURE 2
Site Sketch
Capitol Metal Finishing, Inc.
Austin, TX
TXD048452064
TDD F-06-9010-03

ICF

2.3 REGULATORY INVOLVEMENT

The TWC issued CMF a registration number to pretreat the waste prior to discharge into the City of Austin's wastewater treatment facility and as a 90 day storage facility (Ref. 2, p. 3). The TWC issued an order to clean up the site, develop an inspection plan, submit a remedial action plan, label all hazardous waste containers on-site and pay an administrative penalty (Ref. 2, pp. 5-6). During an August 31, 1988 follow-up inspection, it was noted that the first round of soil removal had been completed (Ref. 4, p. 3).

3. WASTE CONTAINMENT AND HAZARDOUS SUBSTANCE IDENTIFICATION

Documentation, waste generation and containment are addressed in this section.

3.1 DOCUMENTATION

Manifests that document the amount of waste generated at the site show that an unknown amount of corrosive waste (D002) was shipped to Disposal Systems, Inc. on February 25, 1989. The manifests were not complete. During a TWC inspection on February 16, 1989, and a February 28, 1989 follow-up inspection, no manifests or any other solid waste records were available for review (Ref. 4, pp. 5, 7, Appendix V).

3.2 WASTE GENERATION

CMF operated as an electroplating facility for aluminum anodizing, using zinc, chromium, nickel and various other types of specialty plating (Ref. 4, p. 1). The types of wastes generated from this operation included EPA hazardous waste numbers F001, F006, F007, F008, F009, F019, D002, D003, D006 and D007 (Ref. 2, p. 3). Within the site, heavy metal and cyanide contamination were found at levels above background (Ref. 4, p. 2).

3.3 CONTAINMENT

CMF developed a batch treatment system for handling its electroplating wastewater solutions. It consisted of three 1,500 gallon, concrete, poly-lined below grade treatment tanks, and two 2,200 gallon stainless steel clarifiers pumped in series through a gravity feed to a second clarifier for a final pH adjustment, and subsequent discharge to the city sewer. The City of Austin must analyze each treatment batch prior to discharge (Ref. 4, pp. 5-6).

Generated sludges were dewatered in filter pans with a volume of approximately 15 cubic feet, and were placed over three concrete tanks. The sludges stored in the pans and within the batch treatment tanks exceeded maximum holding times (Ref. 4, p. 6).

There was also a boildown tank used to store non-acidic wastes. The liquids were boiled off, the remaining solids drummed (Ref. 4, p. 6).

On October 7, 1988, the TWC inspected CMF to check its sampling status. A CMF official had no knowledge of any sampling events for the facility. The TWC noticed that there was boiler blowdown water, flowing across previously

identified contamination along the edge of the concrete pretreatment area and off the site, north of the gate. The TWC informed CMF that the discharge must cease (Ref. 4, p. 4). Later that day, sampling by a CMF contractor took place to determine background limits. The locations of the samples were questionable, since most of the samples were not collected from areas unaffected by spills and previous waste management (Ref. 4, p. 4).

4. PATHWAY CHARACTERISTICS

This section characterizes environmental pathways and evaluates the potential of contaminant migration from the facility.

4.1 GROUND WATER

The site is located over an aquifer formed by Quaternary age terrace deposits. The maximum thickness of the deposits is 60 feet (Ref. 9, p. 14, Figure 4). Travis County is underlain by several geologic and hydrogeologic units which yield fresh to moderately saline ground water. The Edwards aquifer is the primary aquifer in Travis County, and occurs approximately 75 feet below the surface in the site area (Ref. 2, p. 4; Ref. 3, p. 5). The Edwards consists of 200 to 360 feet of brittle thick-bedded to massive limestone, commonly dolomitic, containing minor beds of shale, clay, and siliceous limestone. Beds of chert and flint are common (Ref. 9, pp. 34-35).

The Austin Chalk overlies the Edwards Limestone which contains the Edwards aquifer (Ref. 9, Table 1). The Austin Chalk ranges in thickness from 300 to 500 feet, except in the outcrop, where the thickness is considerably less. CMF is located on an Austin Chalk outcrop where the thickness is less. The Austin chalk yields small to very small amounts of water and is generally confined to the outcrop areas. The Austin Chalk is characterized as a light gray chalk, limy marl, and chalky limestone with some bentonite, glauconite and pyrite modules (Ref. 3, p. 7).

Below the Edwards and associated limestones is the Travis Peak Formation. The Travis Peak formation is composed of the Hosston, Silgo, Hammett Shale, Cow Creek Limestone, and Hensell Sand Members which consists of limestone, sand, and shale (Ref. 9, p. 13, Table 1).

The ground water flow is south to east toward the Colorado River and its tributaries (Ref. 9, p. 84). The annual net precipitation for Travis County is 5.49 inches (Ref. 12).

4.2 SURFACE WATER

The nearest surface water is Blunn Creek, an intermittent stream creek which is approximately 300 yards north of the site. Site runoff flows 2.8 stream miles north into the Colorado River. Drainage from the site is sloped toward Blunn Creek. The runoff pathway is toward the storm drainage on the street in front of the building sloping downgradient toward Blunn Creek (Appendix A). Blunn Creek is a tributary of the Colorado River (Ref. 8, p. 1; Ref. 17). The drainage area for the site is not known. It is not known if there are any surface water containment structures at the site.

The two year, 24 hour rainfall for the area is estimated at 4.2 inches (Ref. 7). The site is located in an area of minimal flooding and is above the 500-year floodplain (Ref. 14).

4.3 SOIL EXPOSURE

Samples were taken from the soil and waste pile located on the south side of the building. Analysis of the soil samples detected chromium, cadmium, nickel, zinc and cyanide at 156, 156, 1,100, 193, and 24 ppm, respectively (Ref. 15, p. 2). CMF is an inactive facility (Ref. 5). Potential contaminants of concern include cyanide, cadmium, nickel, zinc and chromium (Ref. 4, p. 2). The site is fenced and the possibility for the general public coming into contact with contaminated soil is low (Ref. 5).

4.4 AIR

There is no file information documenting a release to the air. Cadmium, zinc, nickel, cyanide and chromium are all heavy metal solids with no gas potential. The potential for particulate migration is not known. It is not known if the contaminants are contained.

4.5 GROUND WATER RELEASE TO SURFACE WATER

The depths of the Colorado River and Blunn Creek are approximately 300 and 440 feet above sea level, respectively (Ref. 1). The ground water level within the site area is approximately 400 feet above sea level (Ref. 9, Figure 22). Therefore, the aquifer appears able to contact the Colorado River 2 miles from the site, but not Blunn Creek (Ref. 1). There are no perennial surface water bodies within 1 mile of the site.

5. TARGETS

This section characterizes the environmental pathways and associated targets of contaminant migration from the facility.

5.1 GROUND WATER

The site is located in an area of Travis County which has been classified as unfavorable for potential ground water development (Ref. 3, p. 7). The nearest well is located approximately 1 mile west of the site. The well is a domestic/livestock well which was owned by (b) (6) [redacted] The depth of the well is 18 feet deep and is screened in the Quaternary age terrace deposits (Ref. 9, pp. 104, 141, Figure 25). It is not known if this well is still in use. The nearest public supply well, owned by Stuckey Candy Company, is 2.75 miles southwest of the site. The well is 320 feet deep and pumps the Edwards aquifer. Both of these wells are upgradient of the site. The nearest downgradient well is a domestic/livestock well which was owned by (b) (6) (b) (6) [redacted] in 1965. It is screened in the Travis Peak Formation at a depth of 462 feet, and is approximately 1.5 miles east of the site (Ref. 9, pp. 104, 112, 117, Figure 25).

The City of Austin obtains drinking water from the Colorado River; ground water is not used by the city for drinking water (Ref. 10).

5.2 SURFACE WATER

The City of Austin obtains its drinking water from the Colorado River. A section of the Colorado River in the Austin area is called Town Lake (Ref. 1). One intake is located on the northwest end of Town Lake near Palmer Auditorium, 1 mile upstream from the confluence of Blunn Creek and the Colorado River (Ref. 1; Ref. 10). The city services approximately 150,000 metered connections (Ref. 10). It is not known if the site area receives its drinking water from the City of Austin. There are 8 water rights for 15 miles downstream of the confluence of Blunn Creek and the Colorado River (Ref. 8; Ref 17). Town Lake has quality characteristics which make it suitable for contact recreation, yet its use is prohibited by local regulations for reasons unrelated to water quality. Below Town Lake, the Colorado River is used for contact recreation and fishing (Ref. 18, pp. 6,7,13-16 and 40).

Several endangered species are located within 4 miles of the 15 mile target distance limit. Sensitive environments more than 4 miles from the site are not known. These include the bracted twistflower, Correll's false dragon-head, Smalleye Shiner, Barton Springs Salamander, and Guadalupe Bass. The species are imperilled and/or rare both locally and globally. The Black-capped Vireo is a federally endangered bird found within 4 miles of the site. Blunn Creek Nature Preserve is a wildlife management area located one mile north and downstream of the site (Ref. 1; Ref. 11).

5.3 SOIL EXPOSURE

There are no on-site residents. The nearest regularly occupied building is less than 50 feet from the site (Ref. 5). The population within a one mile radius of the site is 6,352, according to a population per household of 2.48 times 2,561 (number of houses within a 1 mile radius of the site) (Ref. 1; Ref. 13).

It is not known if there are any endangered species located on-site.

5.4 AIR

The distance to the nearest residence or regularly occupied building is less than 50 feet (Ref. 5). The population for the 0 to 1, 1 to 2, 2 to 3 and 3 to 4 mile radii are 6,352, 18,580, 13,286 and 14,196, respectively, according to a population per household of 2.48 times 2,561, 7,492, 5,357 and 5,724 respectively (number of houses within a 0 to 1, 1 to 2, 2 to 3 and 3 to 4 mile radii of the site) (Ref. 1; Ref. 13).

Several endangered species are located within 4 miles of the site. These include the bracted twistflower, Correll's false dragon-head, Smalleye Shiner, Barton Springs Salamander, and Guadalupe Bass. The species are imperilled and/or rare both locally and globally. The Black-capped Vireo is a federally endangered bird found within 4 miles of the site. Blunn Creek Nature Preserve is a wildlife management area located one mile north and downstream of the site.

McKinney Falls State Park is a wildlife management area located three miles southeast of the site (Ref. 1; Ref. 11). It is not known if there are any wetlands within a 4 mile radius of the site.

6. CONCLUSIONS

CMF operated as an aluminum anodizing and electroplating facility using zinc, cadmium, nickel, cyanide plating and various other types of specialty metal plating. Plant operations began in 1980. The site, owned by Odas Jung, is currently inactive.

The hazardous wastes generated from the electroplating operation are toxic due to solvent, heavy metal and cyanide content. Hazardous waste 1,1,1-trichloroethane is generated in a degreasing process. The electroplating process also generates heavy metals and cyanide from plating to stripping bath solutions. The types of wastes generated from this operation included EPA hazardous waste numbers F001, F006, F007, F008, F009, F019, D002, D003, D006 and D007. Analysis of on-site surface and subsurface soil samples detected heavy metals and cyanide, all above background levels.

The City of Austin obtains its drinking water from the Colorado River. Ground water is not used by the city for its drinking water supply.

The surface water is a pathway of concern because of contact recreational use of the Colorado River and its aquatic life, however, the nearest perennial surface water is at Blunn Creek's confluence with the Colorado River, approximately 2.8 miles downgradient of the site. Blunn Creek is an intermittent stream and is above the 500-year floodplain. A section of the Colorado River in the Austin area is called Town Lake. This section of the river has quality characteristics which make it suitable for contact recreation, yet its use is prohibited by local regulations for reasons unrelated to water quality. Below Town Lake, the Colorado River is used for contact recreation and fishing.

The soil and air are not major pathways of concern. The site is fenced and contaminants of concern are heavy metals with no gas potential. The potential for particulate migration is not known. There are no on-site residents.

Several endangered species are located within 4 miles of the site. These include the bracted twistflower, Correll's false dragon-head, Smalleye Shiner, Barton Springs Salamander, and Guadalupe Bass. The species are imperilled and/or rare both locally and globally. The Black-capped Vireo is a federally endangered bird found within 4 miles of the site. Blunn Creek Nature Preserve and McKinney Falls State are wildlife management areas located within the target distance limit.

REFERENCE 2

PA DOCUMENTATION LOG SHEET

SITE:	CAPITOL METAL FINISHING
IDENTIFICATION NUMBER:	TXD048452064
CITY:	AUSTIN
STATE:	TEXAS

REFERENCE NUMBER	DESCRIPTION OF THE REFERENCE
1	U.S.G.S. 7.5 Minute Series Topographical Maps. Oak Hill, Texas, 1988. Montopolis, Texas, 1988. Austin East, Texas, 1966. Austin West, Texas, 1966.
2	Enforcement Report. State of Texas's Original Petition and Application for Injunction. From: State of Texas, Plaintiff. To: Capitol Metal Finishing, Inc., and Carl Booth, Defendants. May 12, 1990.
3	Sampling and Analysis Plan. Capitol Metal Finishing, Inc. Prepared by Environmental Consulting Associates, Austin, Texas for Capitol Metal Finishing, Inc., Austin, Texas. July, 1990.
4	Enforcement Report, Capitol Metal Finishing, Inc. Prepared by Texas Water Commission. March 16, 1989.
5	Memorandum. Off-Site Reconnaissance Inspection of the Capitol Metals Finishing Site. From: Warren P. Mitchell, FIT Biologist, ICF Technology, Inc. To: File. December 4, 1990.
6	Record of Communication. Population of Austin. From: Trudy K. Tannen, FIT Chemical Engineer, ICF Technology, Inc. To: Leanne Pacappe, Austin City Hall. November 14, 1990. TXD987989340.
7	Hershfield, David M. Rainfall Frequency Atlas of the United States. U.S. Department of Agriculture, Soil Conservation Service. May 1961.
8	Letter. Water Rights Downstream of the Confluence of Blunn Creek and the Colorado River. From: Mark Evans, Applications Unit, Surface Water Section. To: Warren P. Mitchell, FIT Biologist, ICF Technology, Inc. November 14, 1990.
9	Occurrence, Availability, and Quality of Ground Water in Travis County, Texas. Texas Department of Water Resources. Report 276. June 1983.

10 Record of Communication. Drinking Water for Austin. From: Trudy K. Tannen, FIT Chemical Engineer, ICF Technology, Inc. To: Alfredo Delgado, Consumer Affairs, City of Austin Water and Waste Water Utility. December 3, 1990. TXD987989340.

11 Letter. Sensitive Species and Natural Communities. From: Dorinda Sullivan, Data Manger, Texas Natural Heritage Program, Resource Protection Division. To: Trudy K. Tanner, FIT Chemical Engineer, ICF Technology, Inc. November 20, 1990.

12 Letter. HRS Net Precipitation Values. From: Andrew M. Platt, Group Leader, MITRE Corporation. To: Lucy Sibold, U.S. Environmental Protection Agency. May 26, 1988.

13 Estimates for Households for Counties: July 1, 1985. U.S. Department of Commerce, Bureau of the Census. March 1988.

14 Federal Emergency Management Agency. Flood Insurance Rate Map. City of Austin, Texas, Panel 480624 0080 B. September 2, 1981.

15 Memorandum. Capitol Metal Finishing, Reg. No. 31593, Sampling Inspections Conducted January 24, 1990, February 6, and April 24, 1990. From: Daniel Brashear, Field Investigator, District 14 Field Office, Texas Water Commission. To: File. April 26, 1990.

16 Code of Federal Regulations. Protection of Environment. 40. Parts 190 to 299. Revised July 1, 1989.

17 Record of Communication. Names and uses of intakes for 15 miles downstream of the confluence of Blunn Creek and the Colorado River. From: Warren P. Mitchell, FIT Biologist, ICF Technology, Inc. To: Mark Evans, Application Unit, Surface Water Section, Texas Water Commossion. August 23, 1991. TXD048452064.

18 Texas Surface Water Quality Standards. Informational Copy. Texas Water Commission. December 1986.

RECEIVED
97 MAY 16 PM 12:13
US EPA
COMP ASSISTANCE &
ENF DIV FILE ROOM

CONSENT FOR ACCESS TO PROPERTY

Name: Joe Jung

EPA I.D. No.: TXD048452064

Site Name: Capitol Metals Finishing, Inc.

Description of Property: 3909 Warehouse Row, Austin, Texas.

I hereby consent to officers, employees, and representatives authorized by the United States Environmental Protection Agency (EPA) entering and having continued access to my property for the following purposes:

1. Reviewing and copying documents related to the site;
2. The taking of such soil, water and air samples as may be determined to be necessary;
3. The sampling of any solids or liquids stored or disposed of on property;
4. The drilling of holes and the installation of monitoring wells for subsurface investigation of subsurface contamination.

I realize that these actions are undertaken pursuant to EPA's response and enforcement responsibilities under the Comprehensive Environmental Response, Compensation, and Liability Act, as amended (CERCLA), 42 U.S.C. § 9601 et seq., as well as 40 CFR Part 300.400 Subpart E.

I am the property owner, or a responsible agent of the property owner, and I warrant that I have the authority to enter into this access agreement.

Place a check mark in the appropriate space. Please note that if no selection is made EPA will assume that you do not wish to be provided with a portion of the sample.

( ) Please provide me with a portion of each sample taken at the property described above. I understand that there will be no charge for the sample portions provided by the EPA. I also understand that I must furnish suitable containers, be responsible for the laboratory analytical analysis, and sign for the transfer of custody from the EPA designated sampler.

( ) I do not wish to receive a portion of samples taken at the property described above.

This written permission is given by me voluntarily with knowledge of my right to refuse and without threats or promises of any kind.

5-12-97
DATE

Joe Charles Jung
SIGNATURE, Title
Managing Partner

REFERENCE 3

CAPITOL METAL FINISHING, INC.
CERCLA ID No.: 048452064
W.O. No.: 11098-112-034

DIETZGEN

ENGINEERS' FIELD BOOK

No. S400V

6-5-97 Capitol Metal JW&RB
Warehouse facility (ins)
1000 At TNRCC Records
Obtained copy of TNRCC
acceptance of Closure for CMF
1100 left Records

Mr Rhodes states that dirt piles in building are clean fill that will be used to fill excavations after concrete grade beam for building is poured. PLAN is to restore building and reopen/lease as warehouse space.

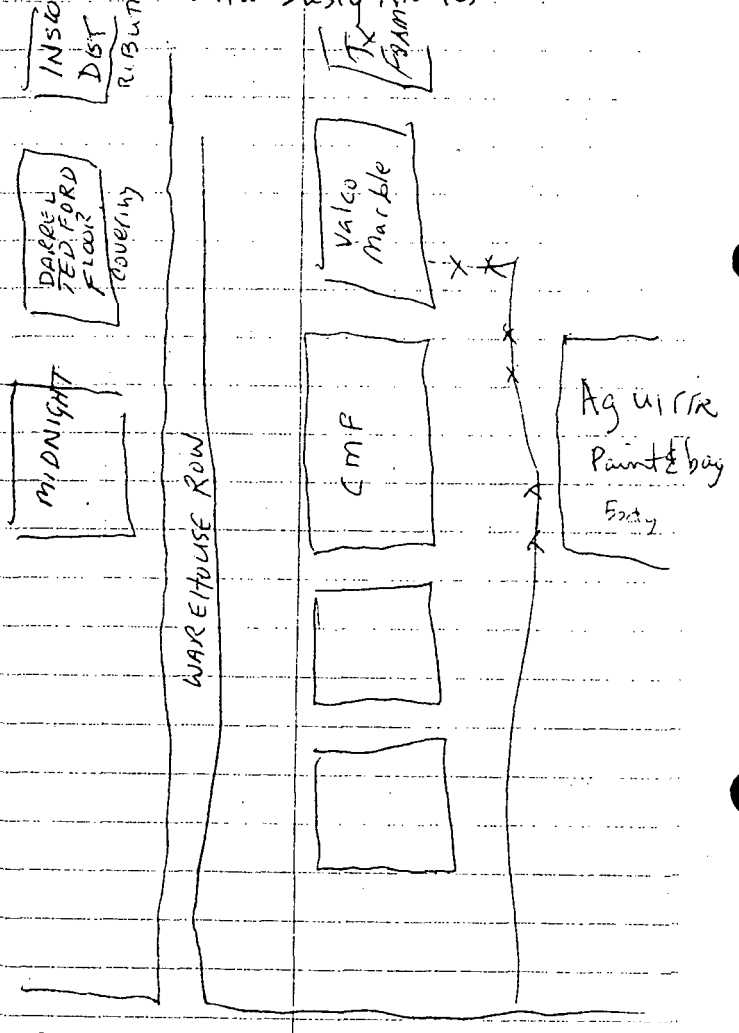
John Warren
6-5-97

INDEX PAGE

JOB NO.	PROJECT	PAGE NUMBER

6-5-97 CAPITOL METAL JW & RB

9:00 Meet with Dusty Rhodes



Drove adjacent roads no residents or day care all commercial

REFERENCE 4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1201 ELM STREET
DALLAS, TEXAS 75270

January 6, 1982

TXD048452064
Capitol Metal Finishing Inc
Attn: James Long
3909 Warehouse Row
Austin, Texas 78704

3909 Warehouse Row
Austin, Texas

The RCRA permit application submitted on the above facility was returned to you a few weeks ago with a request for clarification of information, and to date we have received no response. In order to continue the processing of your application, we must receive the following information:

Waste Information (Form 3, item IV) we need a unit of measure.

To prevent further delay in processing, please provide this information to us within ten days of the date ofthis letter. Return the information to:

EPA - 6EP
RCRA Activities
1201 Elm Street
Dallas, Texas 75270

Should you have questions, please contact Mr. Dwight Corley at (214) 767-2765, or at the above address.

Thanks very much for your cooperation.

Sincerely,

Fred B. Woods

Fred B. Woods, Chief
Administrative Branch

cc: File/Referenced Facility

SUPERFUND FILE
FEB 05 1992
REC

REFERENCE 5

EPA POTENTIAL HAZARDOUS WASTE SITE IDENTIFICATION

REGION	SITE NUMBER
VI	TXD048452064

NOTE: The initial identification of a potential site or incident should not be interpreted as a finding of illegal activity or confirmation that an actual health or environmental threat exists. All identified sites will be assessed under the EPA's Hazardous Waste Site Enforcement and Response System to determine if a hazardous waste problem actually exists.

A. SITE NAME	B. STREET (or other identifier)		
Capitol Metal Finishing, Inc.	3909 A Warehouse Row		
C. CITY	**D. STATE**	**E. ZIP CODE**	**F. COUNTY NAME**
Austin	TX	78704	Travis 453

G. OWNER/OPERATOR (If known)

1. NAME

2. TELEPHONE NUMBER

H. TYPE OF OWNERSHIP (If known)

☐ 1. FEDERAL ☐ 2. STATE ☐ 3. COUNTY ☐ 4. MUNICIPAL ☐ 5. PRIVATE ☒ 6. UNKNOWN

I. SITE DESCRIPTION

Metal plating and finishing. Started in 1969, charter forfeiture in 2/84. Site is closed - appears abandoned, but has not been reopened as any other business. As of 3/5/89, a red banner stating "Hazardous Materials" was across the entrance.

Sources: 1980 TX Manuf. Manual
Sec. of State Active & Dead Corps.
Drive-by

See attached Photographs

J. HOW IDENTIFIED (i.e., citizen's complaints, OSHA citations, etc.)	K. DATE IDENTIFIED (mo., day, & yr.)
Karst Environment Site Discovery	3-7-90

L. SUMMARY OF POTENTIAL OR KNOWN PROBLEM

SUPERFUND FILE

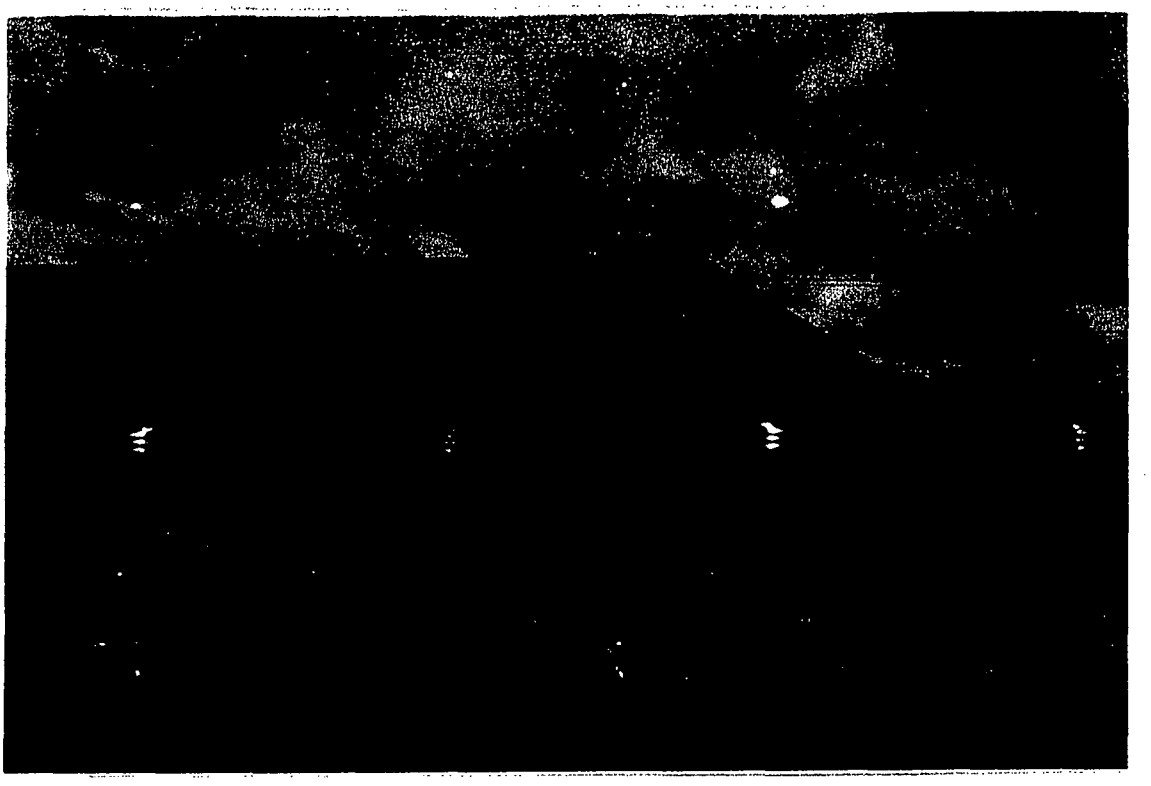
FEB 05 1992

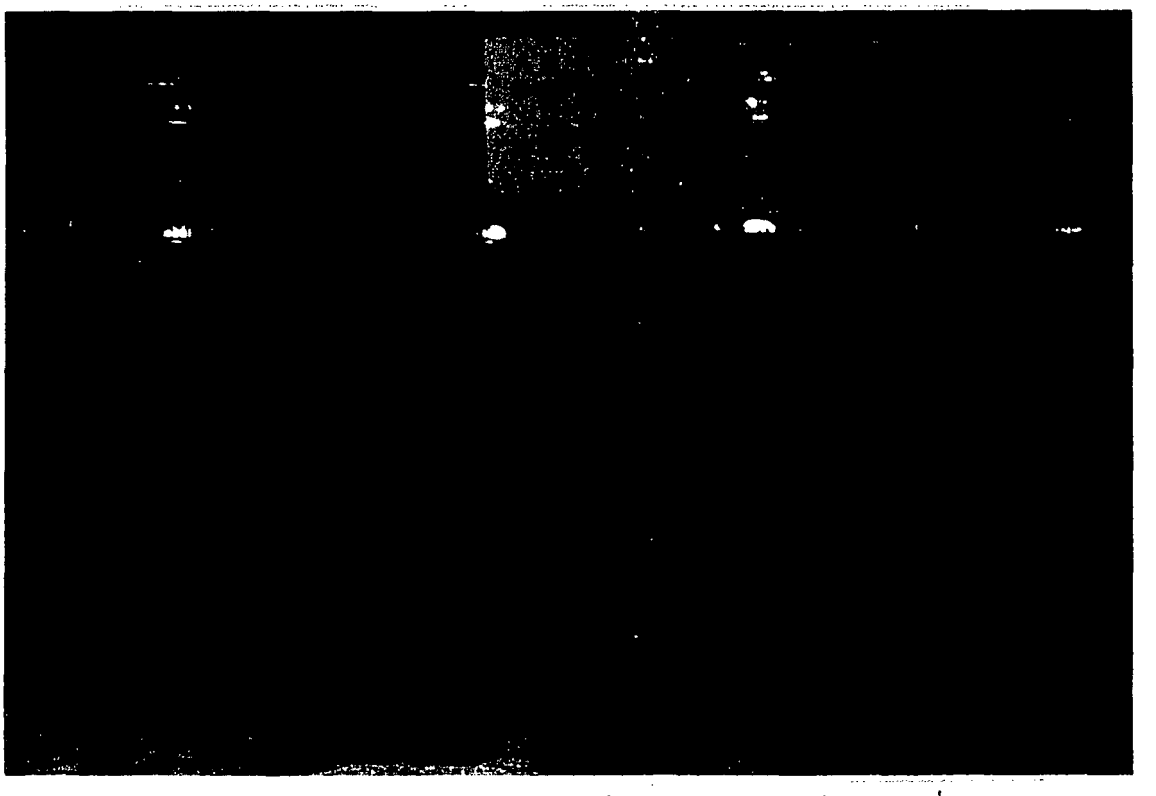
REORGANIZED

M. PREPARER INFORMATION

1. NAME	2. TELEPHONE NUMBER	3. DATE (mo., day, & yr.)
Dorcas Kircher, FIT Geologist For Kelly Bowles, FIT Geologist	(214) 742-6601	3-8-90

EPA Form 2070-5 (5-80)





CAPITOL METAL FINISHING INC.
AUSTIN, TX TRD 048452064

CAPITOL METAL FINISHING INC.
AUSTIN, TX

REFERENCE 6

INSPECTION REPORT REVIEW
POTENTIAL HAZARDOUS WASTE SITE

SITE NAME : Capitol Metal Finishing
LOCATION : Austin, TX
SITE NUMBER: TXD048452064
SURVEY DATE: 8/30/91 INSPECTED BY: STATE (FIT) TAT OTHER: _____
LABORATORY : ✓ CLP ___ EPA ___ OTHER _____

RECEIVED FROM: ED SIERRA DATE RECEIVED: 9/25/91

SAMPLE TYPE(s):

SOIL	SURFACE WATER	GROUND WATER	DRINKING WATER
off / on -site	off / on -site	off / on -site	off / on -site

CONTAMINANT(s): (Organics) (Inorganics) Radionuclides Microbiological

FOLLOW UP (Y/N): SSI

___ (Re)Sampling Requested
___ Further Action is URGENT
___ Locate Drinking Water Sources
___ Keep Site Active ("N"=No Further Action)
___ Concur with Report Recommendations

SUMMARY:

Capitol Metal Finishing, Inc. began operations at this site in 1980. The company was formed by a merger between Austin Painting & Plating and CMF. Conducted on-site were aluminum anodizing and electroplating for zinc, cadmium, nickel and cyanide plating, and various other types of specialty metal plating. The contaminants of concern include those heavy metals mentioned plus cyanide and 1,1,1-trichloroethane.

There are no drinking water wells known to exist within 1 mile of the site. There are also no perennial surface water bodies within 1 mile of the site. Based on the preliminary information, the threat to drinking water seems limited. We will look forward to the Screening Site Inspection for more detailed information.

Neil Gilham 10/8/91
ENGINEER/REVIEWER

Concurrence:
P. Warren Morris 10/8/91

INSPECTION REPORT REVIEW
POTENTIAL HAZARDOUS WASTE SITE

SITE NAME : Capital Metal Finishing
LOCATION : Austin, TX
SITE NUMBER: TXD048452064
SURVEY DATE: 8/30/91 INSPECTED BY: STATE (FIT) TAT OTHER: _____
LABORATORY : ✓ CLP ___ EPA ___ OTHER _____

RECEIVED FROM: ED SIERRA DATE RECEIVED: 3/13/92

SAMPLE TYPE(s):

SOIL	SURFACE WATER	GROUND WATER	DRINKING WATER
off / on -site	off / on -site	off / on -site	off / on -site

CONTAMINANT(s): (Organics) (Inorganics) Radionuclides Microbiological

FOLLOW UP (Y/N):

Y (Re)Sampling Requested
N Further Action is URGENT
Y Locate Drinking Water Sources
Y Keep Site Active ("N"=No Further Action)
Y Concur with Report Recommendations

SUMMARY:

Capital Metal Finishing, Inc. began operations at this site in 1980. The company was formed by a merger between Austin Painting & Plating and CMF. Conducted on-site were aluminum anodizing and electroplating for zinc, cadmium, nickel and cyanide plating, and various other types of specialty metal plating. The contaminants of concern include those heavy metals mentioned plus cyanide and 1,1,1-trichloroethane.

There are no drinking water wells known to exist within 1 mile of the site. There are also no perennial surface water bodies within 1 mile of the site. Based on the preliminary information, the threat to drinking water seems limited. We will look forward to the Screening Site Inspection for more detailed information.

Neil Pflum 3/13/92
ENGINEER/REVIEWER

Concurrence:

_____ __/__/__

REFERENCE 7

FINAL CLOSURE COMPLETION REPORT

Prepared for:

TWIN OAKS ASSOCIATES

Prepared by:

ENTRIX, Inc.
5252 Westchester, Suite 250
Houston, Texas 77005

Project No. 163204

November 1995

FINAL CLOSURE COMPLETION REPORT

Prepared for:

TWIN OAKS ASSOCIATES

Prepared by:

ENTRIX, Inc.
5252 Westchester, Suite 250
Houston, Texas 77005

Project No. 163204

November 1995

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INDUSTRIAL & HAZARDOUS WASTE
CORRECTIVE ACTION SECTION

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Appendix B Notice of Deficiency Response Pertaining to Closure and Post-Closure Plans; Former Metal Plating Site. September 25, 1992. ..... Volume I

Appendix C Closure Plan: Capitol Metal Finishing, Inc. Site, Former Metal Plating Facility Building. January 1993. ENTRIX, Inc. ..... Volume I

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1.0 INTRODUCTION

1.1 Introduction and Purpose of Document

Twin Oaks Associates (TOA) is submitting this Final Closure Report for the closure of the former metals plating site (the site) located at 3909 Warehouse Row, Austin, Texas. The facility was previously operated by Capitol Metal Finishing, Inc. The site property is owned by TOA. A site location map is provided as Figure 1-1. A site plot plan is provided as Figure 1-2.

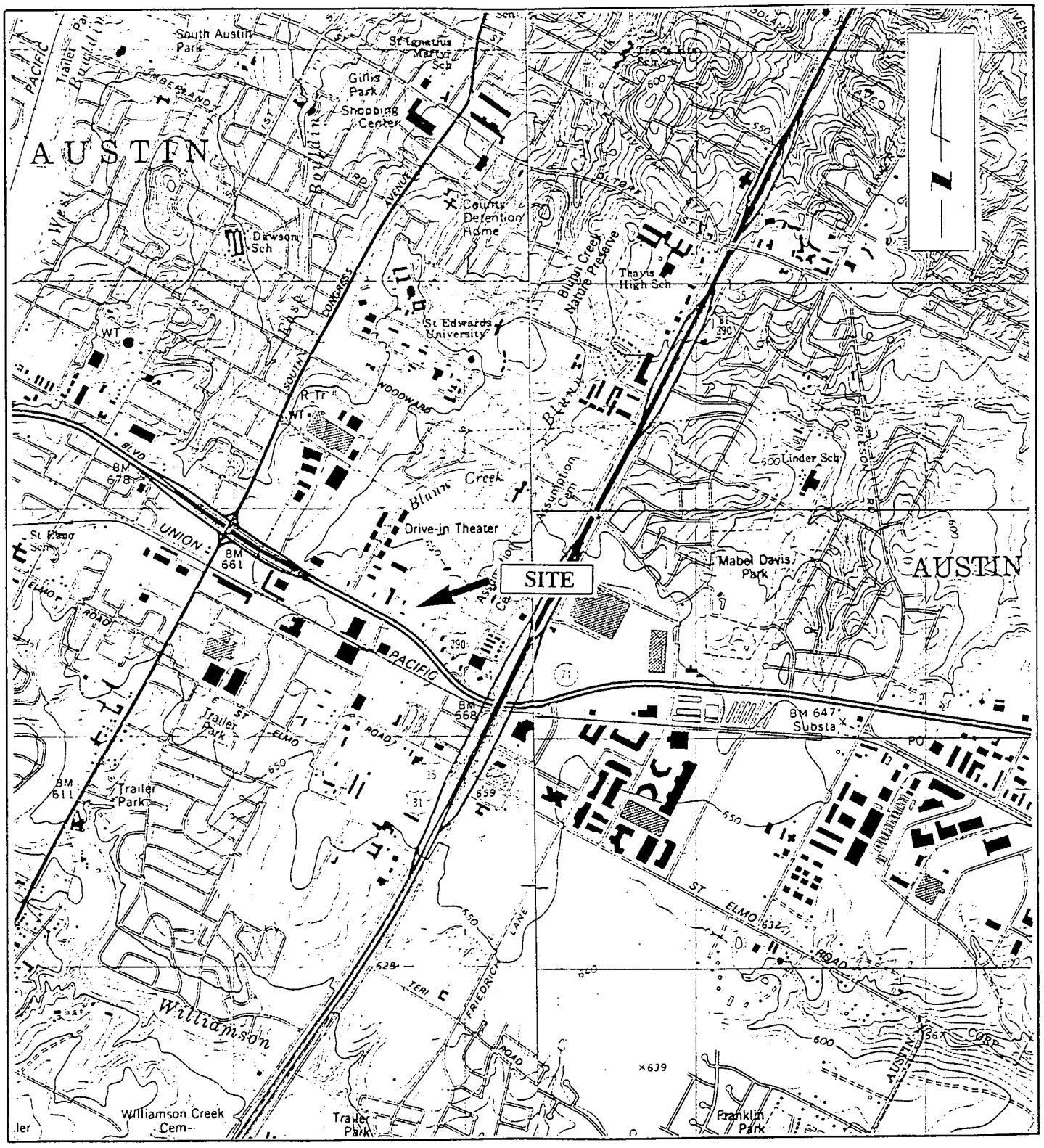
The purpose of this document is to document closure of the site in accordance with TNRCC-approved closure plans and Risk Reduction Standard 1 described in 30 TAC Section 335 Subchapter S. This report includes all information required by Section 335.553.

1.2 Site History

A metal plating facility was operated by Capitol Metal Finishing, Inc. at the site continuously from 1968 until the late 1980s when operations ceased. The former metal plating facility building is an enclosed rectangular warehouse constructed in the late 1960s. The warehouse is approximately 15,000 square feet in area. The walls consist of hollow concrete cinder blocks between steel-reinforced concrete columns, and the roof is comprised of adjoining concrete T-slabs. A site plot plan is provided in Figure 1-2.

Capitol Metal Finishing and the Texas Water Commission (TWC) signed an agreed order on March 9, 1988, requiring the submittal of a remedial action plan for removal of all affected soils and other materials at the site. Affected areas or materials refer to those areas or materials analytically determined to contain specified constituents in excess of the agreed-upon background concentrations discussed in Section 1.4 below, or that are determined to exhibit the characteristic of toxicity using the Toxicity Characteristic Leaching Procedure (TCLP). The order also required Capitol Metal Finishing to verify that all affected soils had been removed to the agreed-upon background concentrations, to restore excavated areas to original grade, and to properly handle and dispose of all wastes generated during remedial activities.

An initial investigation and remedial action was undertaken in 1988 by Capitol Metal Finishing to identify contaminated areas and to remove all tankage, processing equipment and contaminated soils from known spill areas. Approximately 225 cubic yards of contaminated soil was excavated by Capitol Metal Finishing and stockpiled in the southwest corner of the property. The resulting pits were designated Pit A and Pit B (see Figure 1-2). These pits were later dewatered and backfilled in January 1991 in accordance with City of Austin Temporary Permit No. 74586003. This remedial work was not conducted in accordance with a TWC-approved closure plan. Removal of the stockpiled soils and final closure of Pits A and B was completed under the closure plans discussed in Section 1.3 that form the basis of the closure activities described in this report.



0 2000
Scale in Feet

Ref.: USGS Topographic Maps, 7.5 minute series
Montopolis, Texas – 1988
Oak Hill, Texas – 1988

ENTRIX

Figure 1-1
Site Location Map
Capitol Metal Finishing Site
Twin Oaks Associates
Austin, Texas

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5 KCD R:\ACAD\163204\FIG1-1

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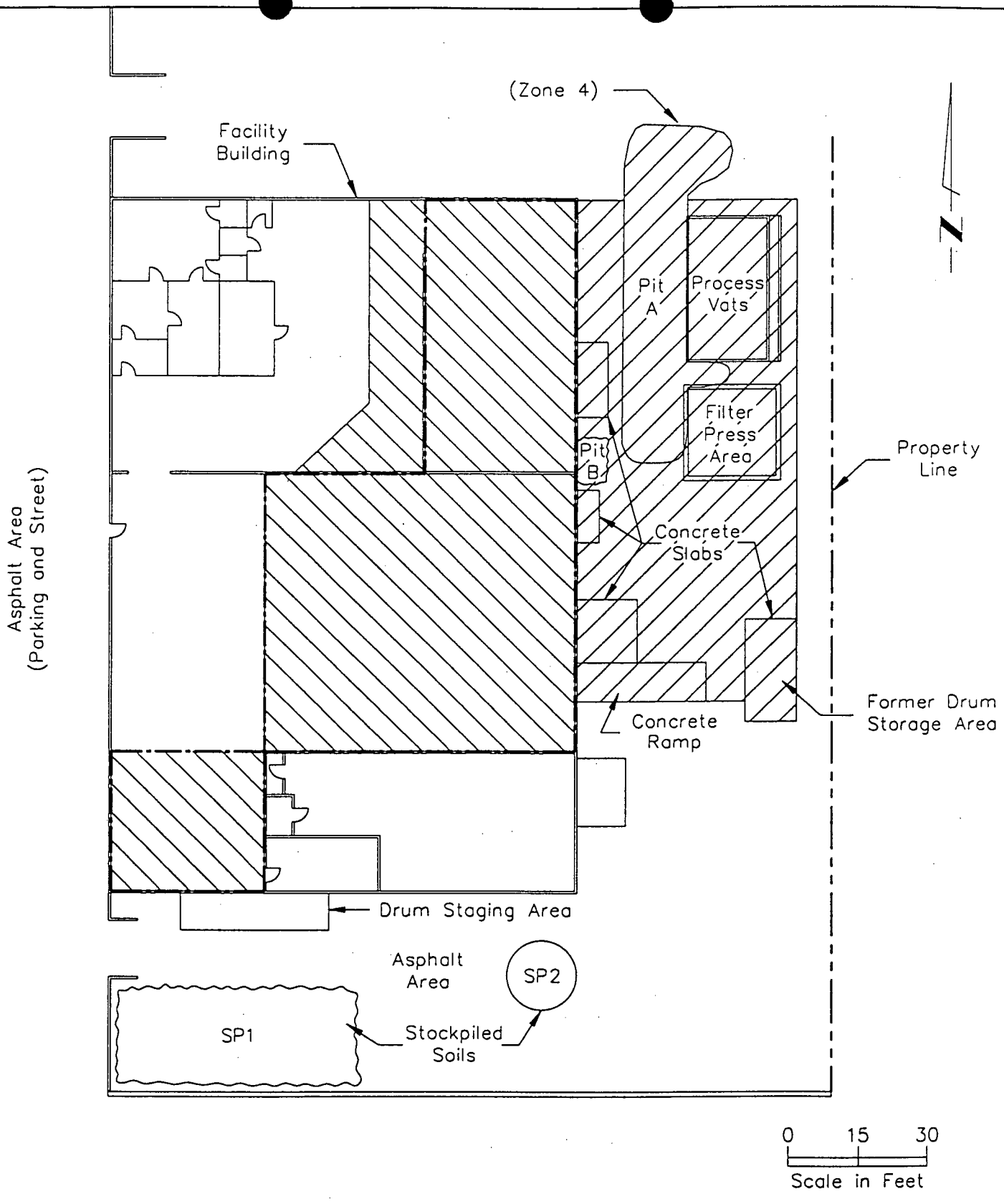

Legend

- Former process area boundary
- Areas closed under May 1992 ECA closure plan
- Areas closed under January 1993 ENTRIX closure plan

ENTRIX

Figure 1-2
Capitol Metal Finishing Site
Site Plot Plan
Twin Oaks Associates
Austin, Texas

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TDUNN R:\ACAD\163204\FIG1-2

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Environmental Consulting Associates (ECA) was retained by Capitol Metal Finishing to perform additional investigation of soils and concrete at a number of locations at the site both inside and outside the facility building. Sampling was commenced in October 1990 and the results were presented in a report dated March 1991. Results from this investigation were used by ECA to delineate affected areas and materials that were later designated for remedial action under the May 1992 ECA Closure Plan (this plan is discussed in Section 1.3 below).

1.3 Site Closure Plans

Closure of the site was conducted in accordance with two separate closure plans. The closure of the site property outside of the facility building (see Figure 1-2) was conducted in accordance with the Closure and Post-Closure Plans for Former Metal Plating Site submitted to the TWC in May 1992 by ECA (see Appendix A). The May 1992 plan proposed clean closure for areas outside the facility building and in-place closure for areas inside the facility building. In-place closure of affected soils and building materials within the facility building as written in the May 1992 plan was declared unacceptable by the TWC in a Notice of Deficiency (NOD) dated July 15, 1992. The NOD is included in Appendix A. A Notice of Deficiency Response Pertaining to Closure and Post-Closure Plans was submitted by ECA on September 25, 1992. In a letter dated December 9, 1992, the TWC accepted with modifications the elements of this closure plan regarding clean closure of the areas *outside* the facility building. The NOD response and subsequent acceptance letter are included as Appendix B.

Closure of the interior of the facility building was conducted in accordance with a Closure Plan submitted to the TWC by ENTRIX, Inc. for TOA in January 1993 and is included as Appendix C. This plan proposed clean closure of contaminated areas within the facility building. The January 1993 plan was granted partial approval with modifications in a TWC letter dated March 2, 1993. The letter is included in Appendix C. The March letter gave approval for determining the full extent of contamination within the building and for residual waste removal from interior surfaces within the facility building (hereafter referred to as Phase I activities). The letter further requested that a Phase I - Closure Completion Report, including any revisions to the January 1993 plan, be submitted to the TWC after completion of Phase I Activities. The approved Phase I activities were performed and the revision, entitled Phase I - Closure Completion Report, was submitted September 28, 1994 by ENTRIX, and is included as Appendix D. The Revised Phase I - Closure Completion Report incorporated the use of risk reduction standards and contained a revised closure schedule and a revised estimate of the amounts of waste to be generated from interior closure activities. The Revised Phase I - Closure Completion Report was accepted by the TNRCC in a letter dated December 28, 1994. The letter is included in Appendix D.

The September 28, 1994 document proposed a closure schedule with a duration of 32 weeks. However, due to unanticipated, extensive structural repairs to the facility building, a six week extension for completion of interior closure was requested by ENTRIX on July

25, 1995 to the Texas Natural Resources Conservation Commission (TNRCC). This extension was granted in a letter dated September 15, 1995 (see Appendix D).

1.4 Clean Closure Standards

In a meeting on March 8, 1989, Capitol Metal Finishing and the TWC identified six constituents of concern at the site: cyanide, cadmium, chromium, lead, nickel, and zinc. Background concentrations were established for all constituents of concern with the exception of cyanide, based on five samples collected from unaffected areas in the vicinity of the site. Constituents of concern and agreed-on background concentrations are presented in Table 1-1 below. At the suggestion of the TNRCC, the ENTRIX September 1994 closure plan revisions proposed that Risk Reduction Standard 1 under 30 TAC Subchapter S be implemented for cleanup of the Capitol Metal Finishing facility. To attain clean closure under Standard 1, all affected areas and materials at the site must be removed or decontaminated to background concentrations for the six constituents of concern. Affected areas and materials refers to those areas and materials analytically determined to contain the specified constituents of concern in excess of agreed-upon background concentrations, or that are determined to exhibit the characteristic of toxicity using the Toxicity Characteristic Leaching Procedure (TCLP).

The January 1993 closure plan for areas inside the facility building specified a cyanide standard of 250 mg/kg. A sample exhibiting a concentration greater than 250 mg/kg total cyanide would be considered potentially hazardous due to the reactivity characteristic. This standard was rejected in a March 2, 1993 letter from the TWC in an attachment of closure plan modifications to the January 1993 plan. The modifications specified that any verification sample exhibiting a total concentration of cyanide greater than 20 mg/kg, must be further analyzed for leachable cyanide. Although this second tier verification sampling was established in the modifications, no new cleanup value for cyanide was proposed.

Using the Risk Reduction Rules, a standard of 100 mg/kg for cyanide was proposed in the September 1994 Revised Phase I - Closure Completion Report based on the Soil/Air and Ingestion Standard for Residential Areas (SAI-Res) set forth in the Risk Reduction Rules with a reduction of greater than 80% for a safety factor. This value was deemed appropriate as a cyanide clean closure standard because the most likely route of contact with affected material at the site is through inhalation or ingestion. This cyanide standard was accepted as part of the Revised Phase I - Closure Completion Report by the TNRCC in a letter dated December 28, 1994 (see Appendix D) and implemented for closure at the site.

Table 1-1

Clean Closure Standards

Constituent	Background Level	
	Total Metals (mg/kg)	TCLP Level* (mg/1)
Cadmium (Cd)	6.0	1.0
Chromium (Cr)	43.3	5.0
Lead (Pb)	252.0	5.0
Nickel (Ni)	61.7	N/A
Zinc (Zn)	313.0	N/A
Cyanide (CN)	100.0**	N/A

*40 CFR 261.24
** Proposed in the September 1994 Revised Phase 1-Closure Completion Report. Based on Risk Reduction Standards (30 TAC Subchapter S)

1.5 Administrative Information

Company Name:
Capitol Metal Finishing, Inc.

Plant Name and Address:
Capitol Metal Finishing, Inc.
3909 Warehouse Row
Austin, Texas 78704

Contacts:
Former Operator
Capitol Metal Finishing, Inc.
Attn: Carl Booth
P.O. Box 746
Round Rock, Texas 78760

Property Owner
Twin Oaks Associates
Attn: Joe Jung
P.O. Box 668
Austin, Texas 78767

Texas Registration No.:
31593

EPA I.D. No.:
TXD 048452064

2.0 HEALTH AND SAFETY PROCEDURES

A Health and Safety Plan was developed by ENTRIX prior to mobilization for remediation and construction activities at the site (see Appendix E). Copies of the plan were kept on site during all closure activities. The plan was reviewed with all personnel involved with on-site closure activities. An evaluation of necessary personal protective equipment (PPE) was made by the senior field member prior to each remedial activity. Safety meetings were held to ensure personnel understood the proper PPE to wear during activities and to discuss general safety issues. Hard hats, steel-toed boots, and safety glasses were worn while working on or about heavy machinery or tools.

The two principal pathways of exposure to personnel at the site were through dermal contact with contaminated materials and ingestion of airborne dust particulates. Protective coveralls and gloves were worn by workers whenever extensive contact with contaminated materials was expected. During activities that produced dust and air-borne particulates, half-face respirators with HEPA filters were worn. Water mist was also used as needed as a dust suppressant.

A technical representative from ENTRIX was on site during field operations to ensure that proper health and safety measures were observed.

Three zones were established on site both inside and outside the facility building to prevent affected materials from being transported to unaffected areas. The three zones were designated as follows:

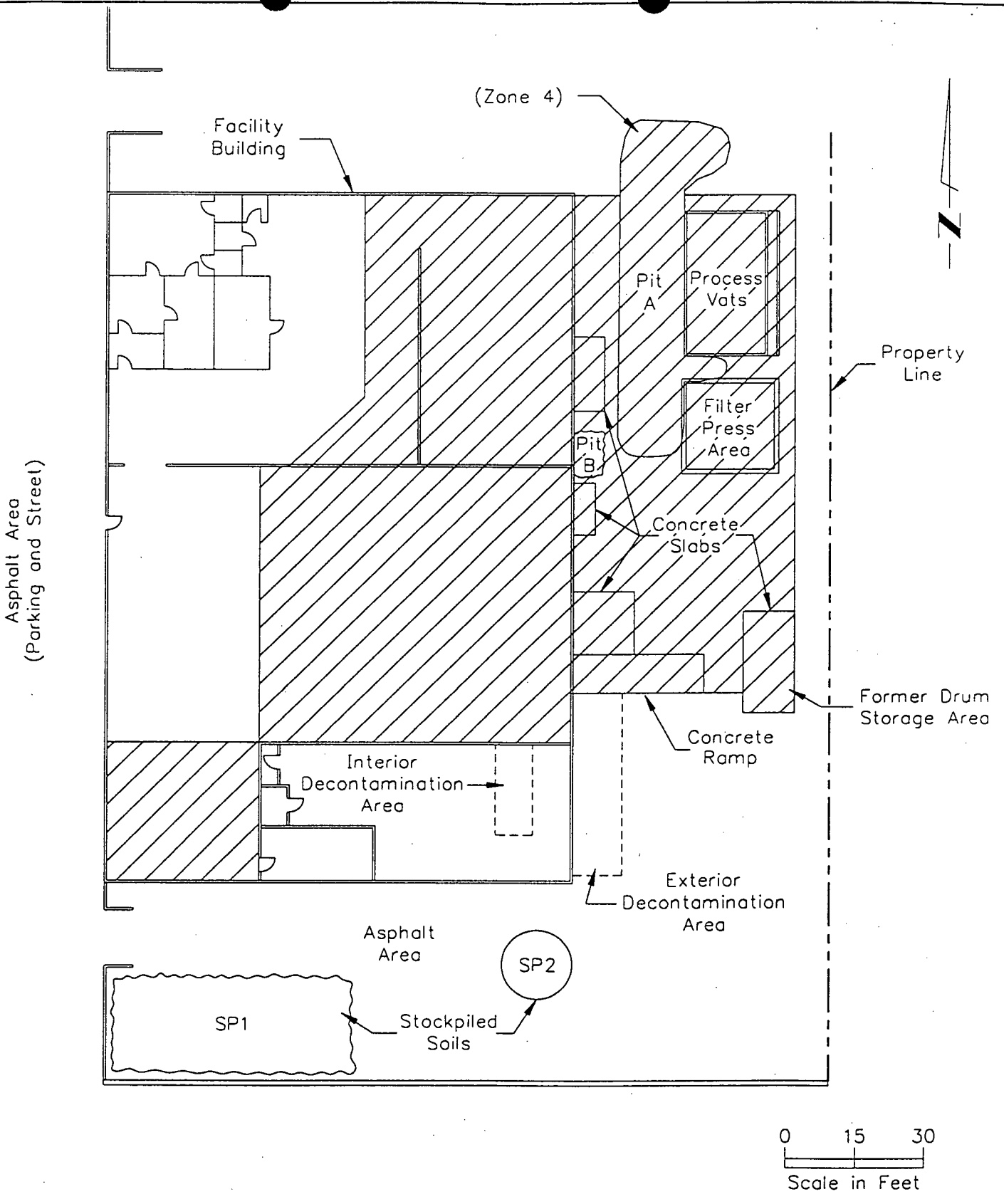
Exclusion Zone—This zone included areas where contact with affected materials was possible. All personnel entering the Exclusion Zone were required to wear proper personal protective equipment as specified in the Health and Safety Plan. Exclusion zones are shown in Figure 3-1.

Contamination Reduction Zone—This zone lies immediately outside the Exclusion Zone. Decontamination areas were established in these zones to prevent the spread of affected materials into clean zones. Decontamination areas are shown in Figure 3-1. Decontamination procedures are discussed in Section 3.0.

Clean Zone—All unaffected areas outside of the contamination reduction zones.

3.0 DECONTAMINATION STATIONS AND PROCEDURES

Upon completion of field activities, equipment that contacted contaminated material was decontaminated. Decontamination stations were established within the Contamination Reduction Zones in both the interior and exterior of the facility building. Decontamination areas are shown on Figure 3-1. An exterior decontamination area was established in the southeast section of the site. All heavy equipment was decontaminated here. A rectangular area approximately 6 feet by 10 feet was bermed using wood planks, and then triple lined using impermeable plastic liner. If necessary, gross decontamination was performed on an adjacent lined concrete pad. Equipment was cleaned with a detergent wash and the rinsate was either containerized or allowed to evaporate from the lined area. Rinsate was containerized within a 1500 gallon plastic tank purchased and used specifically for the collection of rinseate and contaminated liquids from remedial activities. The interior decontamination area was used only for the decontamination of personnel footwear and small sampling equipment. All sampling equipment was decontaminated between sampling events using a detergent wash, followed by a tap water rinse, followed by a third water rinse. Water was kept in three small plastic tubs within the interior decontamination area. All water generated from interior decontamination activities was either transferred into the 1500 gallon tank for future disposal or placed into the lined exterior decontamination area and allowed to evaporate.



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Exclusion zones

Contamination reduction zones

ENTRIX

Figure 3-1
Capitol Metal Finishing Site
Decontamination and Exclusion Zones
Twin Oaks Associates
Austin, Texas

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4.0 SITE SECURITY

Due to the presence of hazardous and potentially hazardous materials at the site, measures were taken to prevent any untrained or unauthorized persons from entering the property unattended. Both gates allowing access to the site from Warehouse Row (see Figure 1-2) were kept secured with a chain and padlock whenever the site was left vacant during remedial activities. All entrances to the facility building accessible from Warehouse Row were either permanently barred or secured and locked when the site was vacated. At some stages during closure activities, 24-hour security was provided by TOA. This was deemed necessary after removal of the east wall of the facility building and during periods when a significant amount of heavy equipment was being stored on site. Security personnel were instructed to stay within clean zones at all times.

5.0 EXTERIOR CLOSURE

Implementation of closure under the approved ECA May 1992 Closure and Post-Closure Plan for the property areas outside of the facility building commenced in March 1995. The closure was performed by ENTRIX in accordance with the closure plan. Tenco Environmental Services was selected as the contractor for performing remedial activities. A field representative from ENTRIX provided oversight during remediation activities. A summary of activities presented in chronological order is presented below. The site exterior prior to closure is shown in Figure 1-2.

5.1 Removal of Pre-existing Stockpiled Material and Structures

An initial investigation and remedial action was undertaken by Capitol Metal Finishing to identify contaminated areas and to remove all tankage, processing equipment and contaminated soils from known spill areas. Approximately 225 cubic yards of contaminated soil was excavated by Capitol Metal Finishing and stockpiled in the southwest corner of the property. The resulting pits were designated Pit A and Pit B (see Figure 1-2). These pits were later dewatered and backfilled in January 1991 in accordance with City of Austin Temporary Permit No. 74586003. This remedial work was not specified for implementation under an approved closure plan for the site. However, removal and disposal of the material was addressed in the May 1992 exterior closure plan since the waste was still on site at the time of the writing of the plan.

The two piles of affected soils generated during previous remedial efforts by ECA, designated SP1 and SP2 on Figure 1-2, were sampled and characterized by ENTRIX for disposal as described in Section 5.8.2.1. Ten random samples were collected from pile SP1 at perpendicular depths of approximately 6 to 12 inches below the outside surface of the stockpiles. The samples were composited at ACZ Laboratories into five samples and analyzed for the constituents listed in Section 5.8.2.1. Based on the analytical results from these five samples, the stockpile was classified as Class 2 waste. Analytical results and laboratory QA/QC data are presented in Appendix G. Stockpile SP1 was loaded into 12-yard dumptrucks owned and operated by Shumaker Landscaping and disposed at the City of Austin Landfill on April 3, 1995 as described in Section 5.9.3.3. Total volume of the stockpile was approximately 220 cubic yards.

Five samples were collected from SP2 at perpendicular depths of approximately 6 to 12 inches below the surface of the stockpile. The samples were composited at ACZ laboratories into a single sample, SP2A-E, and analyzed for the constituents listed in Section 5.7.2.1. Based on the analytical results from SP2A-E, the stockpile was classified as Class 1 waste. Analytical results and laboratory QA/QC data are presented in Appendix F. Stockpile SP2 was loaded and shipped in a 20-yard dumptruck to Browning Ferris Industries' (BFI) Sinton Landfill in Sinton, Texas on July 11, 1995. Transportation services were provided by BFI. Total volume of the stockpile was approximately eight cubic yards. Copies of all manifests are provided in Appendix J. Class 1 waste shipments are summarized in Table 5-4.

Several uncontaminated structures located on concrete slabs (see Figure 1-2 for location of slabs) were dismantled on March 13-14, 1995 and removed in preparation for removal of the underlying slabs and contaminated soil. A corrugated steel shed previously used for drum storage was dismantled and disposed as construction debris in accordance with the May 1992 Closure Plan as described in Section 5.9.3.4. A corrugated steel roof supported by wooden columns used to cover the process vats and filter press was also dismantled and disposed as construction debris in accordance with the May 1992 Closure Plan. A free-standing corrugated steel shed located between the drum storage area and the filter press was demolished and disposed as construction debris in accordance with the May 1992 Closure Plan as described in Section 5.9.3.4. A corrugated steel shed and a wooden lean-to structure located on the concrete pads along the east wall of the facility building were demolished and disposed as construction debris in accordance with the May 1992 Closure Plan as described in Section 5.9.3.4.

5.2 Removal of Filter Press and Filter Press Slab

An inoperable filter press and plastic press plates were left in place after plating operations ceased at the site. The filter press was dismantled and decontaminated by ENTRIX as outlined in the May 1992 Closure Plan on March 16, 1995. The filter press components were triple washed with a detergent wash consisting of Liquinox and potable water, followed by a potable water rinse. Rinsate waste was containerized in a 55-gallon drums for disposal. The rinsate was characterized as Class 2 waste as described in Section 5.7.2.2 and disposal at BFI's Sunset Farms Landfill was pending at the time of the writing of this report (see Section 5.9.3.3.) A final rinsate sample, FP-1, was collected as specified in the closure plan after the final (third) rinsing of the filter press in order to document the removal of all waste residues. Results from the analysis of this sample are given below:

Cadmium	=	0.162 mg/l
Chromium	=	0.03 mg/l
Lead	=	ND (<0.01) mg/l
Nickel	=	0.23 mg/l

The filter press was recycled as scrap metal. The plastic press plates were placed into five 55-gallon drums for storage until disposal. A composite sample, designated FP-2, was collected of the press plates for characterization purposes. The waste was characterized as Class 2 debris. The five drums containing the plates were sent to BFI's Sunset Farms Landfill for disposal as described in Section 5.9.3.3.

The filter press slab was removed and stockpiled in the southeast corner of the site. A representative sample, designated FP3-1, was collected for characterization as described in Section 5.8.2.1. Sample results (see Appendix G) indicated the material was a Class 2 waste. The concrete was sent to the City of Austin Landfill for disposal as described in Section 5.9.3.3.

5.3 Removal of Pre-existing Concrete Slabs

Before excavation of affected soils from the areas designated in Figure 5-1 could begin, it was necessary to remove all concrete slabs. Three concrete slabs along the exterior of the east wall of the facility building (see Figure 1-2) were removed and stockpiled on impermeable plastic liner in the southeast corner of the property. A representative sample, designated BCS-1, was collected and analyzed as described in Section 5.8.2.1. Analytical results indicated the concrete debris was a Class 2 waste. The debris was later disposed at the City of Austin Landfill as described in Section 5.9.3.3.

A fourth slab, previously used for the storage of drums (see Figure 1-2), was visibly contaminated. A representative sample designated CS3-1 was collected and analyzed as described in Section 5.8.2.1 and found to exhibit a TCLP chromium concentration of 82.2 mg/l. The slab was removed and stockpiled separately on impermeable plastic liner in the southeast corner of the property. The concrete was later sent to Texas Ecologist's Robstown Landfill for disposal as described in Section 5.9.3.3.

Due to the high concentration of chromium found in the slab, a representative sample of the underlying soil was collected on March 23, 1995 to determine if contaminants had penetrated into the soil. The sample, designated FM-8, exhibited a TCLP cadmium concentration of 2.2 mg/l. The contaminated area was covered and secured with impermeable plastic liner to await excavation. The underlying soil was excavated on June 21, 1995 to a depth of two feet below the original soil surface. The soil (approximately 25 cubic yards) was stockpiled separately on impermeable plastic liner. The soil, previously characterized by sample FM-8, was later sent to Texas Ecologist's Robstown Landfill for disposal as described in Section 5.9.3.1. The area under the slab was then divided into two 12 foot by 12 foot grids and designated D1 and D2 (see Figure 5-2) for verification sampling purposes. It should be noted that the May 1992 closure plan did not specify removal of soil from this area and that these two grids were added to the original verification sampling grid presented in the May 1992 closure plan (see Appendix A - Figure 3.2.1.7). Further excavation and disposal of soil from these grids is described in Section 5.5. All additional soil removed from these two grids was classified as Class 2 waste.

5.4 Remediation of Process Vat Area

5.4.1 Removal of Process Vats and Underlying Slab

Three aboveground reinforced concrete process vats and an underlying concrete slab were removed using a track-hoe on April 12, 1995, in preparation for the excavation of affected soils. A concrete containment wall surrounding the vats was also removed. The vats, wall, and slab were stockpiled on plastic liner in the southeast corner of the site until disposal. A representative composite sample of the concrete containment walls around the vats and another composite sample of the vats and underlying slab were collected and analyzed as described in Section 5.8.2.1 and designated PVCW2 and VATS2 respectively. Analytical results (see Appendix G) indicated the material was a Class 2 waste. The material was later disposed at the City of Austin Landfill as described in Section 5.9.3.3.

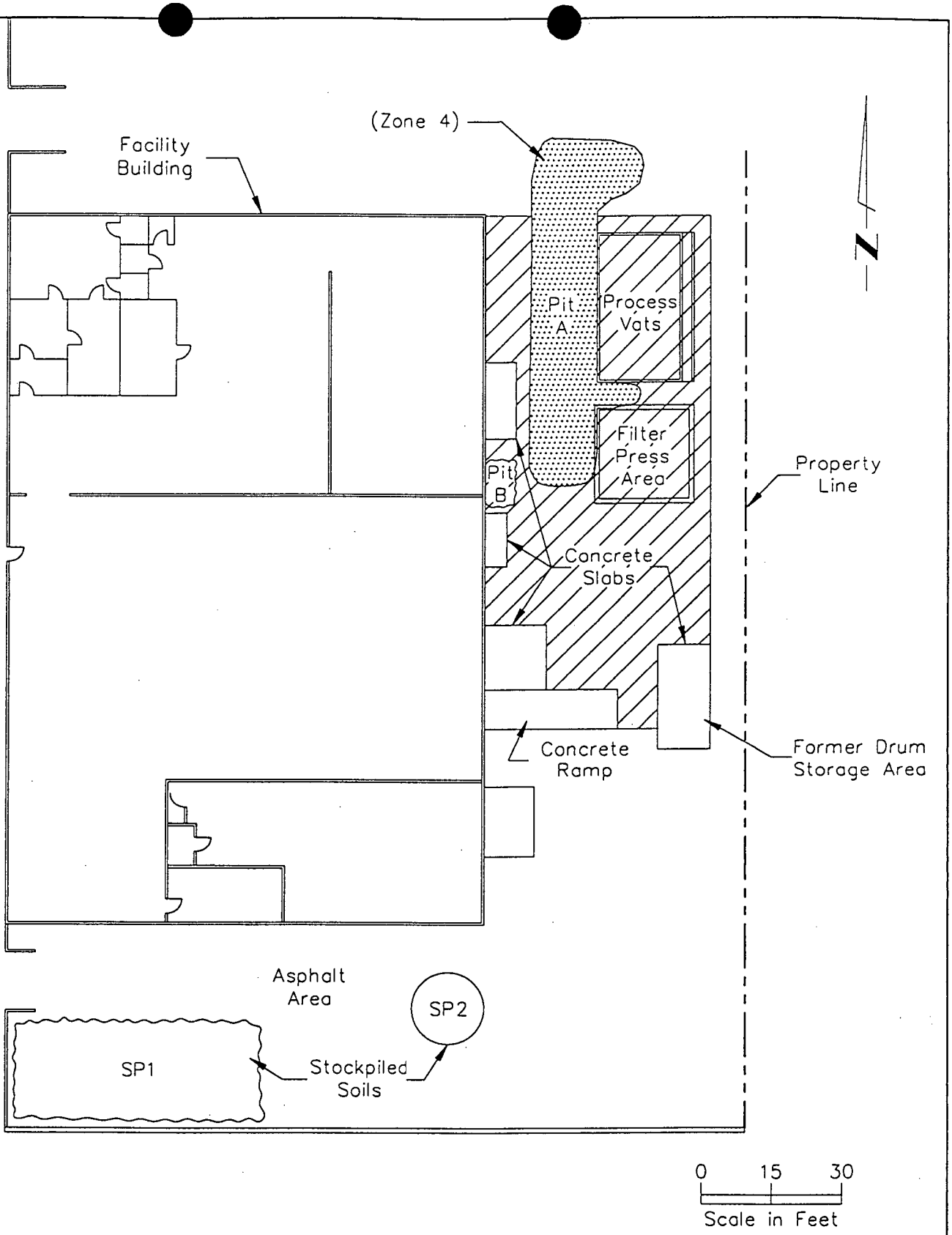
5.4.2 Excavation of Soil Under Process Vats

In order to assure clean closure of the process vat area, a composite verification sample of the underlying soil was collected after removal of the vats and slab. The process vat area was divided into seven 12-foot by 12-foot sampling grids (see Figure 5-2). It should be noted that the May 1992 closure plan did not specify removal of soil from this area and that these six grids were added to the original verification sampling grid presented in the May 1992 closure plan (see Appendix A - Figure 3.2.1.7). A composite sample, designated PVCOMP-S, composed of soil from the center of grids PV6, PV4, and PV1, was collected. Analytical results from the sample indicated the area was above the closure standard for chromium. In order to clean close the vat area, it was necessary to excavate and remove soil from the process vat area. The seven process vat grids were excavated to a depth of two feet below the existing soil surface on May 13, 1995. Verification samples were collected at PV1, PV4, and PV6. These samples indicated that PV4 and PV6 were still above closure standards. Two additional excavations were performed on grid areas PV4, PV5, and PV6 on June 21 and July 14. Verification samples collected on July 14 indicated the areas were below closure standards. No further excavation was performed. Final depth of removed soil at these grids was approximately six feet below original soil surface. A total of approximately 100 cubic yards of soil was removed from the process vat area. The soil was stockpiled in the northeast corner of the site on impermeable plastic liner. Two classification samples, designated PVCOMP and 2PVCOMP, were collected and analyzed as described in Section 5.8.2.1. The soil was classified as Class 2 waste. Soil generated from the first excavation of the process vat area (approximately 50 cubic yards) was sent to the City of Austin landfill. All remaining soil was sent to BFI's Sunset Farms Landfill as described in Section 5.9.3.3.

5.5 Excavation and Stockpiling of Contaminated Soils

Areas of soil removed during remediation activities are shown on Figure 5-1. The area is divided into two zones, Zone 3 and Zone 4 (Pit A). For purposes of verification sampling, the contaminated areas were divided into grids 12 feet by 12 feet. The sampling grid is presented as Figure 5-2. Contaminated soil was excavated using either a backhoe or trackhoe. Due to logistical difficulties and concerns with the structural stability of the facility building, the exterior excavation was performed in phases over the course of several months. Final excavation depths and dates are summarized in Table 5-1.

Initial excavation commenced on April 12, 1995. Approximately 150 cubic yard of clean fill used by Capitol Metal Finishing to backfill Pit A after an initial remedial excavation was removed and stockpiled on the north side of the building. Three samples of the fill, designated with the prefix PITA, were collected as described in Section 5.8.2.1 to verify that none of the constituents of concern at the site were present in the fill. The fill was verified clean and was used as backfill at the site. Sample results are included in Appendix F. A plastic liner separated the clean fill from underlying contaminated soil in Pit A. The liner was removed and the contaminated soil below excavated to a further depth of two feet. The soil (approximately 175 yards) and liner were stockpiled on the south side of the site on impermeable plastic liner. Four classification samples, designated with the prefix



Legend:

Zone 3

Zone 4

ENTRIX

Figure 5-1
Capitol Metal Finishing Site
Exterior Contaminated Areas
Twin Oaks Associates
Austin, Texas

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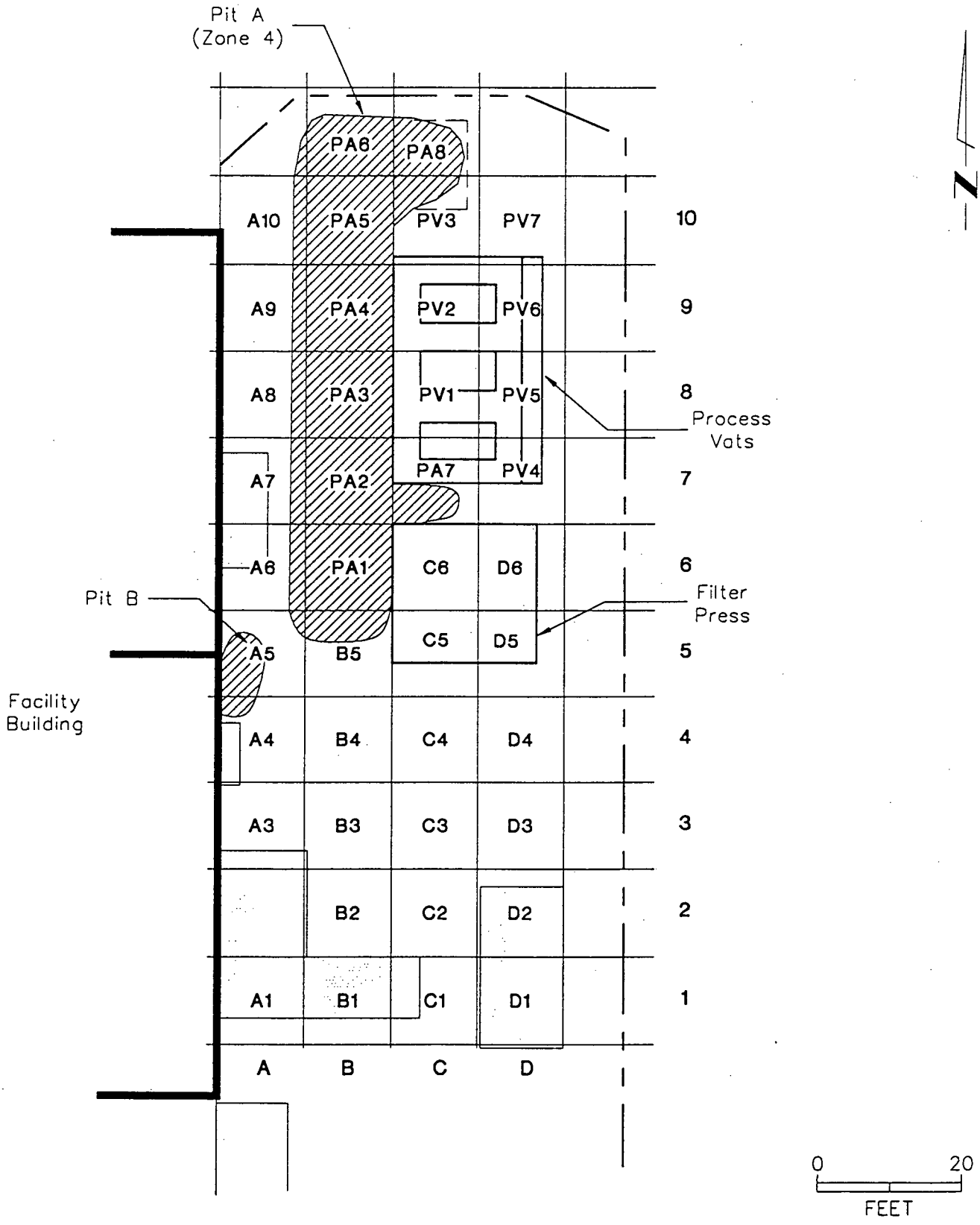

ENTRIX

Figure 5-2
Exterior Sampling Grid
Capitol Metal Finishing Site
Twin Oaks Associates
Austin, Texas

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Table 5-1
Summary of Exterior Excavation
Final Closure Report
Twin Oaks Associates

Grid	Sample Date and Excavation Depth								Total Depth of Excavation
	4/12/95	5/3/95	5/13/95	6/8 - 6/9/95	6/21/95	7/13 - 7/14/95	8/2/95	9/13/95	
A3				4		4			8
A4				4		4			8
A5				4		4			8
A6				4		4			8
A7				4		4			8
A8				4		4			8
A9				4		4			8
A10				4					4
B2	2	2							4
B3	2	2							4
B4	2	2							4
C1	2	2			2				6
C2	2	2			2	2			8
C3	2	2							4
C4	2	2							4
C5	2								2
C6	2	2							4
D1					5	3			8
D2					5	3			8
D3	2	2			2	2			8
D4	2	2			2	2			8
D5	2								2
D6	2								2
PA1*	2								2
PA2*	2								2
PA3*	2								2
PA4*	2								2
PA5*	2								2
PA6*	2								2
PA7*	2	2							4
PA8*	2								2
PV1			2						2
PV2			2						2
PV3			2						2
PV4			2		2	2			6
PV5			2		2	2			6
PV6			2		2	2			6
PV7			2		2	2			6
A1						2	3	3	8

* Depth of excavation measured from soil surface after removal of overlying clean fill.

EXCVT.XLS

SUBZ4-S, were collected as described in Section 5.8.2.1. The soil was classified as Class 2 waste and sent to the City of Austin Landfill as described in Section 5.9.3.3.

After removal of contaminated soil from beneath Pit A, all grids within Zone 3, with the exception of all grid squares within row "A" (see Figure 5-2), were excavated uniformly to a depth of two feet from the existing soil surface. Approximately 360 cubic yards of soil were stockpiled on impermeable plastic liner just south of Zone 3 along the east fenceline. Verification samples were collected from all excavated grids. Sampling methodology is discussed in Section 5.7. A single grid, B3, was found to exhibit a chromium concentration of 46.0 mg/kg which exceeds the closure standard by 2.7 mg/kg. However, as shown in Table 5-2, for the data set consisting of final exterior soil verification samples, including B3, the 95% upper confidence limit of the mean concentration of chromium is below the clean closure standard of 43.3 mg/kg. Therefore, no additional excavation was performed at B3. Seven classification samples, designated with the prefix ZONE3, were collected from the stockpiled soil as described in Section 5.8.2.1. Analytical results indicated the soil was Class 1 waste. The soil was sent to BFI's Sinton Landfill as described in Section 5.9.3.2.

After receipt of sample results from the first round of excavation, twelve grids were still found to exhibit concentrations of the constituents of concern above closure standards. On May 3, these grids were excavated an additional two feet to a total depth of approximately four feet below original soil surface. Soil was stockpiled on impermeable liner in the southeast corner of the property. Verification samples were collected and analyzed. Six grids (C1, C2, D1, D2, D3, D4) were still found to exhibit concentrations above the closure standard for chromium. These grids were further excavated on June 21, to a total depth of approximately six feet below the original soil surface. Soil was stockpiled on impermeable liner in the southeast corner of the property. With the exception of C1, analytical results from verification samples for these six grids were still above the closure standard for chromium. A final excavation of grids D1, D2, D3, D4 and C2 was performed July 14. Soil was stockpiled on impermeable liner in the southeast corner of the property. Verification samples were collected and analyzed. Results were all below closure standards. No further excavation of these five grids was performed. Final depth of excavation at these five grids was eight feet below original soil surface. Approximately 100 cubic yards of soil were generated from the subsequent excavations of the twelve grids just described. Classification samples designated with the prefix 2ZONE3 or 3ZONE3 were collected and analyzed as described in Section 5.8.2.1. The soil was classified as Class 2 waste and sent to the City of Austin Landfill as described in Section 5.9.3.3.

The eight grids in Row "A" (see Figure 5-2) were excavated June 8 and 9, to a depth of approximately four feet below original soil surface after removal of the east wall of the facility building (the removal of the wall and grade beam are discussed in Section 6.5). Approximately 200 cubic yards of soil generated from the excavation were stockpiled in the northeast corner of the site on impermeable liner. This soil included clean fill from Pit B which, due to its relatively small volume, was stockpiled with the contaminated soil removed from the eight grids. The stockpile was subdivided into six smaller piles and classification samples, designated with the prefix AROW, were collected and analyzed as

described in Section 5.8.2.1. Five of the stockpiles were classified as Class 2 waste and one of the stockpiles was classified as Class 1. The Class 2 soil was sent to BFI's Sunset Farms Landfill as described in Section 5.9.3.3. The Class 1 soil was sent to BFI's Sinton Landfill as described in Section 5.9.3.2. Verification samples were collected from the eight grids and analyzed as described in Section 5.8.1. With the exception of grid A10, these grids were all found to exhibit concentrations above the closure standard for cadmium or chromium at a depth of four feet. A second and final excavation of the remaining seven grids, including Pit B, to a total depth of eight feet from original soil surface was performed July 14. Verification samples were collected and analyzed. Analytical results were all below closure standards. No further excavation was performed. Approximately 200 cubic yards of soil was generated during the second excavation and stockpiled on the asphalted area on the south side of the property. Four classification samples, designated with the prefix 2AROW, were collected and analyzed as described in Section 5.8.2.1. The soil was classified as Class 2 waste based on the analytical results and subsequently disposed at BFI's Sunset Farms Landfill as described in Section 5.9.3.3.

The concrete slab located in grid A1 (designated "concrete ramp" in Figure 1-2) was removed using a trackhoe during the excavation activities on July 14. Portions of the slab were visibly contaminated and exhibited a greenish coloration. The slab was stockpiled on impermeable plastic in the southeast corner of the property. The concrete was not characterized using analytical data, but was classified as hazardous based on the extent of visible contamination present. The waste was sent to Texas Ecologist's Robstown Landfill for disposal as described in Section 5.9.3.1. The top two feet of soil under the slab was also visibly contaminated. This soil (approximately 10 cubic yards) was also not characterized using analytical data, but was classified as hazardous based on the extent of visible contamination present. This soil was stockpiled within the interior of the facility building on impermeable plastic and subsequently disposed at Texas Ecologist's Robstown Landfill as described in Section 5.9.3.1. Grid A1 was excavated an additional three feet on August 2. A verification sample was collected and analyzed and found to be above the closure standard for chromium and nickel. Three additional feet of soil were removed from the grid September 13. Analytical results from the verification sample were all below closure standards. No further excavation was performed at A1. Approximately 30 cubic yards of soil were removed from A1 on August 2 and September 13 and stockpiled on grids B1 and B2 (these two grids had already been demonstrated as clean and backfilled). The soil was classified as Class 2 waste and sent to BFI's Sunset Farms Landfill as described in Section 5.9.3.3.

5.6 Demonstration of Attainment of Closure Standards

The TNRCC Risk Reduction Standards (30 TAC Subchapter S) require that the attainment of closure standards be demonstrated by collection and analysis of samples from the medium of concern. Closure is achieved when all areas of the site have concentrations of contaminants below established background levels (see Section 1.4). The comparison of sample values to the background levels can be based on one of two methods as described in 30 TAC Section 335.553(d)(2):

(1) direct comparison of the results of analysis of discrete samples of the medium of concern with the cleanup level; or

(2) for a data set of 10 or more samples, statistical comparison of the results of analysis utilizing the 95% upper confidence limit of the mean concentration of the contaminant, as determined by the following expression:

$CL = x + ts/sqrt(n)$ where

CL = 95% upper confidence limit of the mean
x = mean concentration
s = standard deviation
t = value from Table 2 in Section 335.553(d)
n = sample size

Because one of the samples remained above closure standards for chromium (Grid B3), statistical comparison of the results to background levels was utilized (option 2 above). Table 5-2 shows final concentrations and upper 95% confidence limits for the constituents of concern within each interior sampling grid in Figure 5-2. A concentration of one-half the detection limit was used for samples whose results were below the method detection limit. A statistical summary and comparison to clean closure levels is provided at the bottom of the table.

Table 5-2 indicates that the 95% upper confidence limit of the mean for each contaminant is below established background levels.

5.7 Backfilling

Once the attainment of closure standards were determined by analytical results, all excavated areas were backfilled with a combination of clean crushed limestone and clean sandy loam. It was desirable to backfill areas as quickly as possible in order to prevent unnecessary stormwater retention and to maximize available space on which to conduct operations. All fill was obtained from a quarry operated by Dean Word Company in Austin, Texas.

5.8 Sampling Methodology

All verification, rinsate, and waste characterization samples were collected in accordance with the sampling and analysis plan included in Appendix C of the May 1992 Closure Plan (see Appendix A of this report), and in accordance with applicable requirements specified in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* SW-846. EPA Method 3050/6010 was used for totals metals analyses[1,2]. TCLP analysis were performed

[1] Method Reference: SW-846, Third Edition, Test Methods for Evaluating Solids Wastes, Physical Methods, US EPA Office of Solid Waste and Emergency Response, Washington, D.C., 20460, July 1986.

Table 5-2
Final Concentrations and Upper 95% Confidence Limits for Exterior Closure
Twin Oaks Associates

Grid Location	Date Sampled	Sample ID	Final Soil Concentrations (mg/kg)					
			Cadmium	Chromium	Lead	Nickel	Zinc	Cyanide
A3	7/14/95	VRF5-A3	*0.5*	16.4	*2.5*	5.72	11.7	*0.2*
A4	7/14/95	VRF5-A4	1.8	33.2	*2.5*	15.9	13.8	*0.2*
A5	7/14/95	VRF5-A5	*0.5*	14.6	*2.5*	3.23	12.3	*0.2*
A6	7/14/95	VRF5-A6	*0.5*	25.9	*2.5*	12.4	31.1	3.4
A7	7/12/95	VRF5-A7	*0.5*	26.5	11.3	23.7	34	*0.2*
A8	7/12/95	VRF5-A8	0.5	11.8	7.7	26.2	28.8	*0.2*
A9	7/12/95	VRF5-A9	2.7	10.6	*2.5*	12.2	23.8	*0.2*
A10	6/9/95	VRF3-A10	*1*	16	*5*	14	23	*0.25*
B2	5/3/95	VRF2-B2	*1*	8	10	17	12	*0.3*
B3	5/3/95	VRF2-B3	*1*	46	*5*	19	9	*0.3*
B4	5/3/95	VRF2-B4	*1*	14	*5*	26	38	*0.3*
B5	4/13/95	VRF-B5	5.0	40.0	*10.0*	40.0	20.0	1.1
PA1	4/13/95	VRF-PA1	*2.0*	*5.0*	*10.0*	*5.0*	10.0	*0.005*
PA2	4/13/95	VRF-PA2	*1.5*	*5.0*	*10.0*	*5.0*	10.0	*0.005*
PA3	4/13/95	VRF-PA3	*2.0*	*5.0*	*10.0*	*5.0*	20.0	*0.005*
PA4	4/13/95	VRF-PA4	*1.5*	*5.0*	*10.0*	*5.0*	10.0	*0.005*
PA5	4/13/95	VR5-PA5	*1.5*	*5.0*	*10.0*	*5.0*	10.0	*0.005*
PA6	4/13/95	VRF-PA6	*1.5*	*5.0*	*10.0*	*5.0*	10.0	*0.005*
PA7	4/13/95	VRF2-PA7	*1*	10	*5*	*3*	10	*0.3*
PA8	4/13/95	VRF-PA8	*1.5*	*5.0*	*10.0*	*5.0*	*5.0*	1.1
C1	6/21/95	VRF4-C1	*2*	40	*10*	30	20	1.2
C2	7/18/95	VRF5-C2	*0.5*	15.7	*2.5*	8.53	9.9	1.3
C3	5/3/95	VRF2-C3	*1*	16	*5*	50	10	5.3
C4	5/3/95	VRF2-C4	*0.2*	25	8	35	19	*0.3*
C5	4/13/95	VRF-C5	*2.0*	20.0	*15.0*	20.0	10.0	0.6
C6	5/3/95	VRF2-C6	*0.2*	37	9	14	20	*0.3*
D1	7/18/95	VRF5-D1	*0.5*	24.2	*2.5*	5.24	8	*0.2*
D2	7/18/95	VRF5-D2	*0.5*	5.2	*2.5*	4.47	9.8	*0.2*
D3	7/18/95	VRF5-D3	*0.5*	8.6	*2.5*	9.1	20.2	*0.2*
D4	7/18/95	VRF5-D4	*0.5*	8.5	*2.5*	8.79	17.3	*0.2*
D5	5/3/95	VRF2-D5	*1*	17	10	21	18	*0.3*
D6	4/13/95	VRF-D6	*2.0*	*5.0*	*10.0*	*5.0*	*5.0*	*0.005*
PV4	7/14/95	3PV4-5	*0.5*	28.6	*2.5*	14.8	26.8	0.6
PV6	7/14/95	3PV6-5	*0.5*	11.7	*2.5*	4.59	19.4	*0.2*
PV1	5/13/95	PV1-S	*1*	32	*5*	44	18	3.7
values shown in italics are equal to one-half the method detection limit								
Statistical Summary								
mean			1.18	17.21	6.60	15.08	16.40	0.65
sample population size			35	35	35	35	35	35
standard deviation			0.91	11.82	3.61	12.35	8.11	1.14
t*			1.69	1.69	1.69	1.69	1.69	1.69
CL**			1.44	20.59	7.63	18.61	18.72	0.98
clean closure levels			6.0	43.3	252.0	61.7	313.0	100.0
* t= value from Table 2 in Section 335.553(d)								
** CL= 95% confidence limit of the mean concentration								

using EPA Method 1311/6010. A cyanide cleanup level of 100 mg/l was implemented during closure as specified in the September 1994 Revised Phase I - Closure Completion Report. Total cyanide was analyzed using EPA Method 9012. Samples were analyzed at NDRC Laboratories in Houston, Texas, or ACZ Laboratories in Steamboat Springs, Colorado. Analytical results, including laboratory QA/QC data, are provided in Appendices F and G.

All samples were labeled upon collection and placed in a cooler on ice for shipment to the laboratory. Strict chain-of-custody procedures were followed at all times. Disposable rubber gloves were worn while sampling and were changed between each sampling event to minimize the potential for cross-contamination. All sampling equipment that contacted soil was decontaminated between each sampling event as outlined in Section 3.0. Pertinent sampling information was kept in a dedicated field logbook. Chains of custody are provided in Appendix H.

5.8.1 Verification Samples

Verification samples were collected from the center of each grid to a depth of six inches (relative to surface elevation) using a small metal spade or hand auger. The sample was thoroughly mixed within clean sealable plastic bags and then placed in wide-mouth glass jars with Teflon-lined caps.

Verification samples were analyzed for the following constituents:

Constituent	EPA Method
cadmium	3050/6010
chromium	3050/6010
lead	3050/6010
nickel	3050/6010
zinc	3050/6010
cyanide	9012

5.8.2 Waste Classification Samples

Analytical results for all waste classification samples are included in Appendix G.

5.8.2.1 Waste Classification Samples - Solids

Representative samples of all waste solids were collected for purposes of classification as specified in 30 TAC Chapter 335 Subchapter R. Classification samples for soils, concrete, and debris were collected at a rate of one sample per 50 cubic yards of stockpiled material or one sample per identifiable waste stream, whichever represented the smallest volume. Samples were placed in wide-mouth glass jars with Teflon-lined caps.

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[2] For waste containing less than 0.5 percent filterable solids, method 3050 is not applicable.

Samples were analyzed for the following constituents and classified as Class 2, Class 1, or hazardous waste in accordance with 30 TAC Chapter 335 Subchapter R:

Constituent	EPA Method
TCLP cadmium	6010
TCLP chromium	6010
TCLP lead	6010
TCLP nickel	6010

5.8.2.2 Waste Classification Samples - Liquids

5.8.2.2.1 LIQUID STORAGE TANK

The 1500-gallon plastic tank containing waste liquids was sampled on October 3, 1995. The tank contained approximately 750 gallons of waste aqueous liquid at the time of sampling. The tank was first thoroughly stirred. A grab sample was then collected in a one liter amber glass bottle and designated *stormwater runoff*. Analytical results can be found in Appendix G. The sample was analyzed for the following constituents:

Constituent	EPA Method
Ignitability	1010
pH	9045
Reactive Cyanide	7.3.3.1
Reactive Sulfide	7.3.3.2
TC arsenic	7061
TC barium	7080
TC cadmium	7130
TC chromium	7190
TC lead	7420
TC mercury	7470
TC selenium	7741
TC silver	7760
Volatiles	8240

5.8.2.2.2 DRUMS

Drums containing liquids were sampled using a drum sampler. The drums were mixed thoroughly prior to sampling. For each drum, one sample was collected from the bottom of the drum and another from the top. Samples were analyzed for the following constituents:

Constituent	EPA Method
cadmium	6010
chromium	6010
lead	6010
nickel	6010

5.9 Waste Management

Due to the time variability of the closure operations, several off-site waste management procedures were required. All applicable shipping, recordkeeping, and reporting requirements of the TNRCC, Department of Transportation (DOT) and Resource Conservation and Recovery Act (RCRA) were observed.

5.9.1 Stormwater Management

Extensive efforts were made during closure to prevent stormwater at the site from contacting contaminated material. All contaminated soil and concrete stockpiled on the site was placed on impermeable plastic liner. The piles were then covered with liner to prevent rainwater from contacting the contaminated material and to reduce particulate emissions. Stockpiles were secured with sandbags to prevent removal of the liner by wind. Stockpile liners were inspected a minimum of once per week and were replaced or resecured if necessary.

At the request of the City of Austin, erosion-control fencing was erected along the northern and western (downgradient) site boundaries. Removable haybales were placed at both the north and south gates to the property. The fencing and haybales served to filter sediment and retain stormwater long enough for settlable solids to settle out of runoff.

All excavations were lined with impermeable plastic liner and secured using sandbags to prevent stormwater from contacting potentially contaminated soil. Stormwater runoff was diverted around excavations using sandbags wherever possible. Before backfilling any excavations, it was necessary to remove any retained stormwater. With the exception of the incident described below, retained stormwater was allowed to evaporate or was pumped into another lined excavation on site for subsequent evaporation. Stormwater believed to have come in contact with contaminated material was containerized for subsequent characterization and disposal.

On May 9, 1995, approximately 800 gallons of runoff had collected on clean plastic liner at grids D5 and D6 (see Figure 5-2). The soil at grids D5 and D6 had previously been confirmed to be below closure standards. In preparation to backfill these two clean grids, the ENTRIX field supervisor had the stormwater pumped out of the excavation. The water was discharged to a clean area north of the facility building. The discharge then flowed west off the property and into the storm gutter on the east side of Warehouse Row. On May 11, Mr. Eric Kaufman with the City of Austin Environmental and Conservation Services Department visited the site in response to a complaint. His department had received a report of a discharge of muddy water from the site. His concern was that the discharge contained an excess of 5 mg/l settlable matter in violation of Title IV - Section 4-1-76 of the Austin City Code. The circumstances of the discharge as well as the general nature of the activities at the site were explained to Mr. Kaufman by the ENTRIX field supervisor. Mr. Bruce Beckett with the City of Austin Environmental and Conservation Services Department inspected the site during a follow-up visit on June 15. He informed the ENTRIX field supervisor that due to the presence of contaminants at the site, any further discharges from excavations at the site would require a permit from the City of Austin. It was explained to Mr. Beckett that the previously discharged stormwater had

resided on top of clean plastic liner in an area already shown to be below closure standards. It was further explained that all future retained stormwater would be allowed to evaporate rather than discharged off of the site. No enforcement action was taken by the City of Austin nor was written documentation from the City concerning the event provided to ENTRIX or TOA. No additional stormwater was discharged from the site during the remainder of closure activities.

5.9.2 Drum Management

A temporary drum staging area was constructed for the storage of drums containing affected wastes. The staging area was located on the asphalted area on the north side of the property (see Figure 1-2). The staging area was triple-lined with impermeable plastic liner and bermed to a height of eight inches using wooden beams. The volume of secondary containment within the enclosed area was sufficient to contain 55 gallons of liquid should any liquid drum leak. Drums were stored on wooden pallets and covered with impermeable plastic liner.

Six unmarked 55-gallon steel drums containing unidentified waste were left inside the facility building when Capitol Metals vacated the premises. The six drums were transferred to the drum staging area for sampling and safe storage prior to disposal. One of the drums, designated WD7, contained liquids and was sampled as described in Section 5.8.2.2. The waste was classified as hazardous and disposed at an American Ecology Corporation facility in Winona, Texas via deep-well injection as described in Section 5.9.3.1. Four of the drums (WD5, WD6, WD9, and WD10) contained solids and were sampled as described in Section 5.8.3.1. Drums WD5 and WD6 were classified as Class 2 waste and sent to BFI's Sunset Farms Landfill as described in Section 5.9.3.3. Drums WD9 and WD10 were classified as hazardous and sent to Texas Ecologist's Robstown Landfill as described in Section 5.9.3.1. The sixth drum, designated WD8, contained concrete coring waste. The drum was not characterized using analytical data, but was sent to Texas Ecologist's Robstown Landfill. The drum was transported in a 20-yard dumptruck containing hazardous debris from the site.

5.9.3 Waste Disposal

5.9.3.1 Hazardous Waste

Soil, concrete, and debris were characterized in accordance with 30 TAC Subchapter R and 40 CFR 261. Material classified as hazardous waste was disposed at Texas Ecologist's Robstown Landfill located on Petronila Road, south of Robstown, Texas. Texas Waste Codes for one-time shipment were obtained from the TNRCC, Industrial and Hazardous Waste, Waste Evaluation Section prior to transportation and disposal of all hazardous waste streams. Waste was transported in 24-yard end-dump trailers. A summary of shipments is presented in Table 5-3. Copies of all manifests are included as Appendix J.

5.9.3.1.1 DRUM DISPOSAL

A total of five drums (WD2L, WD3L, WD7, WD9, WD10) containing waste characterized as hazardous material were disposed through Surecycle Systems, a division

of American Ecology Environmental Services Corporation. Two of the drums, designated WD9 and WD10, contained contaminated soil and were landfilled at Texas Ecologist's Robstown Landfill. Three of the drums (WD7, WD2L, and WD3L) contained contaminated water and were disposed via deep well injection into wells operated by American Ecology Corporation located near Highway 155, one mile north of Interstate 20, Winona, Texas. The drums were picked up for disposal on October 25, 1995 by a representative of Surecycle Systems. Manifests and other applicable paperwork are included in Appendix J.

5.9.3.2 Class 1 Waste

Approximately 400 cubic yards of soil were characterized as Class 1 waste as specified in 30 TAC Chapter 335 Subchapter R. These were soils with a TCLP cadmium concentration between 0.5 mg/l and 1.0 mg/l. The soil was disposed at BFI's Sinton Landfill. Texas Waste Codes for one-time shipment were obtained from the TNRCC, Industrial and Hazardous Waste, Waste Evaluation Section prior to disposal of all Class 1 wastes. Soil was transported in 24-yard end-dump trailers. A summary of shipments is presented in Table 5-4. Copies of all manifests are included as Appendix J.

5.9.3.3 Class 2 Waste

All soil, concrete, and debris generated during remedial activities characterized as Class 2 waste according to 30 TAC Chapter 335 Subchapter R was disposed at one of two facilities. All waste disposed before August 10, 1995 was sent to the City of Austin Landfill, located on FM 812 in Austin. Waste disposed after August 10, 1995 was sent to BFI's Sunset Farms Landfill in Austin. Texas Waste Codes for one-time shipment were obtained from the TNRCC, Industrial and Hazardous Waste, Waste Evaluation Section prior to disposal of all Class 2 waste streams. Prior to each shipment of Class 2 waste, a Request for Authorization for Disposal of a Special Waste, along with pertinent analytical data, was filed with the TNRCC Industrial and Hazardous Division, Special Waste Team. Copies of the requests are included as Appendix H. Copies of all analytical data were provided to the landfill prior to shipment. Waste was transported in 12-yard or 24-yard end-dump trucks. A summary of shipments is presented in Table 5-5. Copies of all manifests are included as Appendix J.

5.9.3.3.1 CLASS 2 DRUM DISPOSAL

A total of 16 drums containing solids classified as Class 2 waste were generated during remedial activities. The waste consisted of five drums of plastic filter press scrap, six drums of sandblasting waste, and five drums containing floor sweepings and debris. A Request for Authorization for Disposal of a Special Waste, along with pertinent analytical data, was filed with the TNRCC Industrial and Hazardous Division, Special Waste Team in order to dispose of the drums. The 16 drums were sent to BFI's Sunset Farms Landfill in Austin, Texas for disposal. Copies of all pertinent analytical data were provided to BFI prior to shipment. Transportation services were provided by BK Environmental, Inc. Manifests are included in Appendix J.

5.9.3.3.2 CLASS 2 LIQUID DISPOSAL

Approximately 750 gallons of rinsate and contaminated stormwater were generated during remedial activities and were containerized in a 1500-gallon plastic tank and three 55-gallon drums. The liquids were sampled and characterized as Class 2 waste as described in Section 5.8.2.2. The Class 2 liquid was pumped into a vacuum truck operated by All Cen-Tex on November 10, 1995 and transported to BFI's Sunset Farms Landfill for subsequent solidification and disposal. Copies of all pertinent analytical data (see Appendix G) were provided to BFI prior to disposal. A copy of the manifest is provided in Appendix J.

5.9.3.4 Construction Debris

As specified in the January 1993 Closure Plan, all uncontaminated construction debris that did not contact waste or process solutions was placed into a roll-off box at the site for disposal as construction debris. The debris was transported and disposed by Texas Disposal Systems at the Texas Disposal Systems Landfill in Austin, Texas.

Table 5-3
Summary of Hazardous Shipments
Final Closure Report
Twin Oaks Associates

Date Shipped	Manifest #	Quantity (yds)
Soil		
8/8/95	694228	15.65
8/8/95	694229	15.65
8/9/95	694226	14.08
8/9/95	694227	14.08
8/17/95	512093	3
8/17/95	512094	3.24
9/11/95	05917	18
9/11/95	05918	18
9/12/95	694247	4
9/12/95	694238	15
9/13/95	694245	12
9/13/95	694244	12
9/13/95	694243	13.7
	Total =	158.4
Concrete		
8/17/95	512094	17
8/17/95	512093	17
8/17/95	512092	18
8/17/95	512090	15
9/12/95	694247	15
9/12/95	694238	5
9/13/95	694244	1
9/13/95	694243	8
10/24/95	675932	15
	Total =	111
Drums		
10/24/95	698609	4
10/24/95	675932	1
	Total =	5
Debris		
10/25/95	044172	15
	Total =	15

Table 5-4
Summary of Class 1 Soil Shipments
Final Closure Report
Twin Oaks Associates

Date Shipped	Manifest #	Quantity (yds)
6/6/95	861794	20
6/6/95	861785	20
6/6/95	861796	20
6/6/95	861800	20
6/6/95	861801	20
6/6/95	861787	20
6/6/95	861786	20
6/6/95	861799	20
6/6/95	861804	20
6/7/95	861810	20
6/7/95	861803	20
6/7/95	861809	20
6/7/95	861788	20
6/7/95	861802	20
6/7/95	861806	20
6/7/95	861795	20
6/7/95	861805	20
7/11/95	861808	16
10/11/95	694240	20
10/12/95	694241	17
10/12/95	694242	17
	Total =	**410**

Table 5-5
Summary of Class 2 Waste Shipments
Final Closure Report
Twin Oaks Associates

Date Shipped	Manifest #	Quantity	Landfill
Soil		(yds)	
4/3/95	NA	222	City of Austin
7/11/95	NA	156	City of Austin
7/12/95	NA	216	City of Austin
8/7/95	NA	24	City of Austin
10/9/95	069246	20	BFI Sunset Farms
10/9/95	280297	20	BFI Sunset Farms
10/9/95	280299	20	BFI Sunset Farms
10/9/95	280300	20	BFI Sunset Farms
10/10/95	280298	16	BFI Sunset Farms
10/10/95	280295	20	BFI Sunset Farms
10/10/95	323868	20	BFI Sunset Farms
10/10/95	323866	20	BFI Sunset Farms
10/10/95	323869	20	BFI Sunset Farms
10/10/95	323867	20	BFI Sunset Farms
10/10/95	280296	20	BFI Sunset Farms
10/10/95	323865	18	BFI Sunset Farms
10/10/95	323864	18	BFI Sunset Farms
10/10/95	323863	20	BFI Sunset Farms
10/10/95	323801	18	BFI Sunset Farms
10/10/95	323801	18	BFI Sunset Farms
10/10/95	324000	10	BFI Sunset Farms
10/10/95	323999	7	BFI Sunset Farms
10/10/95	323995	15	BFI Sunset Farms
10/10/95	323998	12	BFI Sunset Farms
10/10/95	323992	8	BFI Sunset Farms
10/10/95	323993	8	BFI Sunset Farms
10/10/95	323994	8	BFI Sunset Farms
10/10/95	323997	8	BFI Sunset Farms
10/10/95	323996	6	BFI Sunset Farms
10/10/95	323990	17	BFI Sunset Farms
10/10/95	323991	15	BFI Sunset Farms
10/11/95	323989	17	BFI Sunset Farms
10/11/95	323988	18	BFI Sunset Farms
10/11/95	323987	8	BFI Sunset Farms
10/11/95	323986	8	BFI Sunset Farms
10/11/95	323985	18	BFI Sunset Farms
10/11/95	323984	8	BFI Sunset Farms
10/11/95	322373	8	BFI Sunset Farms
10/11/95	322372	8	BFI Sunset Farms

Table 5-5
Summary of Class 2 Waste Shipments
Final Closure Report
Twin Oaks Associates

Date Shipped	Manifest #	Quantity	Landfill
Soil (continued)		(yds)	
10/11/95	322371	18	BFI Sunset Farms
10/11/95	322359	8	BFI Sunset Farms
10/11/95	322383	15	BFI Sunset Farms
10/11/95	322360	8	BFI Sunset Farms
10/11/95	322384	8	BFI Sunset Farms
10/11/95	322361	6	BFI Sunset Farms
10/11/95	322370	9	BFI Sunset Farms
10/11/95	322369	8	BFI Sunset Farms
10/11/95	322368	8	BFI Sunset Farms
10/11/95	322367	8	BFI Sunset Farms
10/11/95	322366	18	BFI Sunset Farms
10/12/95	322365	15	BFI Sunset Farms
10/12/95	322364	15	BFI Sunset Farms
10/12/95	322363	18	BFI Sunset Farms
10/12/95	322362	18	BFI Sunset Farms
10/12/95	322386	18	BFI Sunset Farms
10/12/95	322387	18	BFI Sunset Farms
10/12/95	322385	18	BFI Sunset Farms
10/12/95	322388	18	BFI Sunset Farms
10/12/95	322400	18	BFI Sunset Farms
10/12/95	322389	18	BFI Sunset Farms
10/12/95	322399	15	BFI Sunset Farms
10/12/95	322398	14	BFI Sunset Farms
10/12/95	322397	13	BFI Sunset Farms
10/12/95	322396	13	BFI Sunset Farms
10/12/95	322395	14	BFI Sunset Farms
10/12/95	322393	18	BFI Sunset Farms
10/13/95	322392	18	BFI Sunset Farms
10/13/95	323980	18	BFI Sunset Farms
10/13/95	323978	18	BFI Sunset Farms
10/13/95	323977	18	BFI Sunset Farms
10/24/95	323565	10	BFI Sunset Farms
10/24/95	356201	10	BFI Sunset Farms
10/24/95	323566	10	BFI Sunset Farms
	Total =	1610	yds

Table 5-5
Summary of Class 2 Waste Shipments
Final Closure Report
Twin Oaks Associates

Date Shipped	Manifest #	Quantity	Landfill
Nonhazardous Concrete and Construction Debris			
		(yds)	
5/5/95		108	City of Austin Landfill
10/10/95	324000	8	BFI Sunset Farms
10/10/95	323999	8	BFI Sunset Farms
10/10/95	323995	5	BFI Sunset Farms
10/10/95	323998	6	BFI Sunset Farms
10/10/95	323992	10	BFI Sunset Farms
10/10/95	323993	10	BFI Sunset Farms
10/10/95	323994	12	BFI Sunset Farms
10/10/95	323997	10	BFI Sunset Farms
10/10/95	323996	12	BFI Sunset Farms
10/10/95	323990	1	BFI Sunset Farms
10/10/95	323991	5	BFI Sunset Farms
10/11/95	323989	1	BFI Sunset Farms
10/11/95	323987	10	BFI Sunset Farms
10/11/95	323986	10	BFI Sunset Farms
10/11/95	323984	10	BFI Sunset Farms
10/11/95	322373	10	BFI Sunset Farms
10/11/95	322372	10	BFI Sunset Farms
10/11/95	322359	10	BFI Sunset Farms
10/11/95	322383	3	BFI Sunset Farms
10/11/95	322360	10	BFI Sunset Farms
10/11/95	322384	10	BFI Sunset Farms
10/11/95	322361	12	BFI Sunset Farms
10/11/95	322370	9	BFI Sunset Farms
10/11/95	322369	10	BFI Sunset Farms
10/11/95	322368	10	BFI Sunset Farms
10/11/95	322367	10	BFI Sunset Farms
10/12/95	322365	3	BFI Sunset Farms
10/12/95	322364	3	BFI Sunset Farms
10/12/95	322399	3	BFI Sunset Farms
10/12/95	322398	4	BFI Sunset Farms
10/12/95	322397	4	BFI Sunset Farms
10/12/95	322396	5	BFI Sunset Farms
10/13/95	323981	7	BFI Sunset Farms
10/13/95	323979	8	BFI Sunset Farms
10/13/95	322982	5	BFI Sunset Farms
	Total =	**372**	**yds**

Table 5-5
Summary of Class 2 Waste Shipments
Final Closure Report
Twin Oaks Associates

Date Shipped	Manifest #	Quantity	Landfill
Drums			
11/15/95	323569	10	BFI Sunset Farms
11/15/95	323568	6	BFI Sunset Farms
	Total =	**16**	**drums**
Liquid			
	323567	750	BFI Sunset Farms
	Total =	**750**	**gallons**

6.0 INTERIOR CLOSURE

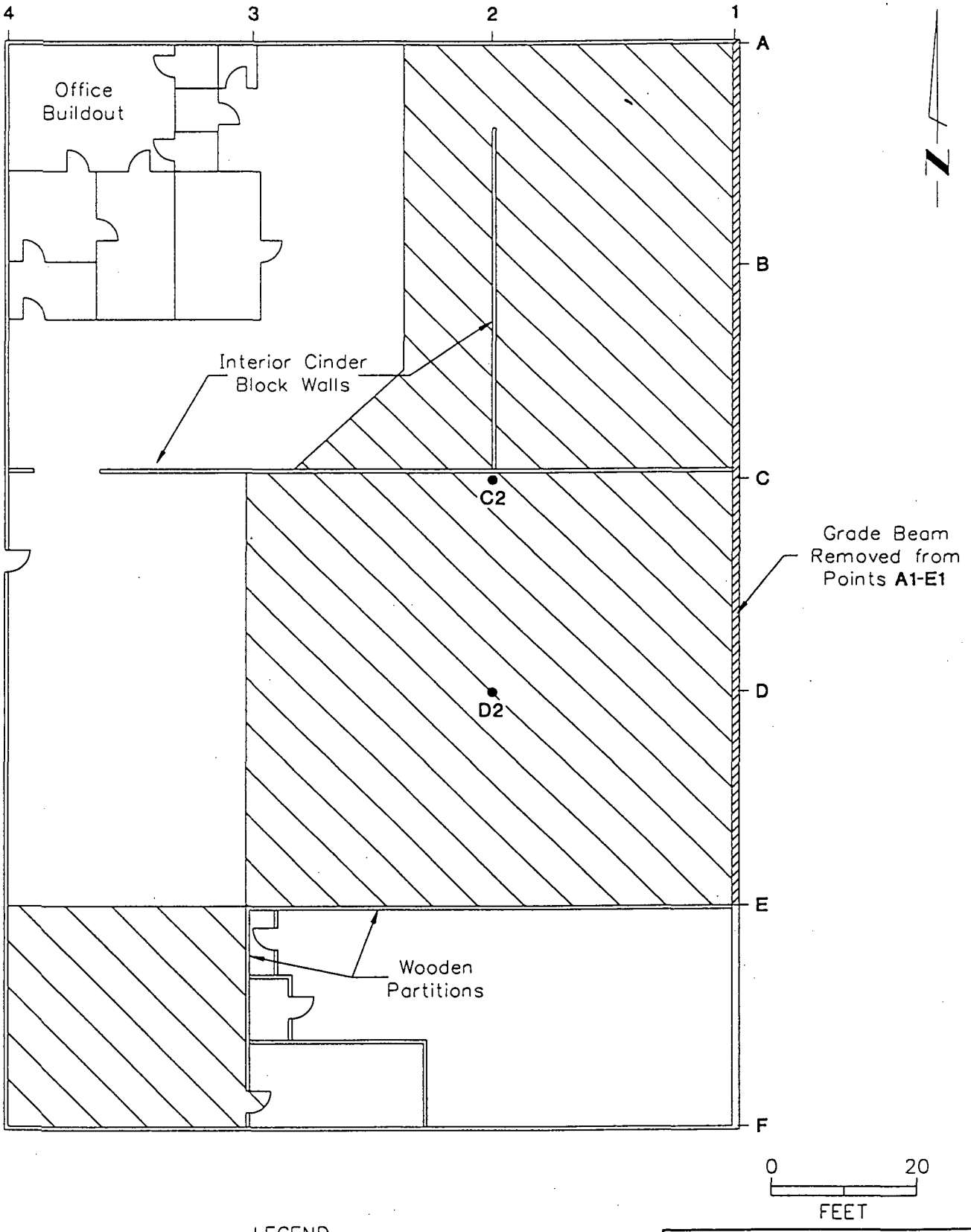
The closure was performed in accordance with the ENTRIX January 1993 Closure Plan and the ENTRIX September 28, 1994 Revised Phase I - Closure Completion Report. Tenco Environmental Services was selected as the contractor for performing remedial activities. A field representative from ENTRIX provided oversight during remediation activities. Implementation of the approved closure plan for areas inside the facility building commenced in April 1995.

The facility building is an enclosed rectangular warehouse with dimensions approximately 100 feet by 150 feet. The floor is a four and one-half inch thick concrete slab. The walls are 16 feet in height and are composed of hollow concrete masonry units (CMU). The walls rest on a 12-inch-thick grade beam. The grade beam is supported at 15 foot intervals by two-foot-diameter piers. The roof consists of adjoining concrete T-slabs. CMU walls and wooden partitions were located in several interior areas of the building. The facility building layout at the commencement of closure activities is shown in Figure 6-1.

The scope of work identified in the January 1993 Closure Plan is as follows:

- Cleaning of residue from interior surfaces (performed March 1993 during Phase I activities - see Section 6.1)
- A baseline survey and sampling of the concrete floor slab to determine the extent of affected concrete (performed April 1993 during Phase I activities– see Section 6.1)
- Removal of interior walls and partitions to provide access to affected areas
- Removal of affected concrete and underlying affected soils
- Cleaning and sampling of the grade beam
- Removal and reconstruction of the grade beam (if required), including the installation of supporting falsework
- Removal of exterior wall along east side of the building
- Clean-closure verification sampling of underlying soils
- Backfill of excavated areas and replacement of grade beam, exterior wall, and concrete slab

In order to insure that all affected materials were either removed from the site or decontaminated to background levels, as required for clean closure under Risk Reduction



LEGEND

Areas closed under January 1993 closure plan

ENTRIX

Figure 6-1
Facility Building Plot Plan
Capitol Metal Finishing Site
Twin Oaks Associates
Austin, Texas

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KCD R:\ACAD\163204\FIG6-1

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Standard I, any areas exhibiting signs of visible contamination, generally in the form of greenish discoloration, were investigated and remedial action was taken if necessary.

6.1 Phase I Activities

Remedial (Phase I) activities consisting of floor cleaning and baseline sampling of the concrete floor slab in the facility building were performed in March and April 1993 with TNRCC approval prior to commencement of closure of the areas inside the facility building. These activities were necessary in order to determine areas of affected concrete that would require removal during final closure. These activities are described in Section 2.0 of the September 28, 1994 Revised Phase I - Closure Completion Report (see Appendix D).

Approximately 130 gallons of wastewater and 20 gallons of sludge were generated by floor cleaning activities. The wastewater was containerized within two plastic 55-gallon drums, designated WD2L and WD3L, and one steel 55-gallon drum, designated WD1. The sludge was placed into a 55-gallon steel drum, designated WD4. The three drums containing wastewater were sampled as described in Section 5.8.2.2. WD2L and WD3L were found to exhibit the toxicity characteristic and were sent to an American Ecology Corporation facility in Winona, Texas for disposal via deep-well injection as described in Section 5.9.3.1. Drum WD1 was characterized as Class 2 waste and was sent to BFI's Sunset Farms Landfill as described in Section 5.9.3.3. Drum WD4 was sampled and analyzed as described in Section 5.8.2.2 and found to exhibit the toxicity characteristic. The sludge was later stabilized by adding a 100-pound sack of portland cement. The sludge and cement were thoroughly mixed and then resampled. The sample, designated WDS, was characterized as Class 2 waste as described in Section 5.9.3.3. Although not hazardous, the drum was included with a load of hazardous debris and sent to Texas Ecologist's Robstown Landfill for disposal as described in Section 5.9.3.1.

6.2 Removal of Interior Walls and Partitions (Including Removal of Asbestos-Containing Materials)

All interior walls and partitions, including the office build-out in the northwest corner, were removed in order to provide adequate space for remedial and structural improvement activities. A Demolition/Renovation Notification Form was filed with the Texas Department of Health prior to interior demolition activities. Due to the presence of possible asbestos-containing material, a licensed contractor collected samples of floor tiles, ceiling tiles, and duct material found in the facility building. The samples were analyzed and several were found to be asbestos containing materials. These materials were removed by a licensed asbestos contractor, Environmental Contractors Incorporated (ECI), on May 25, 1995. All remaining walls, partitions, and debris located outside of affected areas were removed and either recycled or disposed of as construction debris as specified in the January 1993 Closure Plan (see Section 5.9.3.4).

Due to the presence of visible staining and deterioration, the bottom four feet of all cinder block walls and wooden partitions located within previous process areas were retained as potentially contaminated and classified for disposal purposes. Approximately 15 cubic

yards of CMU blocks were retained and classified as Class 2 waste as described in Section 5.8.2.1. The blocks were sent to the City of Austin Landfill for disposal as described in Section 5.9.3.3. Approximately 10 cubic yards of wood paneling were retained and a composite sample, designated IPWOOD, was collected as described in Section 5.8.2.1. The material was classified as hazardous debris as described in Section 5.9.3.1 and sent to Texas Ecologist's Robstown Landfill for disposal as described in Section 5.9.3.1. Material obtained from a height greater than four feet that did not contact waste materials or process solutions was disposed as construction debris as specified in the January 1993 Closure Plan (see Section 5.9.3.4).

6.3 Structural Improvements

A number of structural improvements to the facility building were necessary in order to safely conduct remedial activities. In order to access the contaminated east grade beam, it was necessary to remove the east wall of the facility building. The January 1993 closure plan provided for the installation of falsework to provide temporary support of the roof during removal of the affected grade beam. Mr. June Melton of Amstar Engineering was retained to design the falsework. Upon inspecting the building, however, Mr. Melton determined that the existing permanent support for the roof was insufficient.

Mr. Melton designed an improved support system involving the installation of a permanent network of horizontal steel I-beams and additional vertical supports. The plans also called for the installation of temporary shoring inside the building to provide additional support during removal of the east wall and grade beam. These plans are available from TOA upon request. The majority of structural activities took place during the period May 1 - June 1, 1995. Remedial activities within the facility building were postponed during this period. However, an ENTRIX representative was on site during this time to insure that elements of the site safety plan were not violated during structural improvement activities. Because of the delays caused by the structural work, a six week extension for completion of the interior closure was requested by ENTRIX and accepted by the TNRCC in a letter dated September 15, 1995 (see Appendix D).

In preparation for the erection of support steel I-beams, residual material was removed from the undersides of the concrete T-slabs in areas where roof leaks had occurred. This residue was removed by first applying soapy water and then scrubbing the residue with a wire brush. A vacuum was then used to remove and containerize the residue and wastewater. The activity generated approximately five gallons of wastewater and 10 gallons of residual solid. The wastewater was placed in the 1500-gallon wastewater tank for subsequent disposal as described in Section 5.9.3.3. The residue was transferred to an empty 55-gallon drum. The waste, although not sampled for characterization, was disposed with a shipment of hazardous debris sent to Texas Ecologist's Robstown Landfill on October 24, 1995. This disposal method for the residue was chosen because the costs of characterizing the residue were greater than the costs of disposal at the Robstown Landfill.

In preparation for the welding of new steel I-beams to two pre-existing steel I-beams used to support the warehouse roof, it was necessary to sandblast rust and dirt from the pre-

existing steel I-beams. Because the sand and residue from the sandblasting activities contacted potentially contaminated areas of the concrete floor slab, the sand was treated as potentially contaminated. After sandblasting activities ceased, the sand was collected and containerized within six 55-gallon drums. A representative composite sample, designated SNDBLST, was collected and analyzed for the constituents outlined in Section 5.8.2.1. Based on analytical results, the sand was characterized as Class 2 waste. The six drums were sent to BFI's Sunset Farms Landfill, as discussed in Section 5.9.3.3.

6.4 Removal of Contaminated Piers and Steel Pipe Columns at C2 and D2

Two permanent steel pipe columns located within former process areas at the points designated C2 and D2 (see Figure 6-1) were removed at the request of the structural engineer due to severe corrosion at the base of each column. Temporary shores were erected to carry the roof load while the pipe columns and contaminated piers were removed. Upon removal of the columns, it was noted that the underlying concrete piers exhibited a greenish coloration and were assumed to be contaminated. All soil within a 3-foot radius of the piers to a depth of approximately 8 feet was excavated and stockpiled on impermeable plastic along the east-central property boundary in order to facilitate removal of the concrete piers. The piers were removed using a backhoe and stockpiled on impermeable plastic liner outside of the facility building. The piers were not characterized, but were assumed hazardous and disposed as hazardous concrete at Texas Ecologist's Robstown Landfill as described in Section 5.9.3.1. Approximately 20 cubic yards of soil were removed from the vicinity of the pier at C2. A sample, designated C2-COMP, was collected and analyzed as described in Section 5.8.2.1. The waste was characterized as Class 2 waste and was disposed at BFI's Sunset Farms Landfill as described in Section 5.9.3.3. Approximately 20 cubic yards of soil were removed from the vicinity of the pier at D2. A sample, designated D2-COMP, was collected and analyzed as described in Section 5.8.2.1. The waste was characterized as hazardous waste and disposed at Texas Ecologist's Robstown Landfill as described in Section 5.9.3.3.

The temporary shores carrying the roof load for the removed pipe columns resided on a section of the floor slab designated for removal, so it was necessary to replace the permanent pipe columns and allow for removal of the temporary shores. The structural engineer specified that the replacement columns would each rest on a new five-foot by five-foot concrete footing to be poured in the former location of the removed piers. In order to insure that the new footings were poured on clean soil, soil samples were collected at the base of the excavations at C2 and D2 and analyzed for cadmium, chromium and nickel[3]. The sample collected at C2 was above the closure standards for nickel and chromium. The sample collected from D2 was below closure standards for all three metals. The soil at C2 was excavated an additional 12 inches and a second sample was collected and analyzed for the same metals. Chromium and nickel were below closure standards. However, cadmium was detected at a level of 6.6 mg/kg which exceeds the

[3] In order to expedite analysis the samples were analyzed using EPA Method 7130 for cadmium, Method 7190 for chromium, and Method 7520 for nickel. The use of these methods did not impact the validity of the analysis.

closure standard of 6.0 mg/kg. As shown in Table 6-2, for the data set consisting of final interior soil verification samples, including the second sample for C2, the 95% upper confidence limit of the mean concentration of cadmium is below the clean closure standard of 6.0 mg/kg. Therefore, no additional excavation was performed at C2. Five composite samples, designated with the prefix EW were collected and analyzed as described in Section 5.8.2.1.

6.5 Removal of East Wall and Grade Beam

In order to access the potentially contaminated east grade beam, it was necessary to remove the east wall of the facility building. The wall was removed on June 4, 1995. Due to the presence of areas of visible staining, the bottom four rows of cinder blocks were considered potentially contaminated and were stockpiled on impermeable plastic liner. Five composite samples, designated with the prefix EW, were collected and analyzed as described in Section 5.8.2.1. Based on the analytical results, the 15-cubic-yard stockpile was characterized as hazardous material and disposed at Texas Ecologist's Robstown Landfill, as described in Section 5.9.3.1. The remainder of the debris from the wall that did not contact waste materials or solutions was disposed of as construction debris as described in Section 5.9.3.4.

After removal of the overlying cinder block wall, the adjacent concrete floor slab and underlying soil were removed in order to reveal the interior surface of the grade beam from points A1 to E1 (see Figure 6-1). The grade beam was visibly contaminated in several locations. The supporting concrete piers under the grade beam were also inspected and found to be visibly contaminated. As specified in the Sampling and Analysis Plan (see Appendix C - January 1993 Closure Plan), samples of the grade beam were collected at intervals of 10 linear feet. Results from the samples are shown below in Table 6-1. Laboratory data is included in Appendix F.

Due to the extent of contamination, it was decided to remove and dispose of the grade beam rather than attempt to decontaminate it. A 120-foot section of the grade beam and underlying support piers were removed from point A1 to E1 (see Figure 6-1) using a trackhoe on July 13-14, 1995. The resulting sections were stockpiled and covered with plastic sheeting in the northeast corner of the site. The grade beam sections removed from points A1 to B1 (see Figure 6-1) were classified as Class 2 waste and disposed at BFI's Sunset Farms Landfill as described in Section 5.9.3.3. The pieces were loaded into a roll-off box for transport to the landfill using a backhoe loader. The remainder of the removed grade beam was classified as hazardous waste based on the results in Table 6-1 and sent to Texas Ecologist's Robstown Landfill as described in Section 5.9.3.1. The hazardous sections were loaded into a lined 20-yard dumptruck for transport to the landfill using a crane.

Table 6-1
Analytical Results from East Grade Beam Samples

Interval Distance from Point A1 (ft)	Concentration (mg/kg)					
	cadmium	chromium	lead	nickel	zinc	cyanide
0-10	6.6	105	10	124	130	1.6
10-20	ND (<3.0)	10	ND (<20.0)	10	20	ND (<0.5)
20-30	2.8	45	4	34	64	0.6
30-40	ND (<3.0)	20	ND (<20.0)	20	30	0.5
40-50	21.2	147	14	183	338	0.9
50-60*	NA	NA	NA	NA	NA	NA
60-70	1,100	29,100	28	12,900	1,510	131
70-80*	NA	NA	NA	NA	NA	NA
80-90	497	6,450	5	4,440	333	0.7
90-100	23.8	8,820	76	3,750	114	1.8

ND = analyte not detected above method detection limit
NA = not analyzed
* Sections were not characterized using analytical data, but were classified as hazardous based on their proximity to adjacent hazardous sections and were disposed as hazardous material as described in Section 5.9.3.1.

6.6 Removal of Affected Concrete Floor Slab

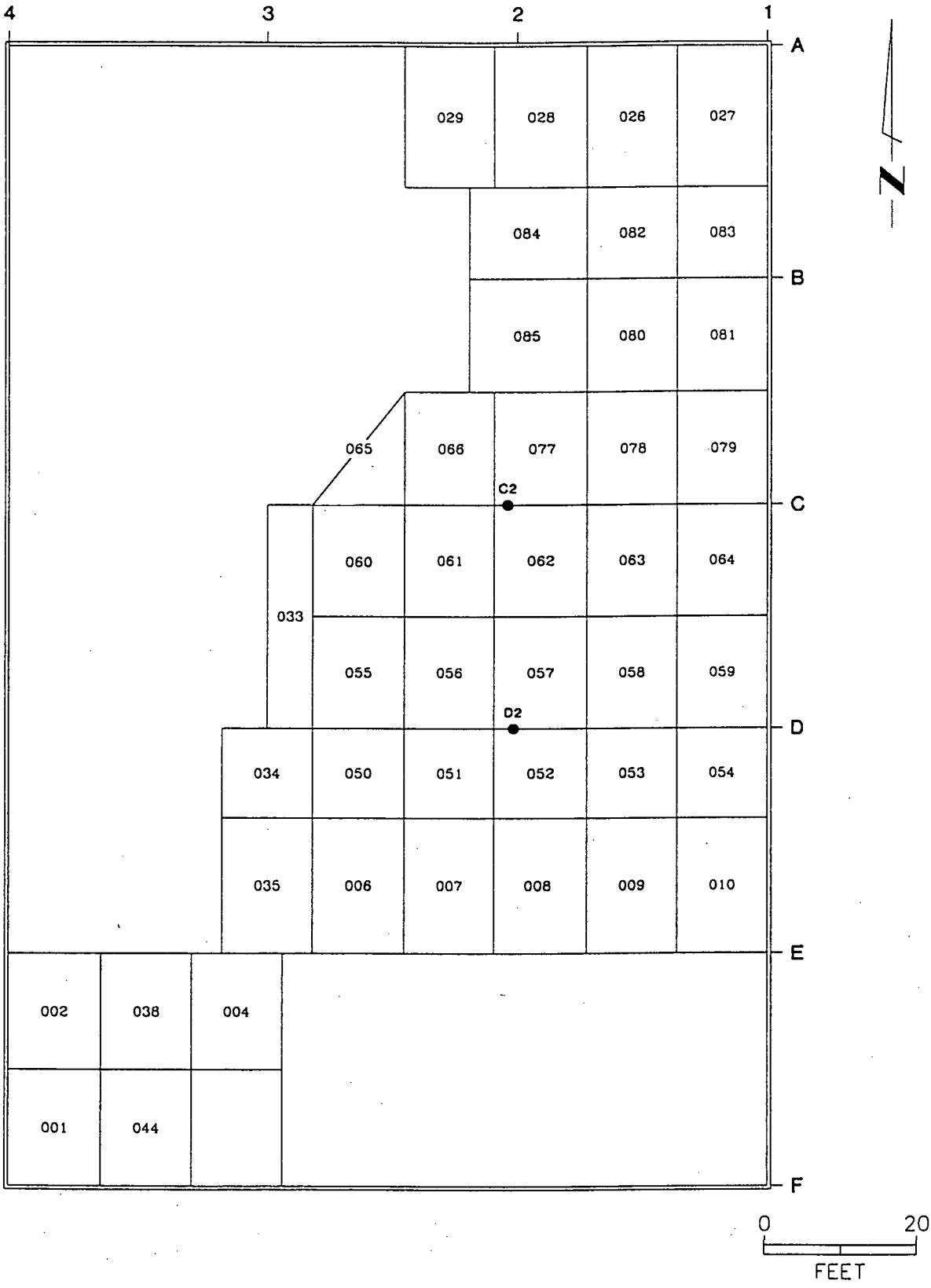
A baseline sampling program was performed on April 5, 1993 during Phase I activities in order to determine the extent of concrete floor slab containing the specified constituents in concentrations exceeding the clean closure standards. The Phase I sampling grid is shown as Figure 3-1 in the September 28, 1994 Revised Phase I - Closure Completion Report (see Section 3.0 of Appendix D). Several areas outside of former process areas were assumed to be above closure standards and were not sampled. Areas that were determined to be significantly over background levels and that required removal during closure are shown in Figure 6-1 of this report. This area was divided into grids for purposes of verification sampling. The grids are shown in Figure 6-2. Several grids (see Figure 3-1 in Appendix D) identified as below closure standards in the September 28, 1994 report and not originally designated for removal were removed during remedial activities. This was due to the difficulty of leaving these blocks intact while removing the surrounding contaminated blocks.

Removal of affected areas of the concrete floor slab took place August 9-11, 1995. The slab was broken using a backhoe and then stockpiled in the northeast and south central areas of the building. The concrete was stockpiled inside the building to prevent possible exposure to rain and subsequent contamination of runoff. Generally, the underside of the slab in the vicinity of some cracks and cold joints was visibly contaminated, exhibiting varying hues of green, red, yellow, and black. All visibly contaminated concrete was stockpiled separately. This concrete was not characterized using analytical data, but was classified as hazardous based on the extent of visible contamination present. The total quantity of visibly contaminated concrete generated during remedial activities was approximately 55 cubic yards. This material was sent to Texas Ecologist's Robstown Landfill for disposal as described in Section 5.9.3.1. The remainder of the stockpiled concrete from the floor slab totaled approximately 250 cubic yards. Six classification samples, designated with the prefix IS, were collected as described in Section 5.8.2.1. The waste was characterized as Class 2 waste and sent to BFI's Sunset Farms Landfill as described in Section 5.9.3.3.

After removal of affected concrete, the underlying sandy fill was removed and stockpiled into five separate piles within the facility building using a skid loader. The stockpiles were sampled as described in Section 5.8.2.1. Samples were designated using the prefix SND and results are included in Appendix G. One of the piles (approximately five cubic yards) was characterized as hazardous and sent to Texas Ecologist's Robstown Landfill as described in Section 5.9.3.1. Another of the piles (approximately five cubic yards) was characterized as Class 1 waste and sent to BFI's Sinton Landfill as described in Section 5.9.3.2. The remaining three piles (approximately 15 cubic yards total) were classified as Class 2 waste as and sent to BFI's Sunset Farms Landfill as described in Section 5.9.3.3.

6.7 Removal of Affected Soils

Previous investigations conducted by ECA during October 1990 and presented in a March 1991 report, indicated that the soils beneath the slab in some locations within the former process areas were affected. This conclusion was supported by the visible discoloration of



ENTRIX

Figure 6-2
Interior Sampling Grid
Capitol Metal Finishing Site
Twin Oaks Associates
Austin, Texas

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the underside of the concrete slab in several areas noted during slab removal. Soils which exceeded clean closure standards were excavated and verification sampling was performed as described in Section 5.8. For purposes of verification sampling, the affected areas were divided into grids and labeled. The verification sampling grid, shown in Figure 6-2, was correlated as nearly as possible with the grid used during baseline sampling (see Figure 2-1 in Section 2.2 of Appendix D). Final soil concentrations at each grid are shown in Table 6-2. Affected soils were removed using a backhoe or skid loader and stockpiled on impermeable plastic liner within the facility building.

Initial excavation of potentially contaminated soils took place August 12-14, 1995. The following grids shown in Figure 6-2 were excavated to a depth of 18 inches below the existing soil surface: 009, 010, 052, 053, 054, 056, 057, 058, 059, 061, 062, 063, and 064. Soil within grids 059, 064, and 069 was still visibly contaminated at a depth of 18 inches. These three grids were excavated further to a total depth of approximately 48 inches below original soil surface. Soil from these three grids was stockpiled separately due to evidence of visible contamination. Verification samples were then collected from all grids shown in Figure 6-2.

After receipt of sample results, nine grids were still found to exhibit concentrations above the closure standard for chromium. These grids were excavated to varying degrees based on contamination levels found in the first round of samples. Verification samples were collected and analyzed. Four of the nine grids (050, 054, 064, 083) were found to exhibit concentrations above the closure standard for chromium, but were not excavated further because the 95% upper confidence limit of the mean concentration of chromium based on the final interior soil verification samples was below the closure standard for chromium (See Table 6-2 and Section 6.9). The soil remaining in these four grids is not considered potentially hazardous due to the toxicity characteristic, because chromium levels are below 100 mg/kg. (A discussion of this rationale can be found on page 7 of the NOD response written by ECA and included as Appendix B of this report.)

The first 40 cubic yards of soil removed from grids 050, 054, and 064 were not characterized using analytical data, but were classified as hazardous based on the extent of visible contamination present. These were areas where extensive process activity occurred during plating operations. The soil was sent to Texas Ecologist's Robstown Landfill for disposal as described in Section 5.9.3.1. The remainder of the soil generated from the excavation of grids 050, 054, and 064 (approximately 60 cubic yards) was sampled as described in Section 5.8.2.1. The samples were designated with the prefix 2GBSOIL-C1C2. Results are included in Appendix G. The soil was classified as hazardous and sent to Texas Ecologist's Robstown Landfill as described in Section 5.9.3.1. Approximately 240 cubic yards of additional soil was generated from the excavation of affected areas. Classification samples were collected as described in Section 5.8.2.1 and designated with a prefix based on the origin of the stockpiled soil. The origin was delineated by a rectangle whose four corners were defined by the grid shown in Figure 6-1. Axis points are labeled A-F and 1-4. For example, a sample designated with the prefix D2D3C2C3 represents soil that originated from the rectangular area defined by points D2, D3, C2 and C3. The soil was classified as Class 2 waste and sent to BFI's Sunset Farms Landfill as described in Section 5.9.3.3.

6.8 Remediation of Southwest Corner Grade Beam

In order to insure that all affected materials were either removed from the site or decontaminated, any areas exhibiting signs of visible contamination, generally in the form of greenish discoloration, were investigated and remedial action was taken if necessary.

One particular area in the southwest corner of the interior of the facility building warrants further discussion. When affected concrete was removed from grids 001 and 044 (see Figure 6-2), a green discoloration of the exposed grade beam and adjacent soil was revealed. The affected area extended linearly along the grade beam approximately fifteen feet east and fifteen feet north from the southwest corner of the facility building. It was decided to attempt to remove all areas of visible staining and then collect a verification sample of the grade beam. Verification samples S001 and S044 collected on August 16, 1995 were used to demonstrate clean closure of the soils within grids 001 and 044 adjacent to the stained grade beam (see Table 6-2 for results).

Removal of visible staining of the grade beam was accomplished on September 12, 1995, by sandblasting the affected areas and then using a jackhammer to uniformly remove the outer layer of concrete to an inward depth of approximately one inch. A composite sample, designated SGB, was collected from four locations along the affected grade beam and sent to NDRC laboratories for analysis. A hammer and chisel were used to chip off pieces small enough to fit into a 16-ounce widemouth sample jar.

Sample results from SGB indicated cadmium and nickel concentrations in the affected grade beam sections were above closure standards. On October 12, 1995, a second effort was made to remove the affected concrete from the grade beam. A jackhammer was used to chip away the affected sections of the grade beam to a depth of approximately 2.5 inches inward from the original exterior surface. A second verification sample, designated SGB2 was collected approximately two feet north of the intersection of the south and west grade beam. The sample was collected from an area previously exhibiting visible discoloration and was assumed to provide a conservative representation of contaminants within the affected area. Analytical results from SGB2 are provided below:

Constituent	Result (mg/kg)
cadmium	ND (<0.1)
chromium	6.9
lead	ND (<5.0)
nickel	4.5
zinc	7.7
cyanide	ND (<0.1)

ND = analyte not detected above method detection limit

Because of the small volume of material, the concrete and sandblasting waste generated from this remedial activity were not characterized using analytical data, but were classified

as hazardous material and disposed at Texas Ecologists Robstown Landfill as described in Section 5.9.3.1.

6.9 Demonstration of Attainment of Closure Standards

The TNRCC Risk Reduction Standards (30 TAC Subchapter S) require that the attainment of closure standards be demonstrated by collection and analysis of samples from the medium of concern. Closure is achieved when all areas of the site have concentrations of contaminants below established background levels, see Section 1.4. The comparison of sample values to the background levels can be based on one of two methods as described in 30 TAC Section 335.553(d)(2):

(1) direct comparison of the results of analysis of discrete samples of the medium of concern with the cleanup level; or

(2) for a data set of 10 or more samples, statistical comparison of the results of analysis utilizing the 95% upper confidence limit of the mean concentration of the contaminant, as determined by the following expression:

$$CL = x + ts/\mathrm{sqrt}(n) \quad \text{where}$$

CL = 95% upper confidence limit of the mean
x = mean concentration
s = standard deviation
t = value from Table 2 in Section 335.553(d)
n = sample size

Because four of the samples (Grids 050, 054, 064, 083) remain above closure standards for chromium, statistical comparison of the results to background levels was utilized (option 2 above). Table 6-2 shows final concentrations and upper 95% confidence limits for the constituents of concern within each interior sampling grid in Figure 6-2. A concentration of one-half the detection limit was used for samples whose results were below the method detection limit. A statistical summary and comparison to clean closure levels is provided at the bottom of the table.

Table 6-2 indicates that the 95% upper confidence limit of the mean for each contaminant is below established background levels.

6.10 Backfilling, Reslabbing, and Reconstruction

Backfilling excavated areas with clean soil, replacing the concrete floor slab, and rebuilding the grade beam and east wall will be delayed until final approval of clean closure is received from the TNRCC. Clean closure will allow for reconstruction to be performed by a general contractor without specialized environmental training.

Table 6-2
Final Concentrations and 95% Confidence Limits for Interior Closure
Final Closure Report
Twin Oaks Associates

Grid Location	Date Sampled	Final Soil Concentrations (mg/kg)					
		Cadmium	Chromium	Lead	Nickel	Zinc	Cyanide
001	8/16/95	*0.5*	3.4	*2.5*	14	8	*0.05*
002	9/13/95	*2.5*	*2.5*	*12.5*	*2.5*	9.4	0.2
044	8/16/95	*0.5*	4.6	*2.5*	8.81	11.1	*0.05*
038	8/16/95	1.6	5.9	*2.5*	10.9	9.8	30
004	8/16/95	*0.5*	6.1	*2.5*	7.01	14.4	*0.05*
006	8/11/95	*2.5*	*5*	*25*	*5*	29	*0.05*
007	8/11/95	*2.5*	*2.5*	*12.5*	*2.5*	*2.5*	*0.05*
008	6/28/95	*0.2*	5	5	33	10	*0.25*
009	8/14/95	*0.5*	6.4	*2.5*	8.23	16.1	*0.05*
010	8/14/95	*0.5*	8.4	*2.5*	2.69	7.1	*0.05*
033	6/23/95	4	19	6	30	60	2.6
034	6/23/95	*1.25*	9	4	20	12.5	0.7
035	6/28/95	*0.2*	8	6	5	9	1.27
050	9/12/95	*0.5*	82.2	*2.5*	17.3	232	0.3
051	9/12/95	*2.5*	30.9	*12.5*	10.3	37.5	0.2
052	9/12/95	*2.5*	7.4	*12.5*	7.82	16.7	0.1
053	9/12/95	*2.5*	15.9	*12.5*	7.04	17.7	*0.05*
054	9/13/95	*0.5*	93.8	*2.5*	5.14	12.3	*0.05*
055	8/16/95	*0.5*	12.6	*2.5*	24.7	7.5	*0.05*
056	8/15/95	*0.5*	14.4	*2.5*	22.7	20.5	0.4
057	8/15/95	*0.5*	39.5	*2.5*	6.86	13	0.4
058	8/15/95	*0.5*	6	*2.5*	10.7	17.9	*0.05*
059	9/12/95	*0.5*	7.1	*2.5*	5.21	10.9	*0.05*
060	8/16/95	*0.5*	6.3	*2.5*	7.44	14.2	*0.05*
061	8/15/95	*0.5*	43	*2.5*	23.7	13	1.9
062	8/15/95	*0.5*	16.1	*2.5*	6.39	12.9	2.4
063	8/15/95	*0.5*	16	*2.5*	15.5	12.7	*0.05*
064	9/12/95	*2.5*	71.3	*12.5*	6.35	15.7	*0.05*
065	8/11/95	*0.5*	4.5	*2.5*	5.01	9.1	0.8
066	8/11/95	*0.5*	9.5	*2.5*	4.01	9	*0.05*
077	8/15/95	*0.5*	21.6	*2.5*	4.35	7.3	*0.05*
078	8/15/95	*0.5*	18.7	*2.5*	3.36	7.1	*0.05*
079	8/15/95	*0.5*	5.3	*2.5*	4.42	10.2	*0.05*
085	6/23/95	*1.18*	6	6	25	*11.8*	NA
080	8/11/95	*0.5*	2.5	*2.5*	2.43	6.7	*0.05*
081	8/11/95	*0.5*	4	*2.5*	5.02	10.3	*0.05*
082	8/11/95	*2.5*	*5*	*25*	*5*	*5*	*0.05*
083	6/26/95	3	44	9	40	88	*0.25*
084	6/23/95	*1.15*	6	4	17	*11.5*	NA
026	8/11/95	*0.5*	4.6	*2.5*	4.03	11.5	*0.05*
027	8/11/95	*0.5*	4.2	*2.5*	7.74	6.9	*0.05*
028	8/11/95	*0.5*	3.5	*2.5*	3.12	8.8	*0.05*
029	6/23/95	*1.18*	9	8	25	*11.8*	NA
C2	8/3/95	6.6	6.3	NA	20	NA	NA
D2	8/1/95	5.5	15	NA	44	NA	NA
Statistical Summary							
mean		1.31	15.96	5.59	12.14	20.20	1.08
sample population size		45	45	43	45	43	40
standard deviation		1.39	20.58	5.54	10.37	35.80	4.67
t*		1.680	1.680	1.684	1.680	1.684	1.684
CL**		1.66	21.11	7.02	14.74	29.39	2.32
clean closure levels		6.0	43.3	252.0	61.7	313.0	100.0
* t= value from Table 2 in Section 335.553(d)							
** CL= upper 95% confidence limit of the mean concentration							

NA = not analyzed
Values in italics equal 50% of the method detection limit

6.11 Sampling Methodology

See Section 5.8. Analytical results and laboratory QA/QC data for verification samples are presented in Appendix F. Analytical results and laboratory QA/QC data for classification samples are presented in Appendix G. Chains of custody are provided in Appendix I.

All verification, rinsate, and waste characterization samples were collected in accordance with the sampling and analysis plan included as an Appendix to the January 1993 Closure Plan (see Appendix C of this report) and in accordance with applicable requirements specified in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* SW-846.

6.12 Waste Management

6.12.1 Stormwater Management

Because the facility building is an enclosed structure, affected materials within the interior of the building were protected from contact with stormwater. However, removal of the east wall and grade beam allowed the adjacent interior soils limited exposure to rain. For this reason, all potentially contaminated soils with potential for contact with outside moisture were kept covered with impermeable plastic liner. The liner was secured with sandbags and inspected weekly. The soils were sloped towards the exterior to allow drainage and to prevent any stormwater accumulation within the facility building.

6.12.2 Floor Sweepings

Debris, consisting primarily of bat guano, that accumulated on affected areas of the concrete floor slab during remedial activities was collected and placed into three 55-gallon steel drums designated WD19, WD22, and WD23. A composite sample, designated *floor debris,* was collected and analyzed. The waste was classified as Class 2 waste and sent to BFI's Sunset Farms Landfill as described in Section 5.9.3.3. Analytical data is provided in Appendix G.

6.12.3 Waste Disposal

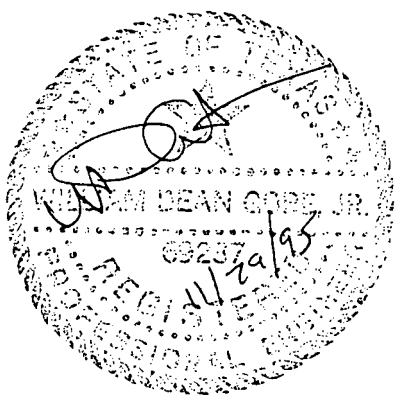
See Section 5.9.3. A summary of waste shipments is presented in Tables 5-3, 5-4, and 5-5. Waste manifests are provided in Appendix J.

7.0 CLOSURE CERTIFICATION

I am a registered professional engineer in good standing under the Texas Engineering Practice Act, Article 3271a, Vernon's Annotated Texas Civil Statutes. Based upon a review of available documentation and interviews with personnel involved in the closure procedure, I certify that the verification of closure activities as described in this report represents an accurate summary of activities performed. Areas outside of the facility building were closed in accordance with the specifications contained in the Closure and Post-Closure Plans for Former Metal Plating Site dated May 1992 and with revisions contained in the Notice of Deficiency Response Pertaining to Closure and Post-Closure Plans dated September, 1992 and approved by the Texas Water Commission (TWC) on December 9, 1992. Areas within the interior of the facility building were closed in accordance with the specifications contained in the Closure Plan: Capitol Metal Finishing, Inc. Site, Former Metal Plating Facility Building dated January 1993 and with revisions contained in the Revised Phase I - Closure Completion Report dated September 28, 1994 and approved by the Texas Natural Resource Conservation Commission on December 28, 1994.

William Dean Gore, Jr.

No: 69237



8.0 CONCLUSIONS

Based upon the information contained in this report, the following conclusions can be made:

- The objectives and requirements of the May 1992 ECA Closure and Post-Closure Plans for Former Metal Plating Site as approved by the TWC for site property outside of the facility building have been met.

- The objectives and requirements of the January 1993 Closure Plan as approved by the TWC for the interior of the facility building have been met.

- All hazardous, Class 1 and Class 2 wastes at the site have been removed and disposed of at approved waste disposal facilities.

- The requirements for closure under Risk Reduction Standard 1 (30 TAC 335 Subchapter S) have been met, including demonstration of attainment of cleanup levels using the procedures of Section 335.553(d) of the Risk Reduction Rules.

- For purposes of closure, no further action is required.

- Provided that demonstration of closure is accepted by the TNRCC executive director, Twin Oaks Associates is not subject to deed recordation requirements of 30 TAC 335.5 and is released from post-closure care responsibilities.

Appendix D

Revised Phase I - Closure Completion Report
September 28, 1994
ENTRIX, Inc.

ENTRIX

REVISED PHASE I—CLOSURE COMPLETION REPORT
CAPITOL METAL FINISHING FACILITY BUILDING
WAREHOUSE ROW
AUSTIN, TEXAS

Prepared for

TWIN OAKS ASSOCIATES
Austin, Texas 78767

Prepared by

ENTRIX, Inc.
Houston, Texas

Project No. 16320

September 28, 1994

REVISED PHASE I—CLOSURE COMPLETION REPORT
CAPITOL METAL FINISHING FACILITY BUILDING
WAREHOUSE ROW
AUSTIN, TEXAS

Prepared for

TWIN OAKS ASSOCIATES
P.O. Box 660
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Prepared by

ENTRIX, Inc.
5252 Westchester, Suite 250
Houston, Texas 77005

Project No. 163203

September 28, 1994

1.0 INTRODUCTION

Twin Oaks Associates (TOA) submitted a Closure Plan to the Texas Water Commission (TWC) in January 1993 for the remediation and clean closure of the interior of the former metal plating facility located at 3909 Warehouse Row in Austin, Texas. The facility was previously operated by Capitol Metal Finishing, Inc. The site property is owned by TOA. The Closure Plan discussed clean closure standards for metals in soil and concrete in the interior of the facility building. These standards were agreed upon by Capitol Metal Finishing and the TWC at a meeting on March 8, 1989. These standards are used in discussions within this document. No clean closure standard for cyanide has yet been established.

In a letter to TOA and Capital Metal Finishing (referred to as the "responsible parties" or RPs) dated March 2, 1993, the TWC granted approval for several sections of the Closure Plan to be performed. The applicable sections included determination of the full extent of contamination within the building and removal of residual wastes from the interior surfaces of the building. The TWC letter also included a number of modifications to the January 1993 Closure Plan. The modifications required the RPs to submit a Phase I–Closure Completion Report describing the preliminary investigation and identifying any revisions or additions to the January 1993 Closure Plan based on the investigation.

The purpose of this document is to present the results of the preliminary investigation activities authorized by the TWC, and to present several revisions to the Closure Plan. The current revision of this document includes the use of the Texas Natural Resource Conservation Commission's (TNRCC) Risk Reduction Standards to determine the extent of affected soils and concrete that will require removal. The TNRCC invited inclusion of risk reduction standards during review of the June 1993 version of the Phase I–Closure Completion Report. The report includes a description of cleaning and sampling activities within the building (Section 2.0), presentation and discussion of analytical results (Section 3.0), and proposed revisions to the January 1993 Closure Plan (Section 4.0). Laboratory data sheets and chain-of-custody documentation are presented in appendices.

Portions of the Revised Phase I–Closure Completion Report are identical to the June 1993 version. These unrevised portions include Section 2.0 and the appendices. However, application of risk reduction standards has culminated in major revisions to Sections 3.0 and 4.0.

2.0 PHASE I ACTIVITIES

2.1 Floor Cleaning

Floor cleaning activities at the Capitol Metals Facility Building site took place on March 22, 1993. ENTRIX personnel present during these activities were Mr. Douglas Kennedy and Mr. Kenneth Cody. ENTRIX personnel were assisted in the cleaning activities by three employees of Twin Oaks Associates. The cleaning of the facility building floor involved the removal of surface material by sweeping and scrubbing using a self-propelled floor scrubber. The floor scrubber incorporated water application, scrubbing, and recovery in a single self-contained unit. A number of areas of the facility were cleaned several times to maximize surface waste removal. All waste generated by the cleaning activities were containerized in 55-gallon drums. Approximately 130 gallons of wastewater and 20 gallons of solids were generated by floor cleaning activities. These wastes are to be managed in accordance with Section 3.0 of the Closure Plan. The wastes are currently stored on site in a total of four steel drums.

2.2 Sampling

2.2.1 Sample Grid Pattern and Specific Locations

Notification of planned sampling activities was provided to Mr. Chris Smith of the Texas Water Commission (TWC) on March 31, 1993. On April 5, 1993, Mr. Cody arrived on site and began initial preparations for the baseline sampling program. These preparations included setting up control and decon areas and marking the sample grid and specific sample locations on the concrete surface. The control area was located in the northwest office area and provided a space for completing sample labels and chain of custody forms, and preparing samples for shipment.

The grid pattern used in the baseline sampling program consisted of grid blocks of 200 square feet or less, as required in the January 1993 Closure Plan. The grid pattern is shown in Figure 2-1. The size and shape of the grid blocks were established based on physical evidence of concrete deterioration and site history. Areas assumed or known to be above background levels from previous slab sampling activities at the site were not sampled. Many grid blocks located adjacent to these areas were irregularly shaped and their size reduced to more accurately determine the extent of affected concrete subject to removal under the Closure Plan. Several areas of the slab were identified through previous slab sampling activities and a review of the site history as having been locations of activities not subject to release of the constituents of concern. These areas include the office area, the southeast buffing and welding rooms, and the north central shipping and receiving area. These areas were excluded from the baseline sampling program. Mr. Smith of the TWC inspected this phase of the baseline sampling program on April 5, 1993.

Figures 2-2a through 2-2c identify the specific sample locations within the facility building. Sample points were located at the approximate centers of the corresponding sample grid blocks.

The sample grid and sample locations were initially outlined on the building floor in chalk. Once the grid pattern was complete, it was permanently outlined for future reference with high visibility fluorescent paint.

Definition of the grid pattern and specific sample locations was completed and physical sampling of the concrete slab within the facility building interior began on April 6, 1993, and continued through April 7.

2.2.2 Sampling Procedure

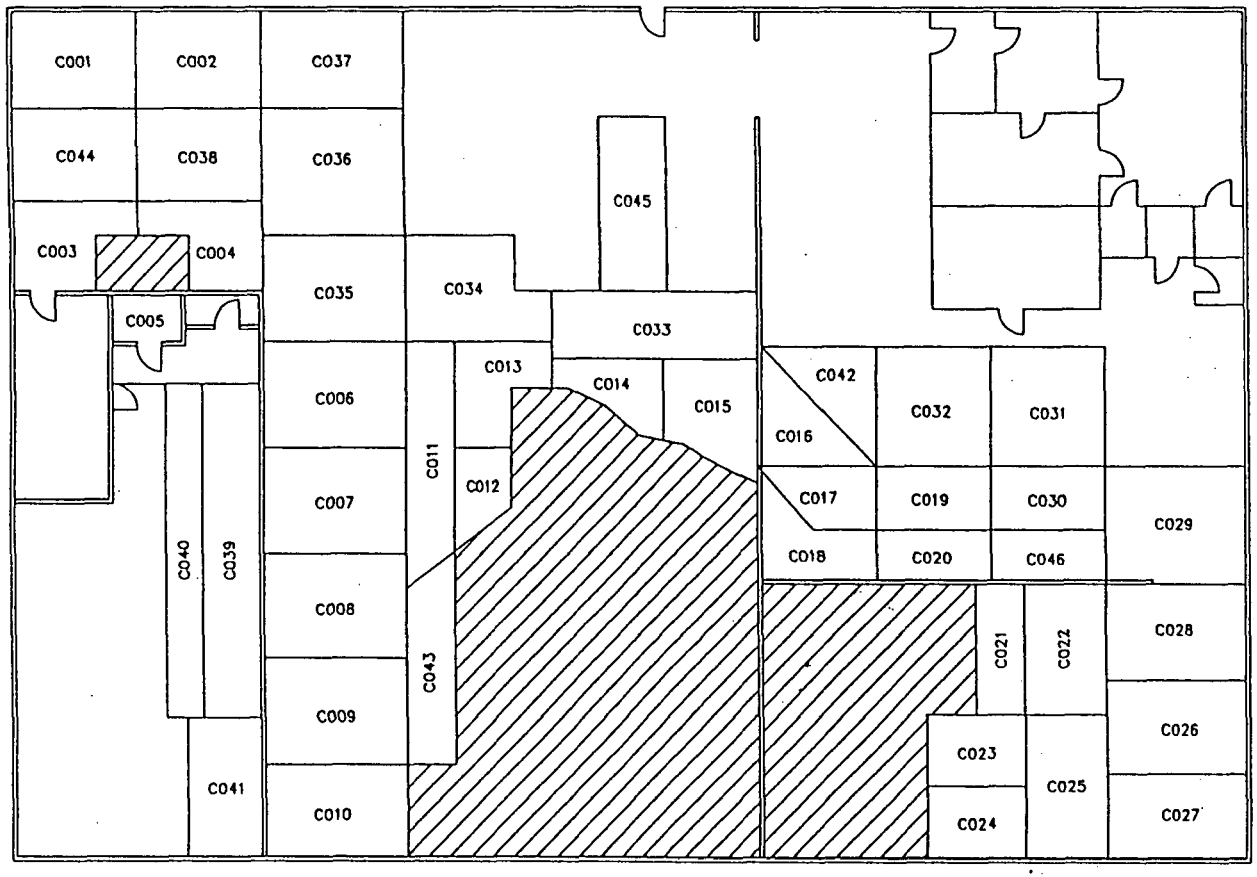
Grab or "chip" samples were obtained by chipping the concrete using an electric chipping hammer with a ¾-inch chisel point. The samples were collected to a depth of up to ¾ inch over an area of less than one square foot per sample.

Concrete chips were broken up into manageable size using a sledge hammer. The samples were then placed into two 8-ounce glass sample jars using a trowel. All sampling equipment (chisel point, sledge hammer, and trowel) was decontaminated between samples by a water rinse followed by soap and water wash and final rinsing with distilled water. Latex gloves were used whenever physical contact with the sample was required.

Samples were packaged and shipped to ACZ Laboratories in Steamboat Springs, Colorado. Chain of Custody forms for the samples are provided in Appendix A. At the laboratory, the two sample jars containing material from the same sample location were combined, crushed, and mixed to generate a homogeneous mixture providing a representative sample of the upper ¾ inch of the respective grid block. Since some sample material from each location was required to be held back for possible analysis for TCLP metals and/or leachable cyanide, this homogeneous mixture was split prior to pulverization for total metals and cyanide analysis.

Total metals analyzed included cadmium, chromium, lead, nickel, and zinc. All metals were analyzed using EPA Method 6010. Digestion of samples was performed using EPA Method 3051. Total cyanide analysis was performed using EPA Method 9012. Extractable cyanide analysis was performed using EPA Method 1312.

A two-tier sampling procedure, established by the March 2, 1993 TWC letter and Closure Plan modifications, was followed. Tier I analysis consisted of total concentrations analysis of cyanide, cadmium, chromium, lead, nickel, and zinc. Tier II leachable analysis of cyanide was performed on samples determined to be below clean closure standards but containing a total cyanide concentration greater than 20 mg/kg. Tier II TCLP analysis was performed on samples with total concentrations below clean closure standards but containing greater than 20 mg/kg cadmium, 100 mg/kg chromium, and/or 100 mg/kg lead.



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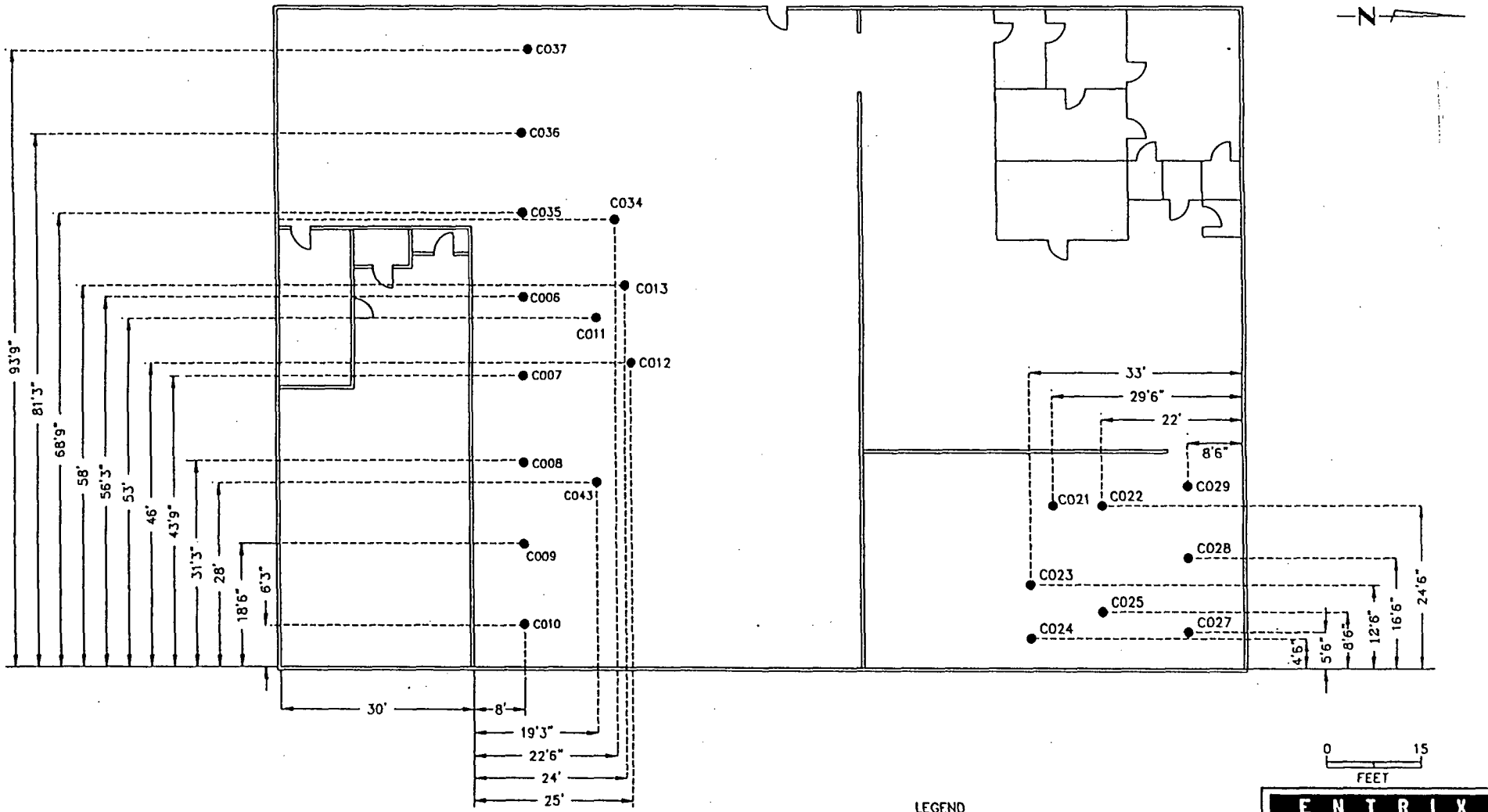
ASSUMED ABOVE CLEAN CLOSURE STANDARDS

ENTRIX

Figure 2-1
Capitol Metal Finishing Site
Facility Building Sample Grid
Twin Oaks Associates
Austin, Texas

PROJ. NO: 163203 | CK: | DATE: 6/93

06/17/93 10:17 CLS C:\ACAD12\163203\FIG2-1



LEGEND

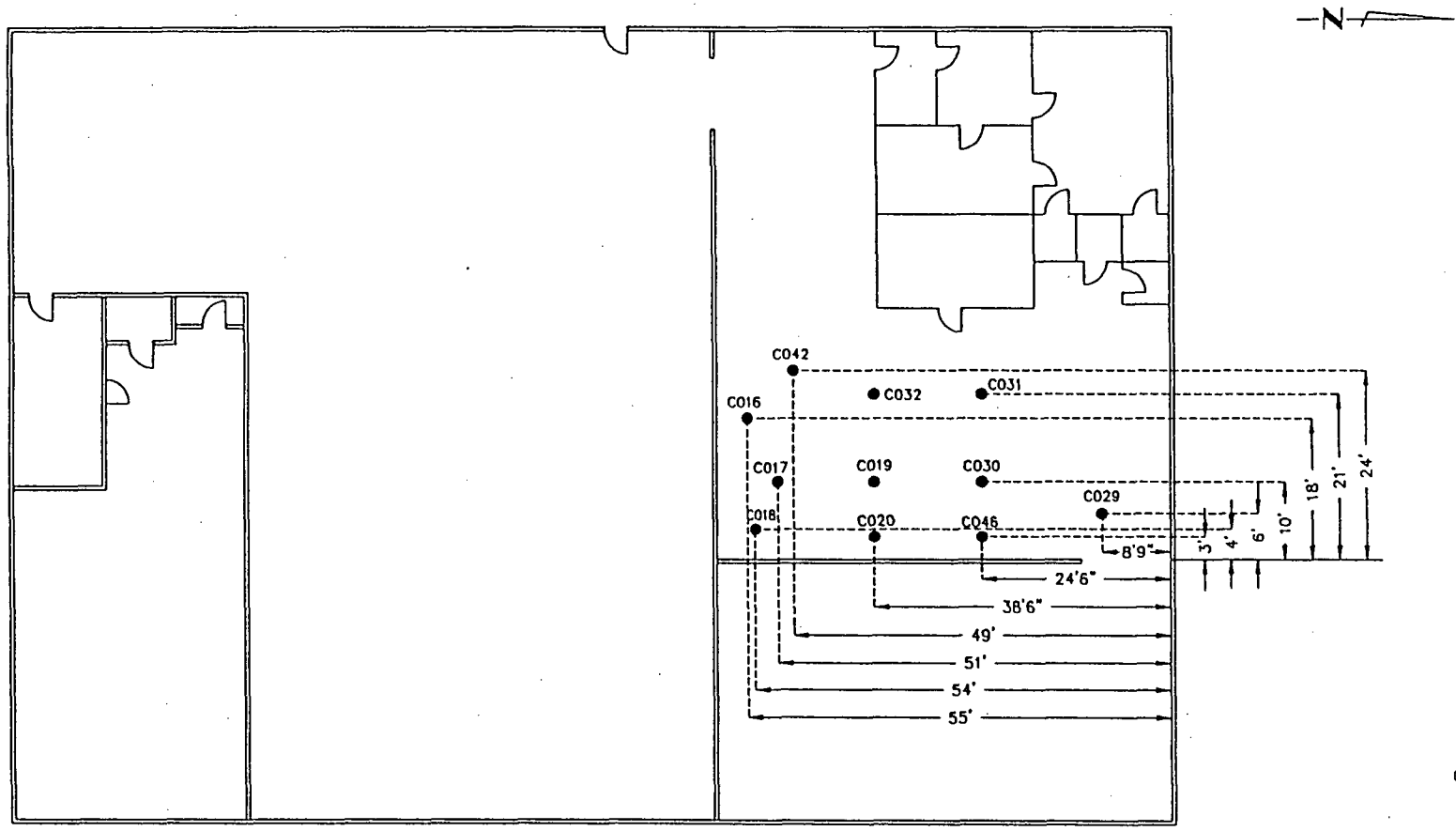
C024 ● SAMPLE LOCATION WITHIN EACH GRID BLOCK

ENTRIX

Figure 2-2a
Capitol Metal Finishing Site
Facility Building
Sample Point Locations
Twin Oaks Associates
Austin, Texas

PROJ. NO: 163203 | CK: | DATE 8/93

06/15/93 08:15 CLS C:\ACAD12\163203\FIG2-2A



LEGEND

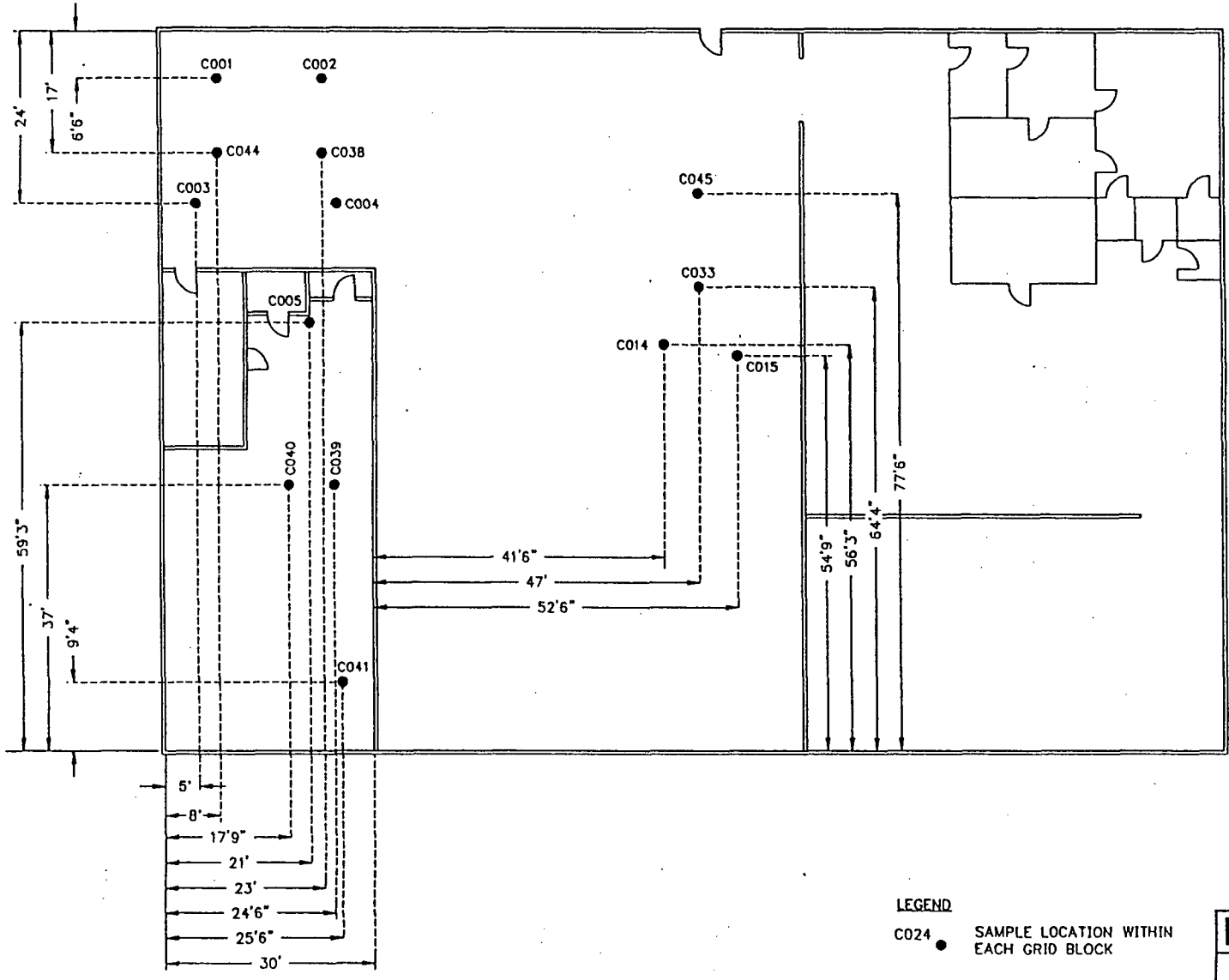
C024 ● SAMPLE LOCATION WITHIN EACH GRID BLOCK

ENTRIX

Figure 2-2b
Capitol Metal Finishing Site
Facility Building
Sample Point Locations
Twin Oaks Associates
Austin, Texas

PROJ. NO: 163203 | CK: | DATE: 6/93

06/17/93 10:27 CLS C:\ACAD12\163203\FIG2-2B



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LEGEND

C024 ● SAMPLE LOCATION WITHIN EACH GRID BLOCK

ENTRIX

Figure 2-2c
Capitol Metal Finishing Site
Facility Building
Sample Point Locations
Twin Oaks Associates
Austin, Texas

PROJ. NO: 163203 | CK: | DATE: 6/93

06/17/93 10:31 CLS C:\ACAD12\163203\FIG2-2C

2.2.3 Wastes Generated by Sampling Activities

Approximately three gallons of wastewater was generated by decontamination activities. All wastewater was collected and containerized in a 55-gallon drum. Solid wastes generated by sampling activities included latex gloves used in sampling and paper towels used in final drying of sampling equipment after the final rinse. Less than one cubic foot of solid waste was generated, all of which was collected and containerized in a five-gallon can to be managed in accordance with Section 3.0 of the Closure Plan.

2.3 Health and Safety Plan

As required by the March TWC letter, prior to mobilization for activities at the site, a Health and Safety Plan was prepared. Two copies of the Health and Safety Plan were mailed to the TWC Industrial and Hazardous Waste Enforcement Section and one copy was mailed to the TWC District 14 office in Austin on March 31, 1993. A copy of the Health and Safety Plan was maintained on site during the on-site Phase I closure activities described in this report.

3.0 ANALYTICAL RESULTS AND CLEANUP LEVEL DETERMINATION

Analytical results indicate a large portion of the concrete slab contains one or more of the constituents of concern above the agreed background level. The analytical results are summarized in Tables 3-1 and 3-2.

3.1 Analytical Results

The analytical results for total metals (cadmium, chromium, lead, nickel, and zinc) and total cyanide are provided in Table 3-1. Several samples contained constituents below the agreed background levels for metals and above the action limit set for Tier II analysis of TCLP metals (see discussion in Section 2.2.2). The results of Tier II analyses are provided in Table 3-2. The concrete sample collected from grid C040 was not analyzed, because all grid blocks bordering C040 were determined to be below the agreed background levels.

The Tier II results show very low concentrations of leachable cadmium, chromium, and nickel in these samples. The TCLP results indicate that the slab material would not be classified as hazardous waste based on the concentrations of cadmium or chromium. It is believed that these concentrations are not a threat to human health or the environment.

No clean closure levels for cyanide were set in the Closure Plan. However, the action level for analysis for leachable cyanide (Tier II action level) was established by the TWC in the March 2, 1993 letter as 20 mg/kg total cyanide. Four samples contained concentrations above this Tier II action level, but metals concentrations below the agreed background levels. These samples were analyzed for leachable cyanide. The results of the analysis shows the leachable cyanide concentrations in these areas to be below 7 mg/l.

3.2 Cleanup Level Determination

Under the TNRCC Risk Reduction Standards, the agency presented three standards of remedial action designed to limit risks to human health and the environment from contaminated media. Cleanup levels are specified for different types of contaminated material, such as air, surface water, groundwater, and soil, and for cross-contamination pathways such as soil to groundwater and soil to air. Under Risk Reduction Standard 1, the site must be cleaned up to background levels, as determined by prescribed background sampling or limitations of analytical methodology. Cleanup under Standard 1 is achieved when all areas of the site have concentrations of contaminants below the background levels. It is proposed that Clean Closure Standard 1 be used for the cleanup of the CMF facility site.

Section 335.554(d) requires that the attainment of cleanup levels be demonstrated by collection and analysis of samples from the medium of concern. In the present case, the

TABLE 3-1
TIER I ANALYTICAL RESULTS

Sample ID Number	Total Metals Analysis, mg/kg						Tier II Analysis
	cyanide	cadmium	chromium	lead	nickel	zinc	
CO01	61	109	341	19	2245	232	
C002	265	120	3955	65	360	845	
C003	103	8.5	78	<10	54	0.4	a
C004	27.5	24	76	<10	216	74	
C005	1.6	<.02	<.01	<.1	<.1	0.2	
C006	78	62	302	40	268	1295	
C007	940	302	264	44	675	1365	
C008	40	48	127	14	92	630	
C009	102	12	142	15	690	235	
C010	45	35	162	16	443	105	
C011	320	41	308	20	550	830	
C012	70	228	3070	124	2725	1280	
C013	440	400	940	78	1485	1220	
C014	320	3	3.3	0.4	5.1	5.2	a
C015	121	2.9	0.7	0.2	1	4.3	a
C016	6.1	5	178	13	29	42	
C017	102	16	36	14	386	74	
C018	69	80	86	12	324	126	
C019	203	5	32	<10	34	1100	
C020	16.4	16	26	12	60	40	b
C021	2.4	7	52	46	66	54	c
C022	1.3	9	246	28	104	82	
C023	2.6	5	34	34	28	64	
C024	2.9	3.5	18	15	15	48	
C025	51	5	31	20	32	204	a
C026	20.7	8	3420	27	50	112	
C027	6.2	8	36	<10	29	44	b
C028	4.4	3	52	<10	47	41	c
C029	17.9	13	374.5	<10	114	108.9	
C030	11.1	7	35.5	<10	99.5	60	
C031	15	4.5	23	<10	53.5	47	
C032	11.7	5.5	41	<10	58	57	
C033	232	143.5	347	<10	283.5	660	a
C034	88	44	96.5	<10	53.5	188	
C035	24	7	70	<10	42	54.5	
C036	17.9	8.5	46	<10	62.5	67	b, c, d
C037	7.9	11	29	<10	58	73.5	b
C038	184	328	186	32	295	2885	
C039	10.4	0.1	0.7	0.3	1.1	0.4	
C040	SAMPLE NOT ANALYZED						
C041	3.3	2.5	21	11	35	34	
C042	8.8	6.5	46	<10	93.5	55	b, c, d
C043	55	26	5950	16	7755	238	
C044	44	16	46	14	408	204	
C045	122	3.1	5.7	2.8	2.8	56	a
C046	19.1	8	46	22	71	130	b, c, d

Shaded areas denote samples above clean closure standards.

a. Extractable cyanide

b. TCLP cadmium

c. TCLP chromium

d. TCLP nickel

TABLE 3-2
TIER II ANALYTICAL RESULTS

Sample Number	TCLP Analysis, mg/l				
	cyanide	cadmium	chromium	lead	nickel
C003	1.75	<0.005	0.84		
C014	4.4				
C015	2.48				
C020		0.086			
C021			0.02		
C025	0.64				
C027		<0.005			
C028			0.09		
C033	6.5				
C036		<0.005	0.19		0.04
C037		<0.025			
C042		<0.025	<0.05		0.25
C045	6.8				
C046		0.063	<0.01	0.26	

1-632\tbls3.wq1

medium of concern is affected concrete slab material in the interior of the facility building. The comparison of sample values to the background levels can be based on one of two methods:

(1) direct comparison of the results of analysis of discrete samples of the medium of concern with the cleanup level; or

(2) for a data set of 10 or more samples, statistical comparison of the results of analysis utilizing the 95% tolerance limit of the mean concentration of the contaminant, as determined by the following expression:

$$\text{cleanup level} \geq x + ts/(\text{sqrt}(n)), \text{ where}$$

x is the mean concentration
s is the standard deviation
t is a value (given in Table 2 in Section 335.553(d) in Subchapter S) based on the number of samples
n is the number of samples

For the data set comprised of the concrete sample analyses, a number of grid blocks are significantly over the background levels of one or more metal, and will be removed during remediation. These grid blocks are shown in Figure 3-1.

The statistical method described in (2) above will be used to demonstrate that the remaining grid blocks meet the Standard 1 clean closure standards. The samples from the grid blocks to be removed are shaded in Table 3-1. The analyses of the remaining grid blocks are presented in Table 3-3, as well as the statistical parameters described above (x, s, and t for each metal and cyanide), and the agreed upon background levels for the metals.

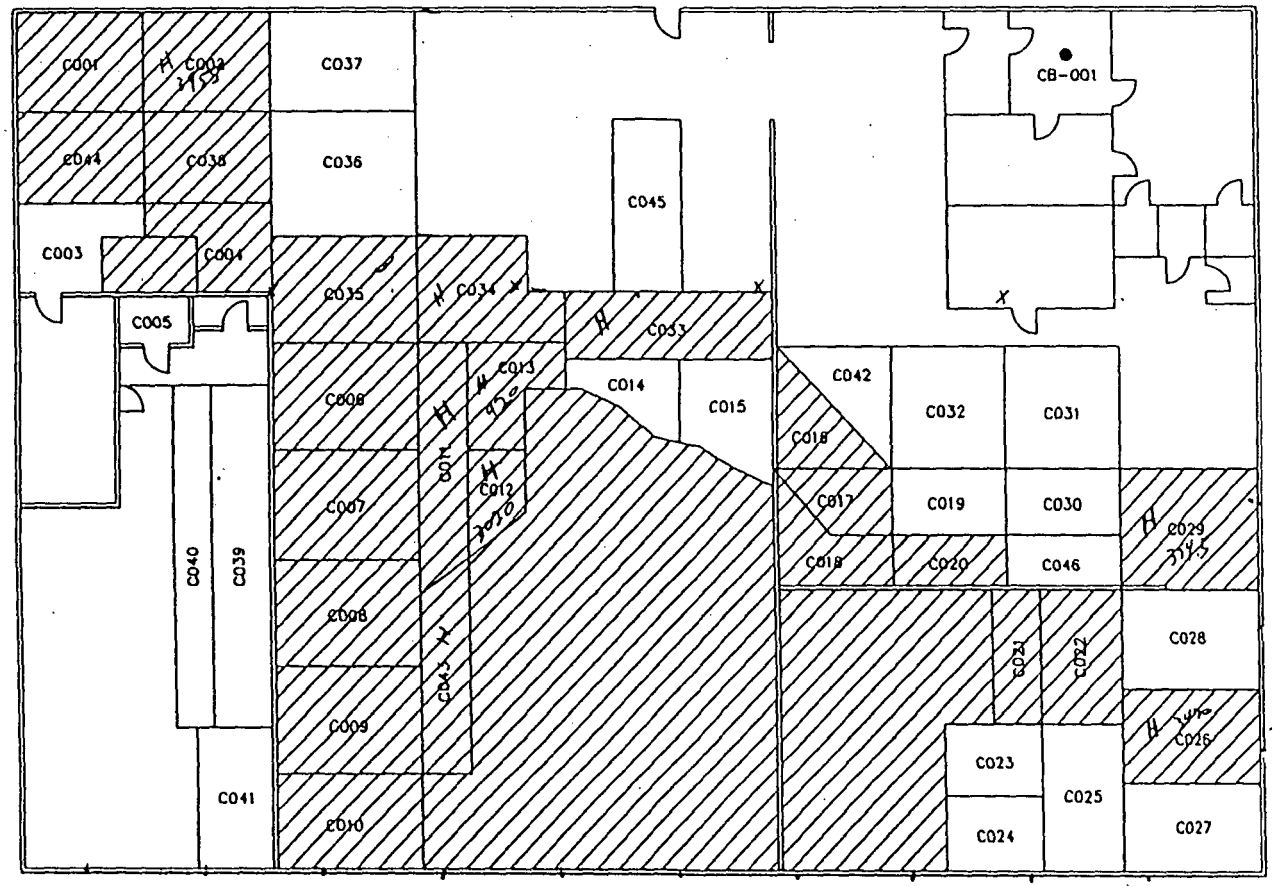
Table 3-3 also includes the analytical results of a concrete surface sample collected by the environmental contractor for Capitol Metal Finishing during an investigation of soils and concrete at the site in March 1991. The sample, CB-001, was collected in the northwestern part of the building (see Figure 3-1 for location). The sample was analyzed at the time of the investigation for total cadmium, chromium, lead, zinc, and nickel. Several other samples of concrete from the building interior were collected during the investigation; however, these samples were located in areas of the slab that are already proposed for removal. In a discussion with Mr. John Murphy of the TNRCC, ENTRIX requested that sample CB-001 be included in the data set for determining the grid blocks to be removed under Subchapter S. Mr. Murphy agreed with this request, and the analytical results were included in Table 3-3.

The calculated values for cadmium, chromium, lead, zinc, and nickel are shown in Table 3-3. These values all fall below the agreed upon background levels for these metals.

TABLE 3-3
SUBCHAPTER S STATISTICAL ANALYSIS

Sample ID Number	Totals Metals Analysis, mg/kg					
	cyanide	cadmium	chromium	lead	nickel	zinc
C003	103	8.5	78	10	54	0.4
C005	1.6	0.02	0.01	0.1	0.1	0.2
C014	320	3	3.3	0.4	5.1	5.2
C015	121	2.9	0.7	0.2	1	4.3
C019	203	5	32	10	34	1100
C023	2.6	5	34	34	28	64
C024	2.9	3.5	18	15	15	48
C025	51	5	31	20	32	204
C027	6.2	8	36	10	29	44
C028	4.4	3	52	10	47	41
C030	11.1	7	35.5	10	99.5	60
C031	15	4.5	23	10	53.5	47
C032	11.7	5.5	41	10	58	57
C036	17.9	8.5	46	10	62.5	67
C037	7.9	11	29	10	58	73.5
C039	10.4	0.1	0.7	0.3	1.1	0.4
C041	3.3	2.5	21	11	35	34
C042	8.8	6.5	46	10	93.5	55
C045	122	3.1	5.7	2.8	2.8	56
C046	19.1	8	46	22	71	130
CB-001	0.1	0.26	5.9	11	2.5	11
x	49.7	4.8	27.8	10.3	37.3	100.1
n	21	21	21	21	21	21
s	80.49	2.93	20.05	7.80	29.63	228.30
t	1.721	1.721	1.721	1.721	1.721	1.721
CL	79.9	5.9	35.4	13.3	48.4	185.8
bkgrnd	--	6	43.3	252	61.7	313

x = mean concentration
n = number of samples
s = standard deviation
t = value from Table 2 in Section 335.553(d)
CL calculated value = x + ts/sqrt (n)
bkgrnd agreed upon background levels (no level has been set for cyanide)



ENTRIX

Figure 3-1
Results of Grid Sampling
Capitol Metal Finishing Site
Twin Oaks Associates
Austin, Texas

09/07/94 09:43 MGS C:\ACAD12\163203\FIG3-1

No agreed background level for the Capitol Metal Finishing site has been set for cyanide. It is proposed that a clean closure standard for cyanide of 100 mg/l be used for this site. This value is based on the Soil/Air and Ingestion Standard for Residential Areas (SAI-Res) set forth in Subchapter S, with a reduction of greater than 80% for a safety factor. This value is appropriate as a cyanide clean closure standard for several reasons: the most likely route of contact with affected material at the site is through inhalation or ingestion; the concrete slab is covered by a roof, is protected from rainfall, and will not leach cyanide or other materials into the underlying soil to threaten groundwater; and previous site investigations undertaken by Capitol Metal Finishing determined that groundwater is not present at shallow depths beneath the site. It is believed that the cyanide clean closure standard of 100 mg/l is appropriate and will ensure that human health and the environment are not at risk. The grid blocks shown in Table 3-3 meet the proposed cyanide clean closure standard.

4.0 REVISION TO CLOSURE PLAN

As a result of the preliminary sampling activities, several revisions to the January 1993 Closure Plan are proposed. These revisions include the following:

- Revision of demonstration of attainment of cleanup levels, using Section 335.554(d) of the TNRCC Risk Reduction Standards.
- Additional sampling requirements including sampling of drums left on site by former tenants, characterization of waste generated by floor cleaning and sampling activities, and floor sampling of areas previously assumed to meet clean closure standards but bordering sample grids determined to be above clean closure standards;
- Revision of waste volumes based on Phase I sample analysis; and
- Revision of closure schedule.

4.1 Additional Sampling Requirements

Four drums of unknown waste were observed at the site upon arrival for floor cleaning operations. These drums are believed to have been left by the former tenants. Labels on the drums indicate the contents may be hazardous waste. It is not known if the contents of the drums have been characterized. In addition to the drums already on site when the preliminary investigation began, several drums of solid and liquid waste were generated during floor cleaning and sampling activities. Waste generated by the preliminary investigation activities included: three 55-gallon drums of liquid waste from floor cleaning and sample equipment decontamination, approximately 20 gallons of solids from floor cleaning activities, and five gallons of solids from floor sampling activities. The contents of the drums left by the previous tenant and the waste from floor cleaning and sampling operations will be characterized and disposed of in accordance with Section 3.0 of the January 1993 Closure Plan.

4.2 Waste Volume Revisions

Original estimates of the volumes of waste to be removed during closure activities were provided in Table 3.2.1 of the Closure Plan. As a result of the baseline sampling programs implemented under the preliminary investigation, the following revised estimates have been calculated:

TABLE 4-1
Estimated Waste Inventory

Waste	Estimated Volume
Miscellaneous wastewater (decon and washwater)	300 gallons
Affected Concrete	155 cubic yards
Affected Soils	420 cubic yards
Building Debris	100 cubic yards

These estimates are based on the use of Subchapter S Risk Reduction Standard 1, as described in Section 3.2, to determine which areas will be removed.

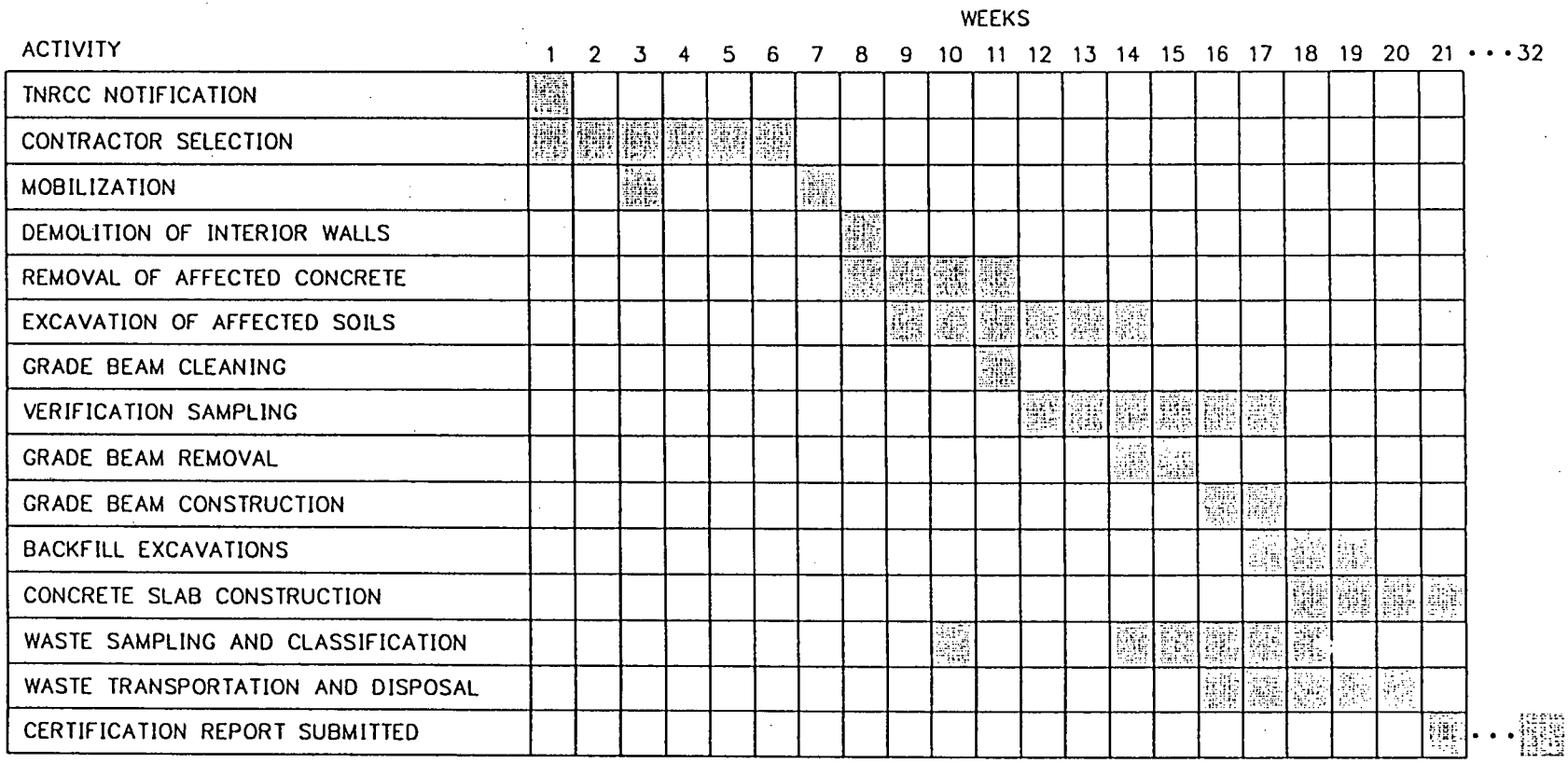
All waste generated during closure activities will be managed in accordance with Section 3.0 of the Closure Plan.

4.3 Closure Schedule Revisions

The following closure schedule represents a revised estimate of the time required to close the facility building in accordance with the Closure Plan. Revisions to the schedule include the elimination of those elements of the schedule already performed during Phase I implementation. Additional time has been allocated for the removal of additional concrete slab material identified as above the clean closure standards.

The revised closure schedule calls for 20 weeks to complete on-site activities associated with the clean closure of the interior of the building. Twelve weeks have been added to allow for completion and submittal of the clean closure certification report. The overall estimated schedule from TNRCC notification to final certification report submittal is 32 weeks.

CAPITOL METAL FINISHING SITE
FACILITY BUILDING
CLOSURE SCHEDULE



APPENDIX A

Chain of Custody Forms

E N T R I X

(93-SI/ 0326-0354)

☒ 515 Post Oak Blvd. Suite 400 Houston, TX 77027 (713) 960-9733 (713) 960-9461 FAX

☐ 12770 Coit Road Suite 1020 Dallas, TX 75251 (214) 239-5999 (214) 386-6528 FAX

☐ 2125 Oak Grove Rd. Suite 300 Walnut Creek, CA 94598 (510) 935-9920 (510) 935-5368 FAX

☐ 601 University Ave. Suite 264 Sacramento, CA 95825 (916) 923-1097 (916) 923-6251 FAX

☐ 200 Bellevue Pkwy. Suite 200 Wilmington, DE 19809 (302) 792-9310 (302) 792-9329 FAX

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

Site: CMF FACILITY BLDG Entrix Contract: DOUG KENNEDY

Client: TWIN OAKS ASSOC. Project No. 163203

Sampler(s) Signature: [signature] Airbill No FEDEX 135878992

ANALYTICAL REQUEST

Sample ID	Date	Time	Comp	Grab	No. of Cont.	Sample Media	TOTAL CADMIUM METHOD 3050/6010	TOTAL CHROMIUM METHOD 3050/6010	TOTAL LEAD METHOD 3050/6010	TOTAL NICKEL METHOD 3050/6010	TOTAL ZINC METHOD 3050/6010	TOTAL CYANIDE METHOD 9012	HOLD FOR 4 FOR LATER ANALYSIS	MIX CONTENTS OF CONT. TOGETHER					Comments
C001	4/6/93	1:45PM		X	2	CONCRETE	X	X	X	X	X	X	X	X					MIX SAMPLE THOROUGHLY AND HOLD BACK ½
C002	4/6/93	2:00PM		X	2	CONCRETE	X	X	X	X	X	X	X	X					
C003	4/6/93	2:15PM		X	2	CONCRETE	↓	↓	↓	↓	↓	↓	↓	↓					↓
C004	4/6/93	2:30PM		X	2	CONCRETE													
C038	4/6/93	2:45PM		X	2	CONCRETE													
C044	4/6/93	3:00PM		X	2	CONCRETE													
C007	4/6/93	3:30PM		X	2	CONCRETE													
C006	4/6/93	3:45PM		X	2	CONCRETE													
C008	4/6/93	4:55PM		X	2	CONCRETE													
C009	4/6/93	4:05PM		X	2	CONCRETE													

Total Number of Containers 20

SAMPLES RECEIVED IN GOOD CONDITION

Relinquished By	Date	Time	Received By	Date	Time
[signature]	4/7/93	6:45PM	B Crawford	4-8-93	11:00

ENTRIX

☒ 515 Post Oak Blvd. Suite 400 Houston, TX 77027 (713) 960-9733 (713) 960-9461 FAX

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CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

Site: CMF FACILITY BLDG Entrix Contract: Doug Kennedy

Client: TWIN OAKS ASSOC Project No. 163203

Sampler(s) Signature: Kenneth Cody Airbill No 135878 9902

ANALYTICAL REQUEST

Sample ID	Date	Time	Comp	Grab	No. of Cont.	Sample Media	TOTAL CADMIUM 3050/6010	TOTAL CHROMIUM 3050/6010	TOTAL LEAD 3050/6010	TOTAL NICKEL 3050/6010	TOTAL ZINC 3050/6010	HOLD 1/2 SAMPLE FOR LATER ANAL MST CONTAINERS THROUGHLY	HOLD FOR LATER ANALYSIS TOTAL CYANIDE 9012					Comments
C010	4/6/93	4:20 PM		X	2	CONCRETE	X	X	X	X	X	X	X		X			
C011	4/6/93	4:30 PM																
C043	4/7/93	8:00 AM																
C012		8:15 AM																
C013		8:25 AM																
C034		8:35 AM												X				
C035		8:50 AM												X				
C036		9:05 AM												X				
C018		9:25 AM					X	X	X	X	X	X	X		X			
C020		9:40 AM																

Total Number of Containers 20

SAMPLES RECEIVED IN GOOD CONDITION

Relinquished By	Date	Time	Received By	Date	Time
Kenneth Cody	4/7/93	6:45 AM	B. Campbell	4-8-93	11:00

ENTRIX

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Houston, TX 77027
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(713) 960-9461 FAX

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Dallas, TX 75251
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(214) 386-6528 FAX

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(510) 935-9920
(510) 935-5368 FAX

☐ 601 University Ave.
Suite 264
Sacramento, CA 95825
(916) 923-1097
(916) 923-6251 FAX

☐ 200 Bellevue Pkwy.
Suite 200
Wilmington, DE 19809
(302) 792-9310
(302) 792-9329 FAX

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

Site: CME FACILITY BLDG Entrix Contract: DOUG KENNEDY

Client: TWIN OAKS ASSOC. Project No. 163203

Sampler(s) Signature: [signature] Airbill No FED-EX 1358789902

ANALYTICAL REQUEST

Sample ID	Date	Time	Comp	Grab	No. of Cont.	Sample Media	TOTAL CHROMIUM 3050/6010	TOTAL CHROMIUM 3050/6010	TOTAL LEAD 3050/6010	TOTAL NICKEL 3050/6010	TOTAL ZINC 3050/6010	MIX SAMPLE THOROUGHLY	HOLD 1/2 SAMPLE FOR LATER ANALYSIS	HOLD FOR LATER ANALYSIS	TOTAL CYANIDE 9012				Comments
C019	4/7/93	10:10 AM		X	2	CONCRETE	X	X	X	X	X	X	X		X				
C024	4/7/93	10:55 AM		X	2	CONCRETE	X	X	X	X	X	X	X		X				
C023	4/7/93	11:10 AM		X	2	CONCRETE	X	X	X	X	X	X	X		X				
C046	4/7/93	11:30 AM		X	2	CONCRETE	X	X	X	X	X	X	X		X				
C030	4/7/93	11:40 AM		X	2	CONCRETE								X					
C016	4/7/93	11:55 AM		X	2	CONCRETE	X	X	X	X	X	X	X		X				
C042	4/7/93	12:50 PM		X	2	CONCRETE								X					
C032	4/7/93	1:20 PM		X	2	CONCRETE								X					
C017	4/7/93	1:30 PM		X	2	CONCRETE	X	X	X	X	X	X	X		X				
C031	4/7/93	1:45 PM		X	2	CONCRETE								X					

Total Number of Containers 20

SAMPLES RECEIVED IN GOOD CONDITION

Relinquished By	Date	Time	Received By	Date	Time
[signature]	4/7/93	6:45 PM	B Cardwood	4-8-93	11:00

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CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

Site: CME FACILITY BLDG Entrix Contract: DOUG KENNEDY

Client: TWIN OAKS ASSOC. Project No. 163203

Sampler(s) Signature: Kenneth Cody Airbill No FEDEX 1358789902

ANALYTICAL REQUEST

Sample ID	Date	Time	Comp	Grab	No. of Cont.	Sample Media	TOTAL CHROMIUM 3050/6010	TOTAL CADMIUM 3050/6010	TOTAL LEAD 3050/6010	TOTAL NICKEL 3050/6010	TOTAL ZINC 3050/6010	TOTAL CYANIDE 9012	MIT SAMPLE THOROUGHLY HOLD 1/2 SAMPLE FOR LATER ANAL.	HOLD FOR LATER ANALYSIS				Comments
C029	4/7/93	2:00 PM		X	2	CONCRETE									X				
C027	4/7/93	2:15 PM		X	2	CONCRETE	X	X	X	X	X	X	X	X					
C026	4/7/93	2:25 PM		X	2	CONCRETE	X	X	X	X	X	X	X	X					CONCRETE HAS YELLOW TINT BELOW SURFACE
C028	4/7/93	2:35 PM		X	2	CONCRETE	X	X	X	X	X	X	X	X					
C021	4/7/93	2:45 PM		X	2	CONCRETE	X	X	X	X	X	X	X	X					
C022	4/7/93	3:00 PM		X	2	CONCRETE	X	X	X	X	X	X	X	X					
C025	4/7/93	3:20 PM		X	2	CONCRETE	X	X	X	X	X	X	X	X					
C045	4/7/93	3:30 PM		X	2	CONCRETE	X	X	X	X	X	X	X	X					CONCRETE LACKS AGGREGATE POSSIBLE FILL OR PATCH
C033	4/7/93	3:45 PM		X	2	CONCRETE									X				
C015	4/7/93	3:55 PM		X	2	CONCRETE	X	X	X	X	X	X	X	X					

Total Number of Containers 20

SAMPLES RECEIVED IN GOOD CONDITION

Relinquished By	Date	Time	Received By	Date	Time
Kenneth Cody	4/7/93	6:45 PM	B. Craighead	4-8-93	11:00

E N T R I X

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Suite 400
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(916) 923-6251 FAX

☐ 200 Bellevue Pkwy.
Suite 200
Wilmington, DE 19809
(302) 792-9310
(302) 792-9329 FAX

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

Site: CMF FACILITY BLDG Entrix Contract: DOUG KENNEDY

Client: TWIN OAKS ASSOC Project No. 163203

Sampler(s) Signature: Kenneth Cody Airbill No FEDEX 1353789902

ANALYTICAL REQUEST

Sample ID	Date	Time	Comp	Grab	No. of Cont.	Sample Media	TOTAL CHROMIUM 3050/6010	TOTAL CADMIUM 3050/6010	TOTAL LEAD 3050/6010	TOTAL NICKEL 3050/6010	TOTAL ZINC 3050/6010	TOTAL CYANIDE 9012	MIX SAMPLE THOROUGHLY HOLD 1/2 SAMPLE FOR LATER ANAL	HOLD FOR LATER ANALYSIS				Comments
C014	4/7/93	4:05 PM		X	2	CONCRETE	X	X	X	X	X	X	X	X				
C037	4/7/93	4:15 PM		X	2	CONCRETE									X			
C039	4/7/93	4:30 PM		X	2	CONCRETE	X	X	X	X	X	X	X	X				DIFFERENT MIX AND SURFACE COATING
C040	4/7/93	4:40 PM		X	2	CONCRETE									X			
C041	4/7/93	4:50 PM		X	2	CONCRETE									X			
C005	4/7/93	5:05 PM		X	2	CONCRETE	X	X	X	X	X	X	X	X				

Total Number of Containers 12

Relinquished By	Date	Time	Received By	Date	Time
Kenneth Cody	4/7/93	6:45 PM	B. Oakwood	4/8/93	11:00

SAMPLES RECEIVED IN GOOD CONDITION

REFERENCE 8

C R
SW#31593

John Hall, *Chairman*
Pam Reed, *Commissioner*
Peggy Garner, *Commissioner*

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

December 28, 1994

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Odas Jung
Twin Oaks Industrial Associates
P.O. Box 660
Austin, Texas 78767

Mr. Carl Booth
Capitol Metal Finishing, Inc.
P.O. Box 746
Round Rock, Texas 78680

Re: Capitol Metal Finishing Facility Building
Solid Waste Registration No: 31593
Revised Phase I - Closure Completion Report
Review and Approval

Dear Mr. Jung and Mr. Booth:

The Texas Natural Resource Conservation Commission (TNRCC, or the Agency) has completed a review of the above-referenced report. This report is a summary of the implementation of the "Closure Plan, Capitol Metal Finishing, Inc., Site", dated January 1993. A letter dated March 2, 1993 from the Texas Water Commission, now the TNRCC, granted "partial approval with modifications" to the January 1993 Closure Plan. As stated in the March 2, 1993 approval letter, this partial approval included "the baseline survey, mobilization, residual waste removal and baseline sampling of the area of the facility building...".

The original report was submitted to the Agency by ENTRIX in June 1993. As stated in a September 6, 1994 letter from the TNRCC to you, the report was revised to propose closure of the site in accordance with Standard 1 of the Risk Reduction Rules (30 Texas Administrative Code, Subchapter S). The revised report was submitted by ENTRIX along with a cover letter dated September 28, 1994.

The Revised Phase I - Closure Completion Report contains a description of the closure activities performed in April 1994. The report also contains four revisions to the January 1993 Closure

Plan. These revisions are 1) the use of the Risk Reduction Standard 1 to attain cleanup of the site; 2) additional sampling of wastes and floor areas, 3) revision of waste volumes expected to be generated during closure, and 4) revision of the closure schedule.

The Agency has completed a review of the above report. Our review indicates that the closure activity meets the requirements of the January 1993 Closure Plan. Therefore the agency approves of the Report and the four revisions to the Closure Plan. The agency also grants permission to commence the remaining portions of the Closure Plan in accordance with the approved schedule.

Please be aware that it is the continuing obligation of persons associated with a site to ensure that the disposal of industrial solid waste is managed in such a way that it does not cause the discharge or imminent threat of discharge of such waste into or adjacent to waters in the state, a nuisance, or the endangerment of the public health and welfare as required by 30 TAC §335.4.

We appreciate your attention to this matter. If you have any questions, please contact John Murphy of the Industrial and Hazardous Waste Enforcement Section at (512) 239-2347.

Sincerely,

Juan d. Rodriguez for

John M. Vilas, Supervisor
Enforcement Team II
Industrial and Hazardous Waste Division

cc: Chris Smith, TNRCC Region 14 Field Office, Austin
Janice Earley, Enforcement Section, Industrial and Hazardous Waste Division
Bill Ballard, Senior Attorney, TNRCC Legal Division
Richard Clarke, Closure Team, Industrial and Hazardous Waste Division
Ken Cody, ENTRIX, 5252 Westchester, Suite 250, Houston, Texas 77005
Nancy Olinger, Assistant Attorney General, Attorney General's Office, Environmental Protection Division, P.O. Box 12548, Austin, Texas 78711

SW31593

Barry R. McBee, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
John M. Baker, *Commissioner*
Dan Pearson, *Executive Director*

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

February 1, 1996

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
#Z-707-601-084

Mr. Doug Kennedy
Project Manager
ENTRIX, Inc.
5252 Westchester, Suite 250
Houston, Texas 77005

Re: Capitol Metal Finishing Facility Building
3909 Warehouse Row, Austin
TNRCC Solid Waste Registration No: 31593
EPA ID No: 048452064
Final Closure Completion Report, November 1995
Review and Approval

Dear Mr. Kennedy:

On December 1, 1995, the staff of the Texas Natural Resource Conservation Commission (TNRCC) received two copies of the above-referenced report prepared for Twin Oaks Associates. The Closure Plan was submitted to the Texas Water Commission in January, 1993, and was granted a partial approval by letter dated March 2, 1993. The March, 1993 letter requested that before the closure work was started additional investigation work was required to determine the full extent of contamination within the building. The March, 1993 letter also required that the results of the investigation be submitted in a phase I Report. The "Phase I Closure Completion Report", which was submitted to the TNRCC September 28, 1994, contained revisions to the Closure Plan of January, 1993. Therefore, the January, 1993 Closure Plan was amended by the Phase I Closure Completion Report of September, 1994. One six-week extension for the closure was requested on July 25, 1995 and granted by the TNRCC on September 15, 1995.

The Final Closure Completion Report of November, 1995, documents that the site closure work was performed in accordance with the amended Closure Plan. The Final Closure Completion Report is therefore approved. Twin Oaks Industrial Associates may begin backfilling with clean soil and may begin the concrete work proposed in Section 6.10 of the Closure Report.

If you have any questions or concerns regarding this matter, please contact John Murphy at the letterhead address (Mail Code 128), or call (512) 239-2347.

Sincerely,

Cathy Remmert

Cathy Remmert, Senior Enforcement Coordinator
I&HW Team I, Waste Section
Enforcement Division

cc: Chris Smith, TNRCC, Region 11 Office, Austin
Mr. Joe Jung, Twin Oaks Industrial Associates, P.O. Box 668, Austin, Texas 78767

TXD 048452064

Capitol Metals Finishing

Austin Travis Tx

Site Inspection / Sampling Plan

PHOTOGRAPH 1

Site Name:	Capitol Metal Finishing, Inc.	CERCLIS:	TXD048452064
Location:	Austin, Texas	TDD Number:	F-06-9010-03
Photographer:	Warren P. Mitchell	Witness:	Trudy Tannen
Date: 11/16/90	Time: 1315	Direction:	North

Comments: Rear of building.

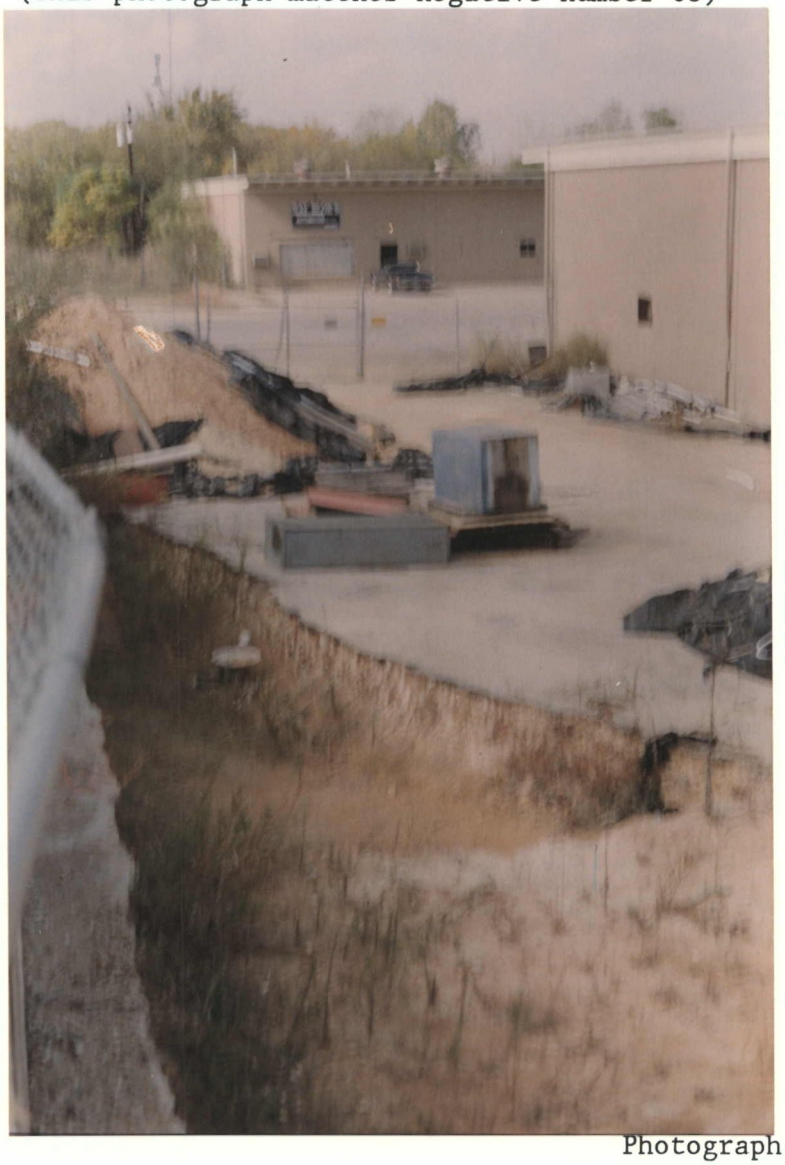
(This photograph matches negative number 02)

PHOTOGRAPH 2

Site Name:	Capitol Metal Finishing, Inc.	CERCLIS:	TXD048452064
Location:	Austin, Texas	TDD Number:	F-06-9010-03
Photographer:	Warren P. Mitchell	Witness:	Trudy Tannen
Date: 11/16/90	Time: 1316	Direction:	West. Northwest

Comments: Excavated area.

(This photograph matches negative number 03)



PHOTOGRAPH 3

Site Name:	Capitol Metal Finishing, Inc.	CERCLIS:	TXD048452064
Location:	Austin, Texas	TDD Number:	F-06-9010-03
Photographer:	Warren P. Mitchell	Witness:	Trudy Tannen
Date: 11/16/90 Time: 1316		Direction:	West, Northwest

Comments: Debris.

(This photograph matches negative number 04)

PHOTOGRAPH 4

Site Name:	Capitol Metal Finishing, Inc.	CERCLIS:	TXD048452064
Location:	Austin, Texas	TDD Number:	F-06-9010-03
Photographer:	Warren P, Mitchell	Witness:	Trudy Tannen
Date: 11/16/90	Time: 1317	Direction:	North

Comments: Standing water.

(This photograph matches negative number 05)

PHOTOGRAPH 5

Site Name:	Capitol Metal Finishing, Inc.	CERCLIS:	TXD048452064
Location:	Austin, Texas	TDD Number:	F-06-9010-03
Photographer:	Warren P. Mitchell	Witness:	Trudy Tannen
Date: 11/16/90	Time: 1319	Direction:	North

Comments: Panorama (1 of 2).

(This photograph matches negative number 07)

PHOTOGRAPH 6

Site Name:	Capitol Metal Finishing, Inc.	CERCLIS:	TXD048452064
Location:	Austin, Texas	TDD Number:	F-06-9010-03
Photographer:	Warren P. Mitchell	Witness:	Trudy Tannen
Date: 11/16/90	Time: 1324	Direction:	Northeast

Comments: Panorama (2 of 2).

(This photograph matches negative number 08)

PHOTOGRAPH 7

Site Name:	Capitol Metal Finishing, Inc.	CERCLIS:	TXD048452064
Location:	Austin, Texas	TDD Number:	F-06-9010-03
Photographer:	Warren P. Mitchell	Witness:	Trudy Tannen
Date: 11/16/90	Time: 1325	Direction:	East

Comments: Warning signs and wastepile.

(This photograph matches negative number 10)

PHOTOGRAPH 8

Site Name:	Capitol Metal Finishing, Inc.	CERCLIS:	TXD048452064
Location:	Austin, Texas	TDD Number:	F-06-9010-03
Photographer:	Warren P. Mitchell	Witness:	Trudy Tannen
Date: 11/16/90	Time: 1326	Direction:	East

Comments: White Tank.

(This photograph matches negative number 11)

PHOTOGRAPH 9

Site Name:	Capitol Metal Finishing, Inc.	CERCLIS:	TXD048452064
Location:	Austin, Texas	TDD Number:	F-06-9010-03
Photographer:	Warren P. Mitchell	Witness:	Trudy Tannen
Date: 11/16/90	Time: 1327	Direction:	East

Comments: North side of Building.

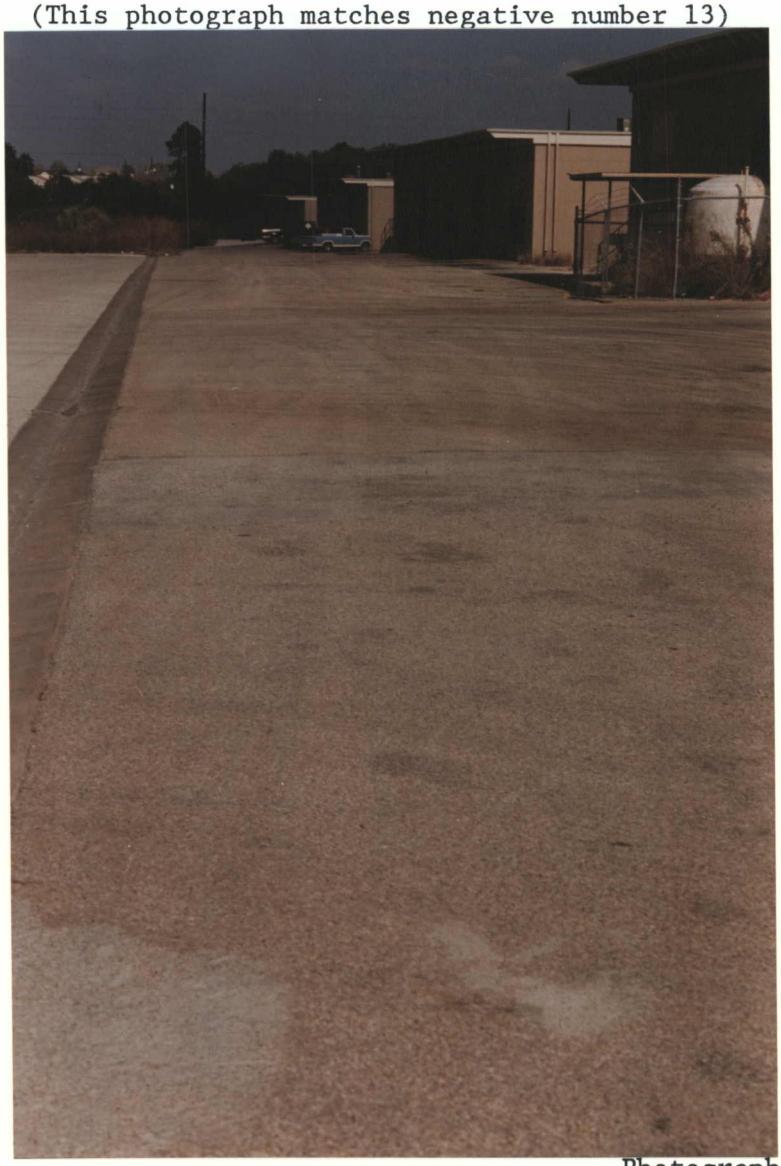
(This photograph matches negative number 12)

PHOTOGRAPH 10

Site Name:	Capitol Metal Finishing, Inc.	CERCLIS:	TXD048452064
Location:	Austin, Texas	TDD Number:	F-06-9010-03
Photographer:	Warren P. Mitchell	Witness:	Trudy Tannen
Date: 11/16/90	Time: 1329	Direction:	North

Comments: Drainage Pathway.

(This photograph matches negative number 13)



PHOTOGRAPH 11

Site Name:	Capitol Metal Finishing, Inc.	CERCLIS:	TXD048452064
Location:	Austin, Texas	TDD Number:	F-06-9010-03
Photographer:	Warren P. Mitchell	Witness:	Trudy Tannen
Date: 11/16/90	Time: 1329	Direction:	East, Southeast

Comments: Wastepile.

(This photograph matches negative number 14)

PHOTOGRAPH 12

Site Name:	Capitol Metal Finishing, Inc.	CERCLIS:	TXD048452064
Location:	Austin, Texas	TDD Number:	F-06-9010-03
Photographer:	Warren P. Mitchell	Witness:	Trudy Tannen
Date: 11/16/90	Time: 1330	Direction:	Northeast

Comments: Pipes.

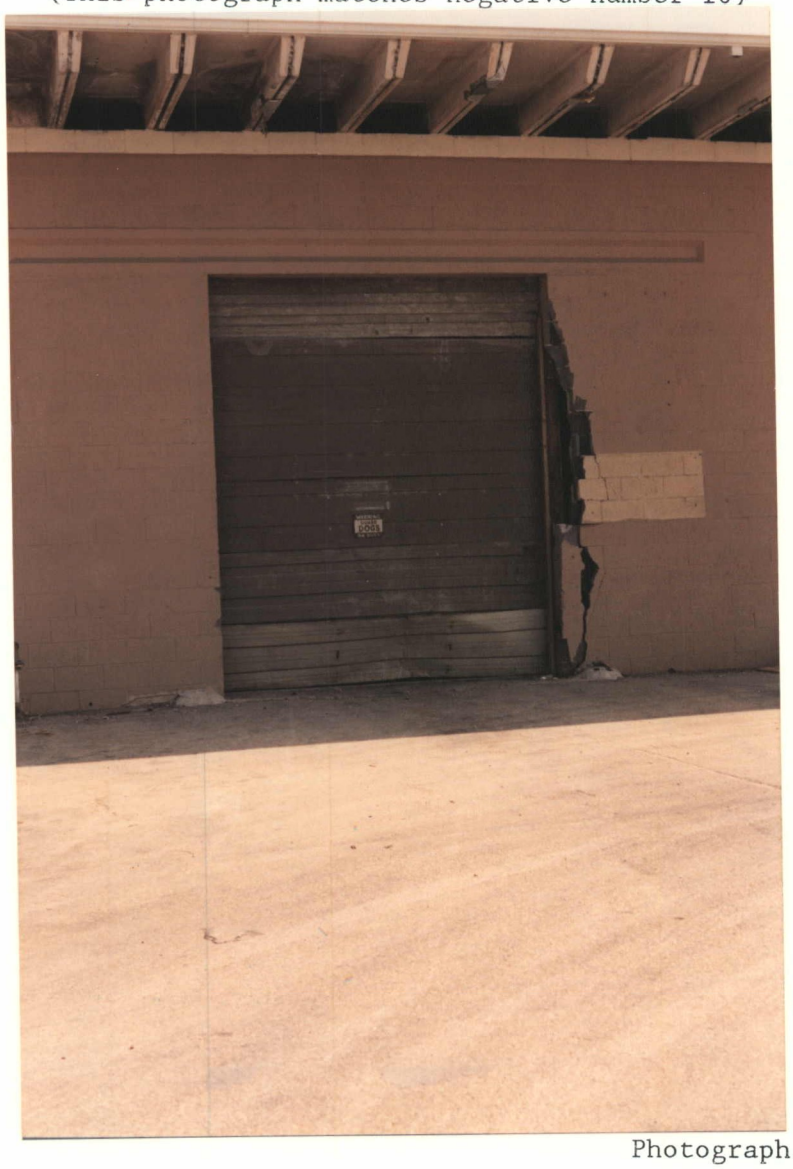
(This photograph matches negative number 15)

PHOTOGRAPH 13

Site Name:	Capitol Metal Finishing, Inc.	CERCLIS:	TXD048452064
Location:	Austin, Texas	TDD Number:	F-06-9010-03
Photographer:	Warren P. Mitchell	Witness:	Trudy Tannen
Date: 11/16/90	Time: 1331	Direction:	East, Southeast

Comments: Door with broken cement.

(This photograph matches negative number 16)



PHOTOGRAPH 14

Site Name:	Capitol Metal Finishing, Inc.	CERCLIS:	TXD048452064
Location:	Austin, Texas	TDD Number:	F-06-9010-03
Photographer:	Warren P. Mitchell	Witness:	Trudy Tannen
Date: 11/16/90	Time: 1332	Direction:	Northeast

Comments: Front of Building.

(This photograph matches negative number 17)

1509 Main Street, Suite 900
Dallas, Texas
75201-4809

ICF TECHNOLOGY
INCORPORATED

Negatives For Capitol Metal Finishing
TDD Number: F-6-9010-03

REFERENCE 1

REFERENCE 2

31593

No. 484,398

STATE OF TEXAS,	§	IN THE DISTRICT COURT OF
	§	
Plaintiff,	§	
	§	
VS.	§	TRAVIS COUNTY, TEXAS
	§	
CAPITOL METAL FINISHING, INC., and CARL BOOTH,	§	
	§	
	§	
Defendants.	§	167 JUDICIAL DISTRICT

STATE OF TEXAS'S ORIGINAL PETITION AND APPLICATION FOR INJUNCTION

TO THE HONORABLE JUDGE OF SAID COURT:

COMES NOW the State of Texas, plaintiff, by and through its Attorney General, Jim Mattox, on behalf of the people of Texas and the Texas Water Commission, an agency of the State, having statewide jurisdiction, and hereby files this suit against Defendant Capitol Metal Finishing, Inc., and Defendant Carl Booth, and for cause of action would respectfully show the Court as follows:

I.

Plaintiff, the State of Texas, is authorized to bring this suit through its Attorney General at the request of the Texas Water Commission (hereinafter known as the "TWC" or the "Commission"), pursuant to the Texas Solid Waste Disposal Act, TEX.HEALTH & SAFETY CODE ANN. §361.001, et seq., (Vernon 1989) (hereinafter known as "the Act"). No filing fee or other security for costs is required of the State of Texas. TEX.CIV.PRAC. & REM. CODE §6.001 (Vernon 1986).

FILED

MAY 15 12 23 PM '90

John Dickson

II.

DEFENDANTS

2.1. Defendant, Capitol Metal Finishing, Inc., is a corporation duly formed and existing under the laws of the State of Texas and may be served by serving its agent, Carl E. Booth, at 800 North Georgetown Road, Round Rock, Texas 78680. Defendant Carl E. Booth is an individual residing in Williamson County, Texas. Defendant Booth can be served with process at 800 North Georgetown Road, Round Rock, Texas 78680.

III.

VENUE

3.1. All violations or threats of violations of the Act and any orders submitted by the Commission occurred or are occurring in Travis County, Texas and venue is proper in Travis County pursuant to the Act.

IV.

BACKGROUND

4.1. This case involves an electroplating business operated under the name Capitol Metal Finishing, Inc., located on Block A, Lots 7 and 8 in the Twin Oaks Industrial Subdivision at 3909 Warehouse Row, Austin, Travis County, Texas. The plating shop has been in operation at this location since approximately 1980. The Defendant, Capitol Metal Finishing, Inc., conducted aluminum anodizing, zinc, cadmium, and nickel plating, and various other types of specialty metal plating at the site. The company generated

and received hazardous material and hazardous waste during the conduct of its business. There is at this time and has been in the past an actual release of solid waste at the site that presents an imminent and substantial endangerment to the public health and safety or the environment.

Capitol Metal Finishing, Inc. was issued Registration No. 31593 from the Texas Water Commission. The Company was supposed to operate its business involving waste by pretreatment prior to discharge to the City of Austin's wastewater treatment facility, and as a 90-day storage facility, pursuant to 31 TEX.ADMIN. CODE §335.69. The following wastes were generated at the Company's facility:

EPA hazardous waste Nos. F001, F006, F007, F008, F009, and F019, which are listed hazardous waste in 40 C.F.R. §261.30, and EPA waste Nos. D002, D003, D006, and D007, which are characteristically hazardous waste as defined in 40 C.F.R. §§26.122, 261.23, and 261.24.

The Company was supposed to store 1, 1, 1-trichloroethane, EPA hazardous waste No. F001, in drums prior to shipment off-site for disposal. Waste No. F001 was generated during a degreasing process. The electroplating process generates EPA Waste Nos. F007, F008, F009, and D002, which were supposed to be treated in an on-site batch wastewater pretreatment system prior to discharge to the City of Austin's wastewater treatment plant. EPA Waste Nos. F006 and F019 are sludges generated as a result of the pretreatment process. Due to spills, the Company has generated EPA Wastes Nos. D006 and D007, which are EP toxic because of cadmium and chromium content,

and EPA Waste No. D003, which is reactive due to cyanide content; all three wastes are characteristically hazardous.

Surface water runoff from the Company's facility flows into Blunn Creek, then into Town Lake in Austin, Texas. Town Lake has designated uses of contact recreation, high quality aquatic habitat, and public water supply under the Texas Water Commission Surface Water Quality Standards (December, 1986). The Edwards Aquifer underlies the Company's facility. The aquifer occurs approximately 75 feet below the surface in this area.

On numerous occasions since January 1, 1985, field representatives of the Texas Water Commission have documented releases of hazardous wastes, both on site and running off the company's property, all in violation of the Texas Solid Waste Disposal Act. On numerous occasions since January 1, 1985, the field representatives of the Texas Water Commission have documented the company's failure to label hazardous waste containers, storage times greater than 90 days, and inadequate management of hazardous waste, and inadequate management of and use of hazardous waste containers and tanks in a manner so as to violate the Act.

On March 9, 1988, the Texas Water Commission issued an order entitled, "An Agreed Order, Determining Violations by Capitol Metal Finishing, Inc. under the Texas Solid Waste Disposal Act, TEX.REV.CIV.STAT.ANN. art. 4477-7 (Vernon Supp. 1987), and the Texas Water Code, TEX.WATER CODE ANN. (Vernon Supp. 1987); Assessing Administrative Penalties; and Requiring Certain Actions of Capitol

Metal Finishing, Inc.". A true and correct copy of the Order is attached hereto as Exhibit A and incorporated herein by reference. It is referred to herein as "the Order." The Order is in all respects proper and valid and it remains in force.

The Order makes findings of fact and conclusions of law and finds as a matter of law, that Capitol Metal Finishing, Inc., violated the Act and the Rules of the Texas Water Commission promulgated thereunder by its conduct at the site at 3909 Warehouse Road, Austin, Travis County, Texas (the site) where it conducted the metal plating business.

The decretory section of the Order had two separate aspects:

In the first part of the decretory section, the Defendant is ordered to pay an administrative penalty of $28,000 to the State of Texas to the credit of the General Revenue Fund, to be paid as follows:

$10,000 is to be paid as follows:

$1,000 is to be paid within 30 days of the date that the Order was signed, and $4,000 was to be paid six months from the date the Order was signed, and $5,000 was to be paid within one year of the date the Order was signed. The remaining $18,000 of the penalty was to be deferred pending a finding by the Commission that there had been a successful completion of decretory provisions Nos. 4 - 8 contained in the Order. Defendant Capitol Metal Finishing, Inc. failed to complete the decretory provisions referenced above, and to date has not paid any of the civil penalty assessed in the Order.

In the second part of the decretory section, Defendant Capitol Metal Finishing, Inc. was ordered to undertake certain specific actions to cease violations of the law, to clean up the site in accordance with an approved closure plan, to develop an inspection plan and schedule to properly label all hazardous waste containers on site, and to submit a remedial action plan to address the removal of all soil contaminated as a result of discharges of industrial solid waste by the company. Reference is made to Exhibit A for a complete description of the actions ordered by the Texas Water Commission.

Defendant Capitol Metal Finishing, Inc. has not completed nor accomplished the actions required by the second part of the decretory portion of the order.

V.

CLAIM TO REDUCE ADMINISTRATIVE PENALTY TO JUDGMENT

Plaintiff is entitled to a money judgment against Defendant Capitol Metal Finishing, Inc., in the sum of $28,000, the amount assessed by the Commission in its Order of March 9, 1988. Since this amount is a liquidated sum, Plaintiff is entitled to interest on the $28,000 at the legal rate allowed by law, from the date of the issuance of the Order, or as set forth in the Order for the various sums as they became due.

VI.

VIOLATIONS OF THE ADMINISTRATIVE ORDER

By failing to carry out the actions required by order, Defendant, Capitol Metal Finishing, Inc. has violated an order of the Texas Water Commission. Any person who violates an order of the

Texas Water Commission is liable for a civil penalty of not less than $100 nor more than $25,000 for each day of violation. TEX.HEALTH & SAFETY CODE ANN. §361.223(b) (Vernon 1989). Plaintiff is entitled to recover civil penalties against Defendant within the range allowed by law for each day from March 9, 1988, the day the Order was final, through the date of trial, plus interest at the legal rate from the date of judgment until paid, for violations of the Order by Defendant Capitol Metal Finishing,Inc.

VII.

CLAIM FOR INJUNCTIVE RELIEF

Defendant Capitol Metal Finishing, Inc. should be ordered to carry out every action required in the Texas Water Commission Order of March 9, 1988, pursuant to §361.224(a) of the Act. No bond is required of the State of Texas prior to the granting of an injunction, pursuant to §361.228(b) of the Act.

VIII.

VIOLATIONS OF THE ACT BY CARL BOOTH
AND CAPITOL METAL FINISHING, INC.

From January 1, 1986 to November, 1986, and from June, 1987 to the present, Defendant Carl Booth, was a manager, operator and/or owner of the Capitol Metal Finishing, Inc. electroplating business at 3909 Warehouse Road site.

Section 361.223(a) of the Texas Health & Safety Code states:

> A person may not cause, suffer, allow, or permit the collection, storage, handling, transportation, processing, or disposal of solid waste or the use or operation of a solid waste facility to store, process, or dispose of solid waste, or to extract materials under §361.092 in violation of this chapter or a rule, permit, license, or other order of the department or commission, . . .

> (b) any person who violates any provision of this chapter or any rule, permit, license, or order of the department or commission . . . is subject to a civil penalty of not less than $100 or more than $25,000 for each act of violation and for each day of violation, as the court may deem proper, to be recovered in the manner provided by this section."

As the manager and owner of the Capitol Metal site and business, and as a corporation which is a separate legal entity, Capitol Metal Finishing, Inc. and Defendant Carl Booth are persons who caused, suffered, allowed, or permitted violations of the Act to occur and are liable for civil penalties of not less than $100 nor more than $25,000 for each violation, and for each day of violation. TEX.HEALTH & SAFETY CODE ANN. §361.223(b) (Vernon, 1989). Plaintiff is entitled to recover civil penalties against Defendant Carl Booth and Defendant Capitol Metal Finishing, Inc. within the range allowed by law for each day that a violation occurred. The liability of the corporation and of Carl Booth is not joint and several. Each should be held separately liable for a civil penalty for the violations.

A.

UNAUTHORIZED DISCHARGES

31 TEX.ADMIN. CODE §335.4 states:

> GENERAL PROHIBITIONS. In addition to the requirements of §335.2 of this title (relating to Permit Required), no person may cause, suffer, allow or permit the collection, handling, storage, or processing, or disposal of industrial solid waste in such a manner so as to cause:

(1) The discharge or imminent threat of discharge of industrial solid waste or municipal hazardous waste into or adjacent to the waters in the state without specific authorization for such a discharge from the Texas Water Commission;

(2) The creation and maintenance of a nuisance; or

(3) The endangerment of the public health and welfare.

Authorized representatives of the Texas Water Commission inspected the Capitol Metal Plating site at 3909 Warehouse Road in Austin, Texas and observed that the named Defendants caused, suffered, allowed, or permitted the discharge of waste from the site to waters in the State without obtaining specific authorization for such discharges on the following dates: September 9, 1986, October 22, 1986, April 28, 1987, February 5, 1988, February 16, 1989, and June 15, 1989.

Each day that Defendants permitted, caused and/or allowed the unpermitted discharges into the waters of the State constitutes a separate violation of the Act.

B.

SPECULATIVE ACCUMULATION

31 TEX.ADMIN. CODE §335.69(a) states:

> Except as provided in subsections (f)-(h) of this section, a generator may accumulate hazardous waste on-site without a permit for interim status for 90 days or less, provided that:
>
> 1. The waste is placed in containers and the generator complies with the provisions adopted by reference in §335.112(a)(8) of this title (relating to Standards), or the waste is placed in tanks, and the generator complies with the requirements adopted by reference in §335.112(9) of this title (relating to Standards), except 40 Code of Federal Regulations §265.197(c) and §265.200. . . .

> 2. The date upon which each period of accumulation begins is clearly marked and visible for inspection on each container; and
>
> 3. While being accumulated on site, each container and tank is labeled or marked clearly with the words, "Hazardous Waste" and
>
> 4 The generator complies with the requirements for owners or operators contained in 40 C.F.R. Part 265, subparts C and D as incorporated by reference in §335.112 of this title, (relating to Standards), 40 Code of Federal Regulations §265.16, and 335.113 of this title . . .

An authorized representative of the Texas Water Commission inspected the metal plating site on June 20, 1986, July 17, 1986, September 9, 1986, October 22, 1986, March 11, 1987, and on February 5, 1988, and observed that the named Defendants had accumulated hazardous waste on site without a permit for a period of more than 90 days, the containers were not properly labled and the Defendants did not store this material according to the provisions of the Act, all in violation of the Act.

Each day that the Defendants caused, permitted or allowed the storage of the above-said waste beyond the allowed period; failed to properly label the containers; and each day of storage in an unauthorized manner constitutes a separate violation of the Act.

C.

IMPROPER STORAGE

31 TEX. ADMIN. CODE §335.112 (a)(8) and (9) adopt by reference 40 CFR 265 Subparts I and J respectively. These provisions set forth the requirements for storage containers and tanks used to store hazardous waste. An authorized representative of the

department inspected the Capitol Metal Plating site on January 4, 1986, June 20, 1986, July 17, 1986, September 9, 1986, October 22, 1986, March 11, 1987, April 28, 1987, September 8, 1987, November 9, 1987, December 28, 1987, February 5, 1988, February 16, 1989, and February 28, 1989 and observed on those dates that the named Defendants caused, suffered, permitted and/or allowed the storage of hazardous waste in violation of the following provisions:

40 CFR 265.171: Hazardous waste was stored in containers which were leaking, and the contents were not transferred to containers which were in good condition.

40 CFR 265.172: Containers were used to store hazardous waste which caused the containers to corrode and leak.

40 CFR 265.192(b): Tanks used to store hazardous waste were utilized in a manner that caused the tank to corrode and leak.

Each day that the Defendants failed to store the waste in proper containers and each instance in which they failed to store it in proper containers constitutes a seperate violation of the Act.

D.

FAILURE TO NOTIFY OF CHANGE IN HANDLING WASTE

31 TEX.ADMIN. CODE §335.6(b) states:

> Any person who stores, processes, or disposes of municipal hazardous waste or industrial solid waste shall have the continuing obligation to immediately provide written notice to the executive director of any changes or additional information concerning waste composition, waste management methods, facility engineering plans and specifications, and the geology where the facility is located to that reported in subsection (a) of this section, authorized in any permit, or stated in any application filed with the commission . Any information provided under this subsection shall be submitted to the executive director in duplicate form.

An authorized representative of the Commission inspected the Capitol Metal Plating site on February 16, 1989, and observed that Defendants Carl Booth and Capitol Metal Finishing, Inc. were utilizing a "boil down tank" to treat and store electroplating waste solutions that had not been used or noted by the inspectors during past inspections of the site. Defendants had not previously notified the Executive Director of the Commission of the use of this tank, nor did the Defendants notify the executive director at the time of this inspection of its use, all of which violated the Act.

IX.

ADDITIONAL CLAIM FOR INJUNCTIVE RELIEF

9.1 Texas Health and Safety Code §361.272 provides for injunctive relief against individuals and companies who are responsible for a release of solid waste that presents an imminent and substantial endangerment to the public health and safety or the environment pursuant to Texas Health and Safety Code §361.271.

9.2 Defendant Capitol Metal Finishing, Inc. and Defendant Carl Booth are contemplated by the Code as being responsible for the release of solid waste that presents an imminent and substantial endangerment to the public health and safety or the environment pursuant to Texas Health and Safety Code §361.271.

9.3 Accordingly, Defendants Capitol Metal Plating, Inc. and Defendant Carl Booth should be ordered to carry out each and every action required by the Texas Water Commission, pursuant to §361.273 of the Code. No bond is required of the State of Texas prior to the granting of an injunction, pursuant to §361.228(b) of the Act.

9.4 The conditions set forth above also constitute an ongoing violation of 31 TEX.ADMIN. CODE §335.4(1) which will continue until the threat of discharge is alleviated or any past or continuing discharges are remedied. Defendant Capitol Metal Finishing, Inc. and Defendant Carl Booth should be required to take whatever steps are necessary to prevent any additional discharges of waste into waters in the state, and to clean up any and all past spills. An injunction ordering Defendants to do these things is specifically authorized by the Texas Solid Waste Disposal Act.

9.5 The injunction against the Defendants should include but not be limited to requirements that defendants submit and carry out detailed engineering plans for chemical testing of the groundwater and the soil to determine if any chemicals and/or hazardous waste and/or material above background levels are detected, that the rate and extent of contamination be determined; and that a program of groundwater recovery and recovery of all contaminated soil immediately be instituted and continuously carried out until no contamination above background level is detectable for a period of 30 continuous years at the site..

9.6 Defendant Carl Booth as well as Defendant Capitol Metal Finishing, Inc. should also be required to comply with the decreatory language of the Order issued by the Texas Water

Commission on March 9, 1980, and take the steps set forth in the Order to assure that no future releases of solid waste occur, and that any and all releases that have occurred shall be properly cleaned, disposed of and eliminated.

X.

CLAIM FOR ATTORNEYS FEES AND INVESTIGATIVE COSTS

This suit is instituted by the Attorney General under subchapter G for injunctive relief and for recovery of a civil penalty. The Attorney General is entitled to recover and collect reasonable attorney's fees, court costs, and reasonable investigative costs incurred in relation to the proceeding, not to exceed $250,000. In the event of an appeal to the Court of Appeals or to the Supreme Court, the Attorney General will be entitled to recover additional reasonable attorney's fees and court costs on behalf of the State. Acts, 1989, 71st Leg., Ch. 639, §2, p. 220 (Vernon Sess.L.Serv. 1989).

PRAYER

WHEREFORE, PREMISES CONSIDERED, Plaintiff prays:

1. That Defendants be cited to appear and answer herein;

2. That upon final trial of this cause, a permanent injunction be granted ordering Defendants to carry out each action required in the Texas Water Commission Order of March 9, 1988, and as set forth above.

3. That upon final trial of this cause, the State have a money judgment against Defendant Capitol Metal Finishing, Inc., in the amount of $28,000 plus prejudgment and postjudgment interest at the legal rate from the date of the Texas Water Commission Order was final until paid;

4. That upon final trial of this cause, the State have an additional money judgment against Defendant Capitol Metal Finishing, Inc. for violation of the Texas Water Commission Order of March 9, 1988, plus interest at the legal rate from the date of judgment until paid.

5. That upon final trial of this cause, the State have an additional money judgment against Defendant Capitol Metal Finishing, Inc., and Defendant Carl Booth for civil penalties for violations of the Act, and the Rules and Regulations promulgated by the Texas Water Commission pursuant thereto, plus interest at the legal rate from the date of judgment until paid;

6. That Plaintiff receive from Defendants reasonable attorney's fees, reasonable investigative costs, and all of its court costs in this action; and

7. That Plaintiff be granted all other relief, general and special, in law and in equity, to which it may show itself to be justly entitled.

Respectfully submitted,

JIM MATTOX
Attorney General of Texas

MARY F. KELLER
First Assistant Attorney General

NANCY N. LYNCH
Assistant Attorney General
Chief, Environmental Protection
Division

LESLIE D. ROMO
State Bar No. 17225800
Assistant Attorney General
Environmental Protection Division

P. O. Box 12548
Austin, Texas 78711-2548
512/463-2012

35LDR

TEXAS WATER COMMISSION

AN AGREED ORDER

Determining Violations by Capitol Metal Finishing, Inc. under the Texas Solid Waste Disposal Act, TEX. REV. CIV. STAT. ANN. art. 4477-7 (Vernon Supp. 1987), and the Texas Water Code TEX. WATER CODE ANN. (Vernon Supp. 1987); Assessing Administrative Penalties; and Requiring Certain Actions of Capitol Metal Finishing, Inc.

On this 24th day of February, 1988, came on to be considered the petition and report of the Executive Director, alleging violations of the Texas Solid Waste Disposal Act, TEX. REV. CIV. STAT. ANN. art. 4477-7 (Vernon Supp. 1987) (the "Act"), and the Texas Water Code, TEX. WATER CODE ANN. (Vernon Supp. 1987) ("the Code"), and the Texas Water Commission ("Commission") rules pertaining to industrial solid waste management and requesting appropriate relief, including administrative penalties. The facility made the subject of the Executive Director's petition is Capitol Metal Finishing, Inc., located on Block A, Lots 7 and 8 in the Twin Oaks Industrial Subdivision at 3909 Warehouse Row in Austin, Travis County, Texas.

This Agreed Order is entered solely for the purpose of resolving the matters raised in the Executive Director's Petition and Preliminary Report and is entered upon the recommendation and consent of the Executive Director and Capitol Metal Finishing, Inc., and without any admission by Capitol Metal Finishing, Inc. of the allegations contained in the Findings of Fact and Conclusions of Law or any other factual or legal matter. For this reason this Agreed Order, or any provision hereof, is not to be construed, and will not be construed, to any extent or for any purposes, however and whenever arising, as an admission of liability or violation, directly or indirectly, on the part of Capitol Metal Finishing, Inc., its successors or assigns; nor shall the Agreed Order be admitted into evidence or used in any way, directly or indirectly, in any judicial or administrative proceeding against any party or in any other manner against any party for any purpose other than in further proceedings by the parties hereto to enforce the terms of this Agreed Order.

After proper notice to Capitol Metal Finishing, Inc. ("the Company"), and after hearing the evidence and argument of the parties, the Texas Water Commission makes the following findings of fact and conclusions of law:

"EXHIBIT A"

Findings of Fact

(1) Capitol Metal Finishing, Inc., located on Block A, Lots 7 and 8 in the Twin Oaks Industrial Subdivision at 3909 Warehouse Row in Austin, Travis County, Texas, is an electroplating operation.

(2) The following wastes are generated at the Company's facility: EPA hazardous waste Nos. F001, F006, F007, F008, F009, and F019, which are listed hazardous wastes in 40 CFR §261.30; and EPA Waste Nos. D002, D003, D006, and D007, which are characteristically hazardous wastes as defined in 40 CFR §§26.122, 261.23 and 261.24.

(3) The Company manages waste by pretreatment prior to discharge to the City of Austin's wastewater treatment facility and as a 90-day storage facility, pursuant to 31 TAC §335.69.

(4) On numerous occasions since January 14, 1986, Commission District Field Representatives have documented releases of hazardous waste both on-site and running off the Company's property.

(5) On numerous occasions since January 14, 1986, Commission District Field Representatives have documented the Company's failure to label hazardous waste containers, storage times greater than 90 days, and inadequate management of hazardous waste containers and tanks.

Conclusions of Law

(1) The Commission has jurisdiction to assess administrative penalties for violations of Commission rules, the Texas Water Code, and the Solid Waste Disposal Act pursuant to §8b of the Act and §26.136 of the Code, and to require certain actions of the Company pursuant to §8c of the Act and §26.019 of the Code.

(2) The events described in Finding of Fact No. 4 above constitute a violation of 31 Texas Administrative Code ("TAC") §355.4 and §26.121 of the Code.

(3) The events described in Finding of Fact No. 5 above constitute a violation of 31 TAC §335.69.

(4) Certain actions must be taken by the Company to bring the Company's facility into compliance with applicable laws and to ensure future compliance.

(5) An administrative penalty of Twenty-Eight Thousand Dollars ($28,000) is justified by the facts recited herein, considered in light of the factors stipulated in §8b of the Act.

REFERENCE 3

SAMPLING AND ANALYSIS PLAN
CAPITOL METAL FINISHING, INC.

Prepared for:

Capitol Metal Finishing, Inc.
Austin, Texas

Prepared by:

Environmental Consulting Associates
Austin, Texas

July, 1990

ECA Environmental Consulting Associates

Oakpointe, Suite 208
9111 Jollyville Road
Austin, Texas 78759
(512) 346-0978
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1.0 Introduction

Capitol Metal Finishing, Inc. (CMF) retained Environmental Consulting Associates, Inc. (ECA) to prepare a plan for investigation studies of the CMF site. This plan is to be submitted to the Texas Water Commission for approval prior to commencement of field activities.

This plan is referred to as the Sampling and Analysis Plan for the Capitol Metal Finishing Site.

1.1 Background Information

Capitol Metal Finishing is located on Block A, Lots 7 and 8 in Twin Oaks Industrial Subdivision at 3909 Warehouse Row, Travis County, Austin, Texas. Property use in the area is primarily commercial and residential.

Operations at CMF are ceased. In 1983, the zinc and nickel plating operation at Austin Painting and Plating (APP) merged with CMF. Many of the same wastes were transferred from APP to CMF. CMF operated an electroplating facility which did aluminum anodizing and zinc, chromium, nickel, and various types of specialty plating. Hazardous wastes generated from this operation included listed wastes (EPA hazardous waste nos. F001, F006, F007, F008, F009, and F019) which are toxic due to solvent, heavy metal, and cyanide content, and reactive due to cyanide content. Other wastes generated were hazardous by the characteristics of: corrosivity (EPA hazardous waste no. D002), due to a pH of less than 2 or greater than 12.5; reactivity (EPA hazardous waste no. D003), due to cyanide content; and EP toxicity (EPA hazardous waste nos. D006 and D007) due to cadmium and chromium content.

Hazardous waste 1,1,1-trichloroethane (EPA hazardous waste no. F001) was generated in a degreasing process. The spent solvent was placed

2.0 Geology and Hydrogeology

2.1 Regional Geology and Hydrogeology

The topography of Travis County is divided into the physiographic regions of the Edwards Plateau, Blackland Prairie, and Grand Prairie. The west and southwest portions of Travis County are characterized by the Edwards Plateau which is also referred to as the Hill Country. To the east of the Edwards Plateau is the gently rolling Blackland Prairie. The Balcones fault zone divides the Edwards Plateau from the Blackland Prairie. The northwestern portion of the county is characterized by the Grand Prairie which is also locally referred to as the Lampasas Cut Plain. The outcrops and geologic units strike in a northeast to southwest direction and dip in a southeasterly direction.

Travis County is located in the Colorado River drainage basin. The Colorado River flows from the northwest to southeast through the center of the county. The Colorado River is fed by several tributaries. The Pedernales River, Barton Creek and Onion Creek enter the river from the south. Cow and Sandy Creeks and Gilleland Creek enter the river from the north.

Travis County is underlain by several geologic and hydrogeologic units which yield fresh to moderately saline ground water. In order of their importance as aquifers are: the Edwards and Associated limestones, the Trinity Group, the alluvium and terrace deposits, the Austin Chalk, the Navarro and Taylor Groups, igneous rocks around Pilot's Knob, and the Midway Group.

The Edwards Aquifer is the primary aquifer in Travis County. It is composed of the Cretaceous-age Edwards Limestone, the underlying Commanche Peak Limestone and the overlying Georgetown Limestone. The aquifer is wider in Williamson, Hays and Bell Counties than in Travis County. This narrowing of the aquifer is attributed to the

intense faulting and topographic variations of the Balcones fault zone. Recharge to the aquifer is from outcrops of the Edwards and associated limestones. However, the aquifer is recharged by areas slightly east of the outcrop where streamflow and rainfall on younger formations may percolate downwards into the aquifer, especially if these younger formations are faulted.

Weathering of the limestone and marl that comprise the aquifer have yielded soils on the outcrop which are typically dark brown, grayish brown, and reddish brown, silty to clayey loams. The soils range in thickness from less than 5 inches to as much as 5 feet.

To the east of the Edwards Aquifer, the Cretaceous rocks are younger than the Edwards and include, from oldest to youngest, the Del Rio Clay, Buda Limestone, Eagle Ford Shale, Austin Chalk, Taylor Marl and Navarro Group. These geologic formations comprise minor aquifers which yield small amounts of water in Travis County. The water quality in these aquifers ranges from fresh to moderately saline and is generally high in sulfates, chlorides, and nitrates.

The western half of Travis County is dominated by the Trinity Group aquifer. The Trinity Group is subdivided into the lower, middle, and upper Trinity.

The lower Trinity Aquifer is comprised of the Hosston and Sligo Members of the Travis Peak Formation. The water quality is usually slightly saline in northwestern Travis County and is used primarily for municipal purposes. The water quality in north-central Travis County is moderately saline.

The Hensell Sand and Cow Creek Limestone Members of the Travis Peak Formation and the lower member of the Glen Rose Formation comprise the middle Trinity Aquifer. Water quality is slightly saline and contains high sulfate which is derived from gypsum beds. The

aquifer yields small quantities of water but is sufficient for domestic and livestock purposes.

The upper Trinity Aquifer is comprised of the upper member of the Glen Rose Formation and the Paluxy Formation. Well yields in this aquifer are small due to low permeabilities but the water is fresh. Well yields are sufficient for domestic and livestock use.

2.2 Local Geology and Hydrogeology

Locally, it appears that the CMF site is located on an Austin Chalk outcrop of Cretaceous age. The Austin Chalk is characterized as a light gray chalk, limy marl, and chalky limestone with some bentonite, glauconite and pyrite modules. In the vicinity of Pilot's Knob (east of Austin) the Austin Chalk has been partially metamorphosed into recrystallized limestone. The Austin Chalk ranges in thickness from 300 to 500 feet except in the outcrops where the thickness is considerably less. The site is located on the upthrown side of a fault located approximately 0.25 mile east of the site. Fluvial terrace deposits of Pleistocene age are to the west and south of the site. Blunn Creek, which flows northward to Town Lake, is located approximately 0.08 mile from the site. Runoff from the site flows toward Blunn Creek.

The site is located in an area of Travis County which has been classified as unfavorable for potential ground-water development (Brune and Duffin, 1983). The Austin Chalk yields small to very small amounts of water and is generally confined to the outcrop areas.

In the vicinity of the site, the Edwards Aquifer dips to the northeast. The Edwards in this area is past its downgradient limit of fresh to slightly saline water. The site is not located in the Edwards aquifer recharge zone or transition zone as illustrated on

the Oak Hill, Texas, Edwards Aquifer Recharge Zone Map produced in accordance Title 331 Texas Administrative Code Section 313.

Boring investigations to be performed at the site will further characterize the soil beneath the site.

3.0 Investigative Approach

3.1 Concrete Coring Investigation

In order to determine the depth of penetration of substances into the concrete slab resulting from operations at Capitol Metal, a series of concrete cores will be taken at the general location shown in Figure 3-1. Specific points will be field located by the Engineer.

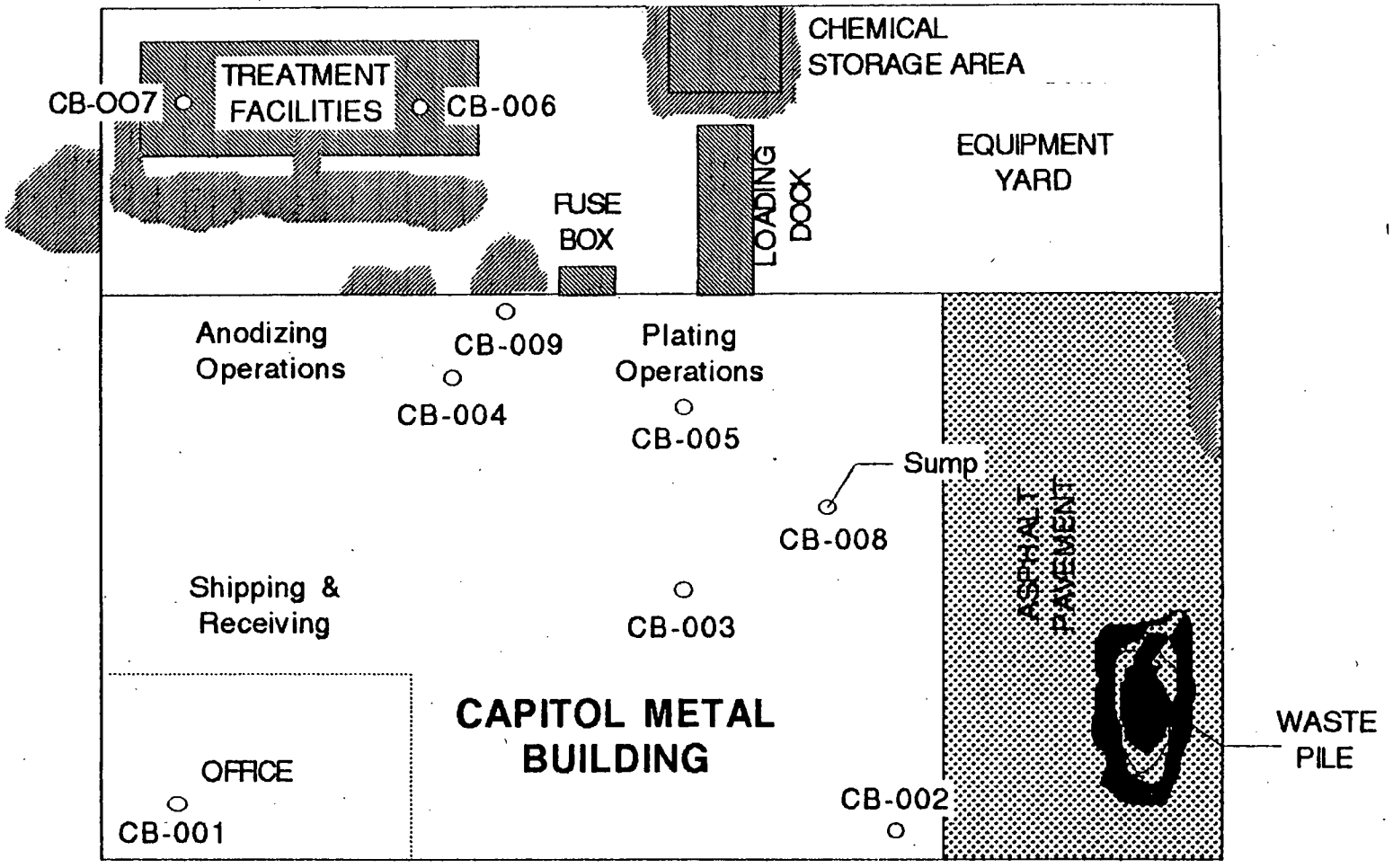
The intent of this sampling program is to determine if contamination at CMF has penetrated the concrete slab of the building and the underlying fill soil. Areas to core were selected to determine the penetration in each of the former process areas at locations where visible erosion was the most severe.

All concrete cores will be collected using a 1 H.P. hand-held auger equipped with a coring barrel capable of retrieving cores up to 2' in length. This is a low R.P.M. cutting device which should provide a uniform core at each sampling point.

The cutting barrel of the auger will be decontaminated using a non-phosphate detergent wash, followed by a deionized water rinse. Rinsate liquid from the decontamination process will be containerized. This process will be repeated between all samples locations. At the completion of coring activities, all core locations will be filled with concrete.

Sample Locations 002, 003, 004, 005, 006, 007 and 008

Coring will be performed by placing the auger over the location selected by the Engineer and advancing the cutting barrel until it cuts through the bottom of the slab. The auger will then be lifted to retrieve the core sample. The core will be extracted from the core barrel and inspected visually for signs of staining. The



N

Waste Removal Area

Proposed Concrete Boring Location

ECA

Environmental Consulting Associates
9111 Jollyville Rd. Austin, Texas

Figure No. 3-1
Concrete Coring Locations

Drawn By:	Date:	Project No.:
Chk'd By:	Revised:	Dwg. No.:

REFERENCE 4

Technical Recommendations

1. Because of the flagrant and repeated disregard for environmental regulations demonstrated by CMF during the past three years and particularly since the Agreed Order was issued on March 9, 1988, the stipulated penalty should be immediately forfeited.

2. Terms of the Agreed Order or any subsequent order should also cover Consolidated Metal Finishing (SW Reg. No. 38570) in Round Rock, since it is owned and operated by the same parties.

3. If reasonable clean-up standards for cyanide, cadmium, chromium, lead, nickel, and zinc cannot be agreed on, TWC staff should take four background samples within 1/2 mile radius of the site. The samples will be analyzed for total cyanide and total metals as listed above. The results for each analyte will be averaged and that will be the clean-up level.

4. Written records regarding waste determination should be made available for all waste streams, particularly those wastes associated with the plant closure, such as the floor sweepings and other debris seen in photos #2 and #3.

5. Written records regarding the inspection of containers and tanks from April 1988 to the present should be made available for review.

6. Legal clarification should be made regarding SQG status and that hazardous wastes associated with an exempt wastewater treatment unit are counted in the volume determination. It is the unit, only, that is exempt from RCRA. The contents are not exempt, if those contents are hazardous due to listing or characteristic. But, at what point does the 90-day accumulation period begin?

7. The unauthorized processing of hazardous waste, use of the boil down tank, should cease immediately. The only legitimate processing of hazardous waste at CMF is through the pretreatment system which has been permitted by the City of Austin and may meet the definition of a wastewater treatment unit.

8. Capitol Metal Finishing's permit to discharge industrial wastewater to sanitary sewer expires 3-15-89. If it is not renewed by the City of Austin, all waste generated by CMF should become subject to RCRA. In other words, CMF would lose their wastewater treatment exemption.

ATTACHMENTS

I. Agreed Order 3-9-88
Actions to be Undertaken

II. Closure Plan Submitted to City of Austin

III. CMF Description of Clean-up Activities

IV. Chain-of Custody Tags

V. Manifests & Shipping Documents

ATTACHMENT I.

Agreed Order 3-9-88 * Actions to be Undertaken

NOW, THEREFORE, BE IT ORDERED BY THE TEXAS WATER COMMISSION that Capitol Metal Finishing, Inc. shall be assessed an administrative penalty of Twenty-Eight Thousand Dollars, ($28,000) for violations of the Texas Solid Waste Disposal Act, the Texas Water Code and the rules of the Texas Water Commission. Ten Thousand Dollars ($10,000) of this penalty shall be paid as follows: One Thousand Dollars ($1,000) shall be paid within thirty (30) days from the date this Order is signed, and Four Thousand Dollars ($4,000) shall be paid six months from the date this Order is signed, and Five Thousand Dollars ($5,000) shall be paid one year from the date this Order is signed. The remaining Eighteen Thousand Dollars ($18,000) of the penalty shall be deferred pending a finding by the Commission that there has been successful completion of decretal provisions No. 4 through 8 below, and continuous compliance with these provisions for a period of one year following the completion of decretal provisions No. 4 through 8, and substantial continued compliance with decretal provisions No. 1 through 3 for the duration of this Order. If the Commission finds that the decretal provisions have not been complied with during that time, the Commission shall issue an order, after notice and opportunity for hearing, and the deferred penalty amount of $18000 shall become due. The disposition of this administrative fine resolves only those matters raised by the Executive Director's Preliminary Report, and the Commission shall not be constrained in any manner from considering any administrative fines for violations of the Texas Solid Waste Disposal Act, the Texas Water Code or the regulations or orders of the Texas Water Commission occurring after the date this Order is signed or which are not raised in the Executive Director's Preliminary Report. All checks rendered to pay penalties imposed by this Order shall be made out to "The State of Texas - General Revenue Fund." This penalty shall be paid within thirty (30) days of the date of this Order, and mailed to the Chief Fiscal Officer, Texas Water Commission, P. O. Box 13087, Capitol Station, Austin, Texas 78711-3087, with the notation, "Re: Capitol Metal Finishing, Inc., Enforcement Order".

IT IS FURTHER ORDERED BY THE TEXAS WATER COMMISSION that **Capitol Metal Finishing, Inc. shall undertake certain actions as follows:**

(1) Beginning immediately from the date this Order is signed, the Company shall continue to conduct hazardous waste determinations on all wastes generated at the facility for which a hazardous waste determination has not been completed as required by 31 TAC §335.62.

(2) Beginning immediately from the date this Order is signed, the Company shall continue to ship all hazardous wastes which are currently in storage and have been in storage for more than 90 days, off-site to an authorized facility for disposal. All shipments of Class I industrial solid wastes must be accompanied by a Uniform Hazardous Waste Manifest and must comply with all applicable Department of Transportation ("DOT") shipping requirements.

(3) Beginning immediately from the date this Order is signed, the Company shall continue to transfer the contents of all leaking containers and tanks to containers that are closed, in nonleaking condition, and compatible with the material to be stored.

(4) Within thirty (30) days from the date this Order is signed, the Company shall develop an inspection plan and schedule, and immediately upon development of the plan, begin inspecting containers and tanks as required by 40 CFR §§265.174 and 265.194(a)(3) and (4).

(5) Within ten (10) days from the date this Order is signed, all containers and tanks used for storage of hazardous waste must be labeled with the words "Hazardous Waste", and all containers used for storage of hazardous waste must be dated with the date upon which accumulation began.

(6) Within thirty (30) days from the date this Order is signed, the Company shall prepare and submit for review and approval a contingency plan addressing actions and procedures for handling hazardous waste emergencies.

(7) Within forty-five (45) days from the date this Order is signed, a personnel training program which meets the requirements of 40 CFR §265.16 shall be developed.

(8) Within forty-five (45) days from the date this Order is signed, the Company must submit a remedial action plan for approval by the Executive Director which will address removal of all soil contaminated as a result of discharges of industrial solid waste by the Company. More specifically the plan should address:

a. An estimate of the volume of soil to be removed and a hazardous waste determination and classification of the resultant waste.

b. Procedures for excavation and packaging of the waste for shipment off-site to an authorized disposal facility. Packaging must comply with applicable DOT requirements and all Class I industrial solid waste must be accompanied by a uniform hazardous waste shipping manifest.

c. A verification sampling plan to confirm the affected area has been restored to background levels for cyanide, cadmium, chromium, nickel, lead, and zinc. The plan must include a description of the sampling methods by which background levels will be established.

d. A description of actions which will be taken to restore the excavated area to its original grade.

e. Assurance by the Company that the work will be carried out under the supervision of a Texas-registered professional engineer and upon completion of the work the facility owner and the professional engineer will submit certification that the work has been carried out in conformance with the plan.

f. The schedule by which each step of the plan will be implemented.

Upon the Executive Director's approval and/or modification of the plan, the Company must initiate the actions required by the plan in accordance with the approved schedule, as may be modified by the Executive Director.

(9) Beginning immediately from the date this Order is signed, the Company shall report all spills to the Executive Director of the Commission and the District 14 Office orally within 24 hours of the spill and in writing within five (5) days of the date the spill occurs.

Failure to comply with any obligation or deadline imposed by this Order shall not constitute a violation of this Order to the extent failure to comply was caused by an event beyond the Company's control. The Company shall notify the Executive Director in writing within seven (7) days of becoming aware of any event which may cause noncompliance with this Order. The Executive Director shall respond in writing within thirty (30) days from receipt of the notification with his decision that the event is or is not beyond the Company's control. The burden of proving that an event was beyond the Company's control shall remain with the Company.

The Chief Clerk shall provide a copy of this Order to each of the parties.

Signed this the 9th day of March, 1988.

TEXAS WATER COMMISSION

Paul Hopkins

Paul Hopkins, Chairman

ATTEST:

Karen A. Phillips

Karen A. Phillips, Chief Clerk

ATTACHMENT II.

TEXAS
INDUSTRIAL WASTE CONTROL
INC.

CLOSURE PLAN

for

CAPITOL METAL FINISHING, INC
3909 WAREHOUSE ROW
AUSTIN, TEXAS

Prepared by

BENJAMIN F JONES

December 13, 1988

RECEIVED
DEC 27 88
LAND OPERATIONS
DISTRICT 14

176 Logan Road • Georgetown, Texas 78628 • (512) 255-9924 • (512)422-3784

1.0 SUMMARY

Capitol Metal Finishing, Inc. (CMF) is closing its metal finishing operations on Warehouse Row and selling its assets to Consolidated Metal Finishing, Inc. of Round Rock, Texas. The move will be accomplished during the month of January, 1989. Cleanup of the facility will begin in January and be completed during February. CMF is asking for an extension of their Industrial Wastewater Permit from the City of Austin until March 1, 1988.

The closure operations will consist of the following steps.

* Shutdown cadmium, chrome, copper, nickel and tin lines by January 8, 1989. The night shift of the zinc plating will be stopped thus reducing the zinc in the waste water by 50%. The nickel and tin lines with their tanks, solutions & pipes will be moved to Round Rock. What happen to cd, cr, & Cu lines

* Shutdown of zinc, black oxide, and anodizing lines & all other baths by January 31, 1988. The anodizing lines will be moved to Round Rock; the black oxide and cadmium and zinc cyanide lines have been sold to other plating companies. The tanks and pipes from these lines will be triple rinsed and disposed/scraped. — what happen to rinse H2O

* All rinsewaters containing little or no controlled metals will be put into sewer after automatic pH adjustment.

* All cyanide & metal containing dead rinses will be pretreated prior to testing and subsequent discharge to sewer. Call IW before discharge.

* All other equipment and contaminated items will be triple rinsed prior to disposal in municipal landfill.

* The floor would be acid rinsed, neutralized & water rinsed twice. Rinse waters would be treated prior to testing and subsequent discharge.

* Chromium plating lines will be discontinued. These bath solutions and untreatable rinse solutions will be deepwelled at a TWC permitted site. — manifest showing vol. — vol. today?

* Cleanup of all contaminated soils outside of facility as part of an existing compliance order.

How do you know Who tests & how? Samples of discharges 2 thru comp.

How catch H2O how?

Segregate all waste now from future waste.

76 Logan Road • Georgetown, Texas 78628 • (512) 255-9924 • (512)422-3784

Need drag on showing [illegible] how these procedures will happen

TWC

2.0 PRETREATMENT OF GENERAL RINSES

Continuous flow rinses will continue to be treated with sodium hydroxide prior to discharge into the city sewer using CMF's existing online pH adjustment system. Continuous readout tapes will be made of the effluent pH. The system will be calibrated and serviced weekly. The system will be checked daily. Robert Camacho with the City of Austin will be notified the same day if the pH exceeded the limits of 6 to 11 for more than 15 minutes. The cause will be identified and immediately corrected. If the cause is from a spill of heavy metals rinses, water to the rinses will be shutoff until the affected water can be pumped into holding tanks for pretreatment.

3.0 Pretreatment of Cyanide & Metal Containing Dead Rinses

Cyanide containing rinses will be treated with sodium hypochlorite at ph 12 to 12.5. The ph will then be dropped to 10 to 10.5 for precipitation of the metal as hydroxides. Chromium containing rinsewaters will be treated with sodium bisulfite at ph 2.5 to 3.0. The pH will then be raised to 7.0 to 8.0 to preciptate the Chromium III hydroxide. These solutions will be sent to clarifiers where the solids will be allowed to precipitate and settle. Clear water will be put down the sewer. Samples will be taken and analyzed if required by the City of Austin. The settled solids/ wastewater treatment sludge will be put in 55 gallon drums approximately 2/3rd's full. Portland cement will be added to this. The solidified mixture will be disposed of in a TWC Class 1 facility.

4.0 TRIPLE RINSING

All discarded tanks, lines, and other contaminated equipment will be rinsed three times with clean water. This water will be pretreated with the rinses in Section 3.0 above. The floor will be swept; these sweepings will be placed with the wastes going to the Class 1 disposal facility. The floor will then treated with a mild acid- pH 2 to 2.5. This acid will be neutralized with an alkaline solution- ph 11 to a neutral ph. This will be squeegeed up and treated as in section 3.0. The floor will be rinsed twice with clean water. This water will be handled as in Section 3.0.

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(2) Beginning immediately from the date this Order is signed, the Company shall continue to ship all hazardous wastes which are currently in storage and have been in storage for more than 90 days, off-site to an authorized facility for disposal. All shipments of Class I industrial solid wastes must be accompanied by a Uniform Hazardous Waste Manifest and must comply with all applicable Department of Transportation ("DOT") shipping requirements.

(3) Beginning immediately from the date this Order is signed, the Company shall continue to transfer the contents of all leaking containers and tanks to containers that are closed, in nonleaking condition, and compatible with the material to be stored.

(4) Within thirty (30) days from the date this Order is signed, the Company shall develop an inspection plan and schedule, and immediately upon development of the plan, begin inspecting containers and tanks as required by 40 CFR §§265.174 and 265.194(a)(3) and (4).

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(6) Within thirty (30) days from the date this Order is signed, the Company shall prepare and submit for review and approval a contingency plan addressing actions and procedures for handling hazardous waste emergencies.

(7) Within forty-five (45) days from the date this Order is signed, a personnel training program which meets the requirements of 40 CFR §265.16 shall be developed.

(8) Within forty-five (45) days from the date this Order is signed, the Company must submit a remedial action plan for approval by the Executive Director which will address removal of all soil contaminated as a result of discharges of industrial solid waste by the Company. More specifically the plan should address:

a. An estimate of the volume of soil to be removed and a hazardous waste determination and classification of the resultant waste.

b. Procedures for excavation and packaging of the waste for shipment off-site to an authorized disposal facility. Packaging must comply with applicable DOT requirements and all Class I industrial solid waste must be accompanied by a uniform hazardous waste shipping manifest.

c. A verification sampling plan to confirm the affected area has been restored to background levels for cyanide, cadmium, chromium, nickel, lead, and zinc. The plan must include a description of the sampling methods by which background levels will be established.

d. A description of actions which will be taken to restore the excavated area to its original grade.

e. Assurance by the Company that the work will be carried out under the supervision of a Texas-registered professional engineer and upon completion of the work the facility owner and the professional engineer will submit certification that the work has been carried out in conformance with the plan.

f. The schedule by which each step of the plan will be implemented.

Upon the Executive Director's approval and/or modification of the plan, the Company must initiate the actions required by the plan in accordance with the approved schedule, as may be modified by the Executive Director.

(9) Beginning immediately from the date this Order is signed, the Company shall report all spills to the Executive Director of the Commission and the District 14 Office orally within 24 hours of the spill and in writing within five (5) days of the date the spill occurs.

Failure to comply with any obligation or deadline imposed by this Order shall not constitute a violation of this Order to the extent failure to comply was caused by an event beyond the Company's control. The Company shall notify the Executive Director in writing within seven (7) days of becoming aware of any event which may cause noncompliance with this Order. The Executive Director shall respond in writing within thirty (30) days from receipt of the notification with his decision that the event is or is not beyond the Company's control. The burden of proving that an event was beyond the Company's control shall remain with the Company.

The Chief Clerk shall provide a copy of this Order to each of the parties.

Signed this the 9th day of March, 1988.

TEXAS WATER COMMISSION

Paul Hopkins

Paul Hopkins, Chairman

ATTEST:

Karen A. Phillips

Karen A. Phillips, Chief Clerk

ATTACHMENT II.

TEXAS
INDUSTRIAL WASTE CONTROL
INC.

CLOSURE PLAN

for

CAPITOL METAL FINISHING, INC
3909 WAREHOUSE ROW
AUSTIN, TEXAS

Prepared by

BENJAMIN F JONES

December 13, 1988

RECEIVED
DEC 27 88
LAND OPERATIONS
DISTRICT 14

176 Logan Road • Georgetown, Texas 78628 • (512) 255-9924 • (512)422-3784

1.0 SUMMARY

Capitol Metal Finishing, Inc. (CMF) is closing its metal finishing operations on Warehouse Row and selling its assets to Consolidated Metal Finishing, Inc. of Round Rock, Texas. The move will be accomplished during the month of January, 1989. Cleanup of the facility will begin in January and be completed during February. CMF is asking for an extension of their Industrial Wastewater Permit from the City of Austin until March 1, 1988.

The closure operations will consist of the following steps.

* Shutdown cadmium, chrome, copper, nickel and tin lines by January 8, 1989. The night shift of the zinc plating will be stopped thus reducing the zinc in the waste water by 50%. The nickel and tin lines with their tanks, solutions & pipes will be moved to Round Rock. What happen to cd, cr, & Cu lines

* Shutdown of zinc, black oxide, and anodizing lines & all other baths by January 31, 1988. The anodizing lines will be moved to Round Rock; the black oxide and cadmium and zinc cyanide lines have been sold to other plating companies. The tanks and pipes from these lines will be triple rinsed and disposed/scraped. — what happen to rinse H_2O they flow?

* All rinsewaters containing little or no controlled metals will be put into sewer after automatic pH adjustment.

* All cyanide & metal containing dead rinses will be pretreated prior to testing and subsequent discharge to sewer. Call IW before discharge.

* All other equipment and contaminated items will be triple rinsed prior to disposal in municipal landfill.

* The floor would be acid rinsed, neutralized & water rinsed twice. Rinse waters would be treated prior to testing and subsequent discharge.

* Chromium plating lines will be discontinued. These bath solutions and untreatable rinse solutions will be deepwelled at a TWC permitted site. — manifest showing vol. — vol. today?

* Cleanup of all contaminated soils outside of facility as part of an existing compliance order.

How do you know Who tests & how? Samples of discharges 2 thr comp.

How catalo H_2O how?

Segregate all waste now from future waste.

76 Logan Road • Georgetown, Texas 78628 • (512) 255-9924 • (512)422-3784

Need drag on [illegible] how these procedures will happen

TWC

2.0 PRETREATMENT OF GENERAL RINSES

Continuous flow rinses will continue to be treated with sodium hydroxide prior to discharge into the city sewer using CMF's existing online pH adjustment system. Continuous readout tapes will be made of the effluent pH. The system will be calibrated and serviced weekly. The system will be checked daily. Robert Camacho with the City of Austin will be notified the same day if the pH exceeded the limits of 6 to 11 for more than 15 minutes. The cause will be identified and immediately corrected. If the cause is from a spill of heavy metals rinses, water to the rinses will be shutoff until the affected water can be pumped into holding tanks for pretreatment.

3.0 Pretreatment of Cyanide & Metal Containing Dead Rinses

Cyanide containing rinses will be treated with sodium hypochlorite at ph 12 to 12.5. The ph will then be dropped to 10 to 10.5 for precipitation of the metal as hydroxides. Chromium containing rinsewaters will be treated with sodium bisulfite at ph 2.5 to 3.0. The pH will then be raised to 7.0 to 8.0 to preciptate the Chromium III hydroxide. These solutions will be sent to clarifiers where the solids will be allowed to precipitate and settle. Clear water will be put down the sewer. Samples will be taken and analyzed if required by the City of Austin. The settled solids/ wastewater treatment sludge will be put in 55 gallon drums approximately 2/3rd's full. Portland cement will be added to this. The solidified mixture will be disposed of in a TWC Class 1 facility.

eg missing diagram tanks.

in one tank.

4.0 TRIPLE RINSING

All discarded tanks, lines, and other contaminated equipment will be rinsed three times with clean water. This water will be pretreated with the rinses in Section 3.0 above. The floor will be swept; these sweepings will be placed with the wastes going to the Class 1 disposal facility. The floor will then treated with a mild acid- pH 2 to 2.5. This acid will be neutralized with an alkaline solution- ph 11 to a neutral ph. This will be squeegeed up and treated as in section 3.0. The floor will be rinsed twice with clean water. This water will be handled as in Section 3.0.

5.0 Operational Response -pH Excursions

The following actions will be taken to ensure that the pH of the discharge stays within the limits of 6 to 11.

* Ph system will be inspected every shift and logged.

* Ph system will be serviced and calibrated weekly.

* No dumping of concentrated solutions will be allowed for any reason.

* No testing of system will be done without notifying Robert Camacho first.

* ~~The~~ an alarm system will be activated ~~if functional.~~

* The water to the rinses will be manually shutoff immediately until the problem can be corrected.

6.0 Operational Response to Zinc Discharges

The problem with zinc was brought to my attention on March 13, by the City of Austin. Based on their data and communication with CMF, the following corrective actions are proposed and are expected to correct the problem. Sampling and testing will be performed during December to verify this and provide a reasonable confidence factor that discharges will be within the allowable limits.

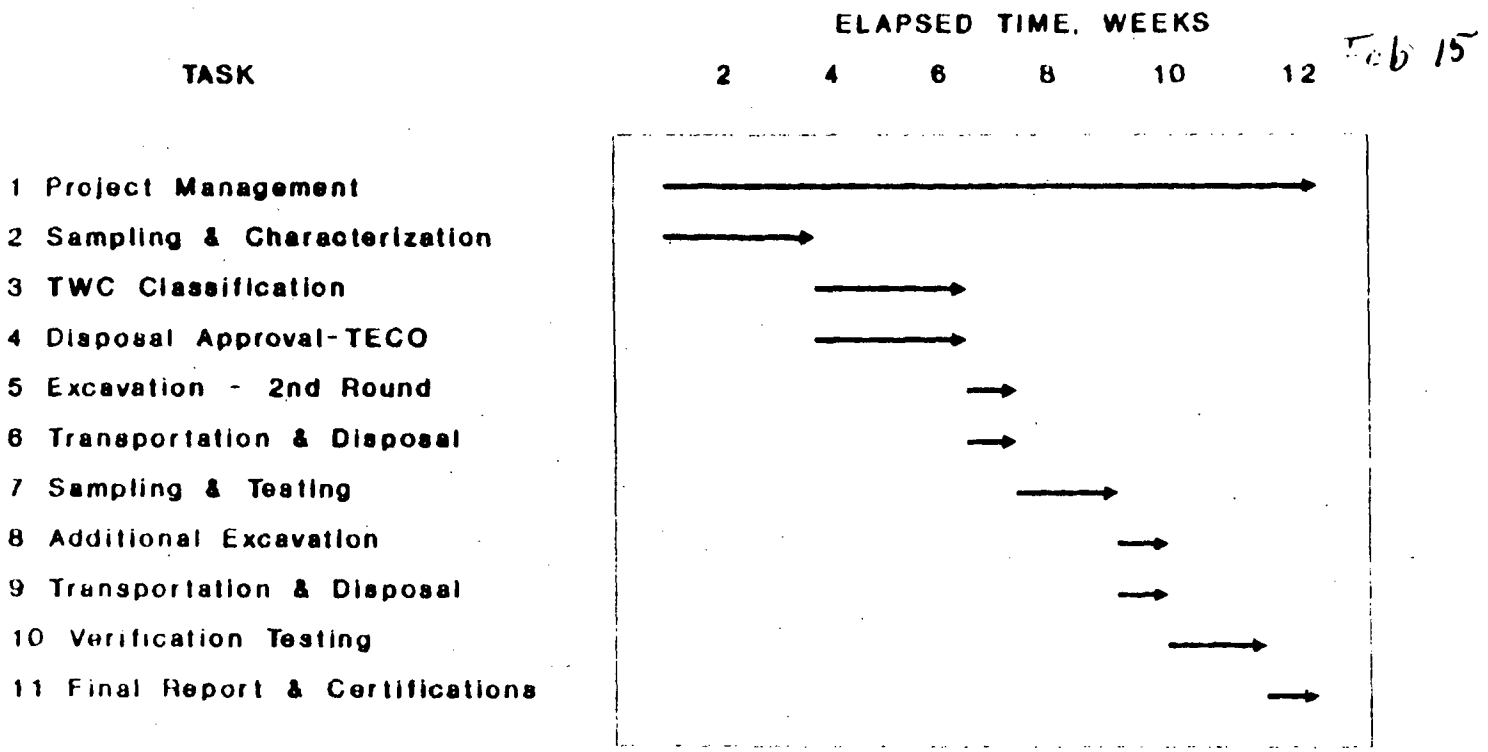
* Two more dead rinses will be installed in the zinc line immediately. This alone should reduce the effluent by an order of magnitude and solve the problem.

* The dead rinses will be dumped for treatment twice as often and will be treated in a new batch treatment system. The night shift will be discontinued by January 8, 1989. These two actions should result in a 4 fold decrease in the average zinc discharge.

The zinc line in Round Rock will be expedited so that zinc plating in Austin will be shutdown as soon as practically feasible.

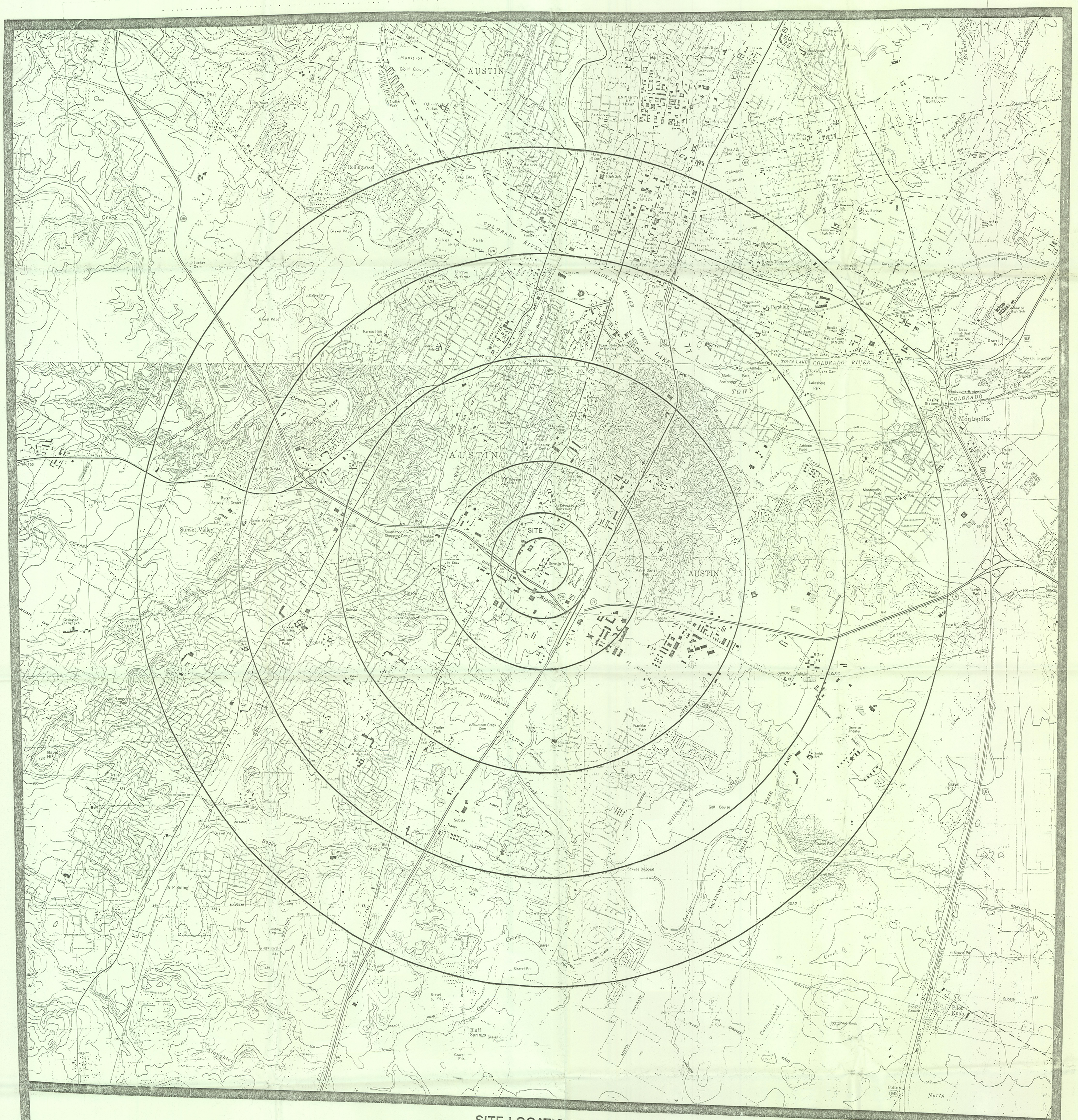
ATTACHMENT III.

PROJECT SCHEDULE
CAPITOL METAL CLEANUP



November 16, 1988

gan Road • Georgetown, Texas 78628 • (512) 255-9924 • (512)422-3784



SITE LOCATION MAP

CAPITOL METAL FININSHING

AUSTIN, TEXAS

TDD NO. F-06-9010-03

CERCLIS NO. TXD048452064

N
W E
S

SCALE 1:24 000

1 MILE

7000 FEET

1 KILOMETER

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLES

PROVISIONAL EDITIONS

AUSTIN WEST

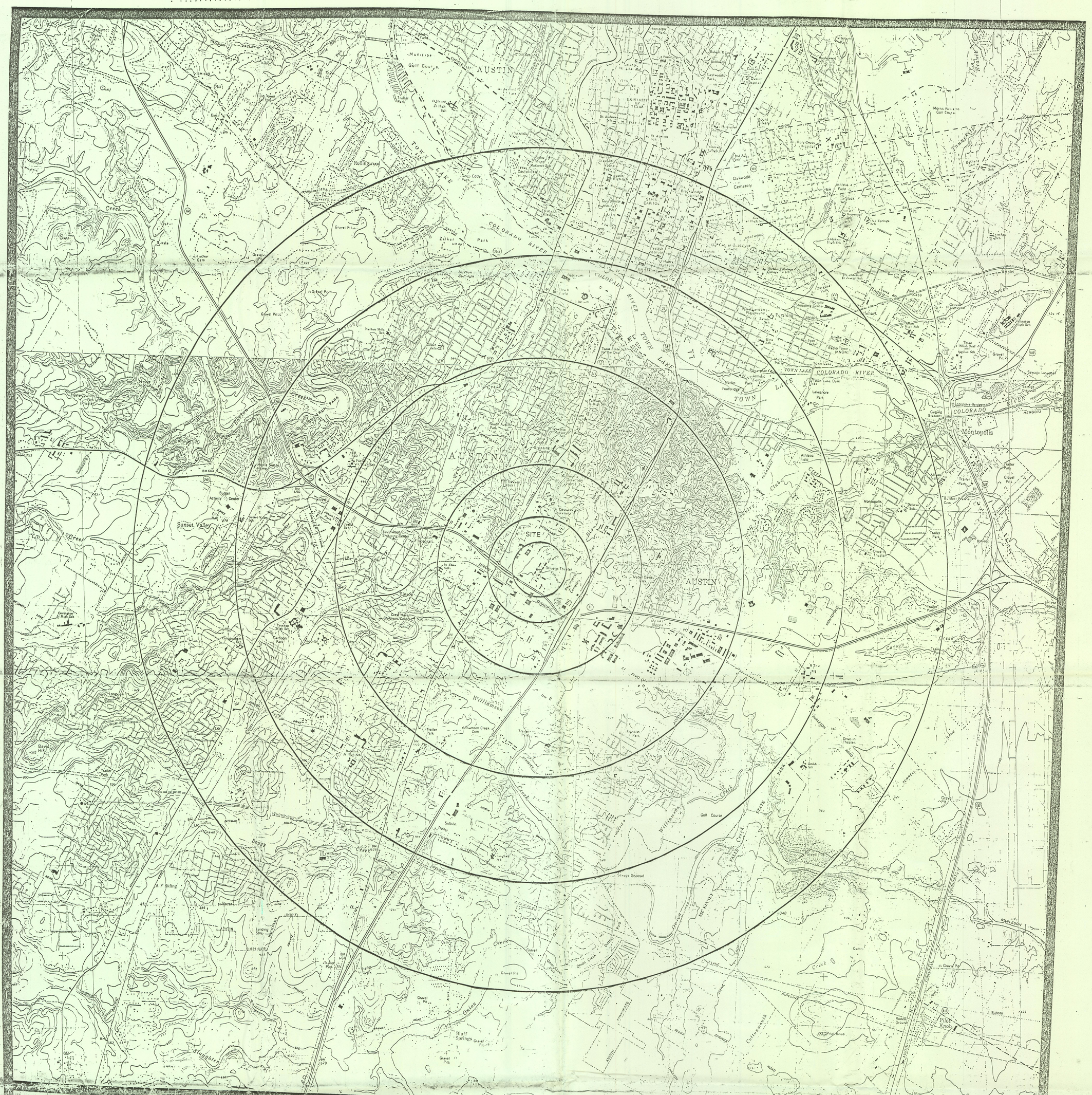
AUSIN EAST

OAK HILL

MONTOPOLIS

TEXAS

QUADRANGLE LOCATION



SITE LOCATION MAP

CAPITOL METAL FININSHING

AUSTIN, TEXAS

TDD NO. F-06-9010-03

CERCLIS NO. TXD048452064

N
W E
S

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLES

PROVISIONAL EDITIONS

AUSTIN WEST

AUSIN EAST

OAK HILL

MONTOPOLIS

TEXAS

QUADRANGLE LOCATION

TEXAS
INDUSTRIAL WASTE CONTROL
INC.

TABLE 2

RESULTS of ANALYSES for CONTAMINANTS
in SOILS at CAPITOL METAL FINISHING, AUSTIN TEXAS
Sampled 6-20-88 Composited 4-8 inches

	Equipment Yard	Chemical Dock	Fuse Box	Treatment Dike	Outside N Fence	Background Site	Background U.S.
Cadmium	14.5	260	80.5	175	234	<0.05	.01-.70
Chromium	35.5	1590	118	48	70	10.5	1-1000
Copper	67.5	444	25.5	91.5	54	13	2-100
Lead	160	1010	2	<0.05	79	11	2-100
Nickel	285	3350	120	390	275	18	5-500
Silver	0.7	2.6	3.5	3.15	2.7	1.25	
Zinc	157	1850	300	285	190	26	10-300
Cyanide	0.7	0.86	2.3	4.4	0.14	<0.05	

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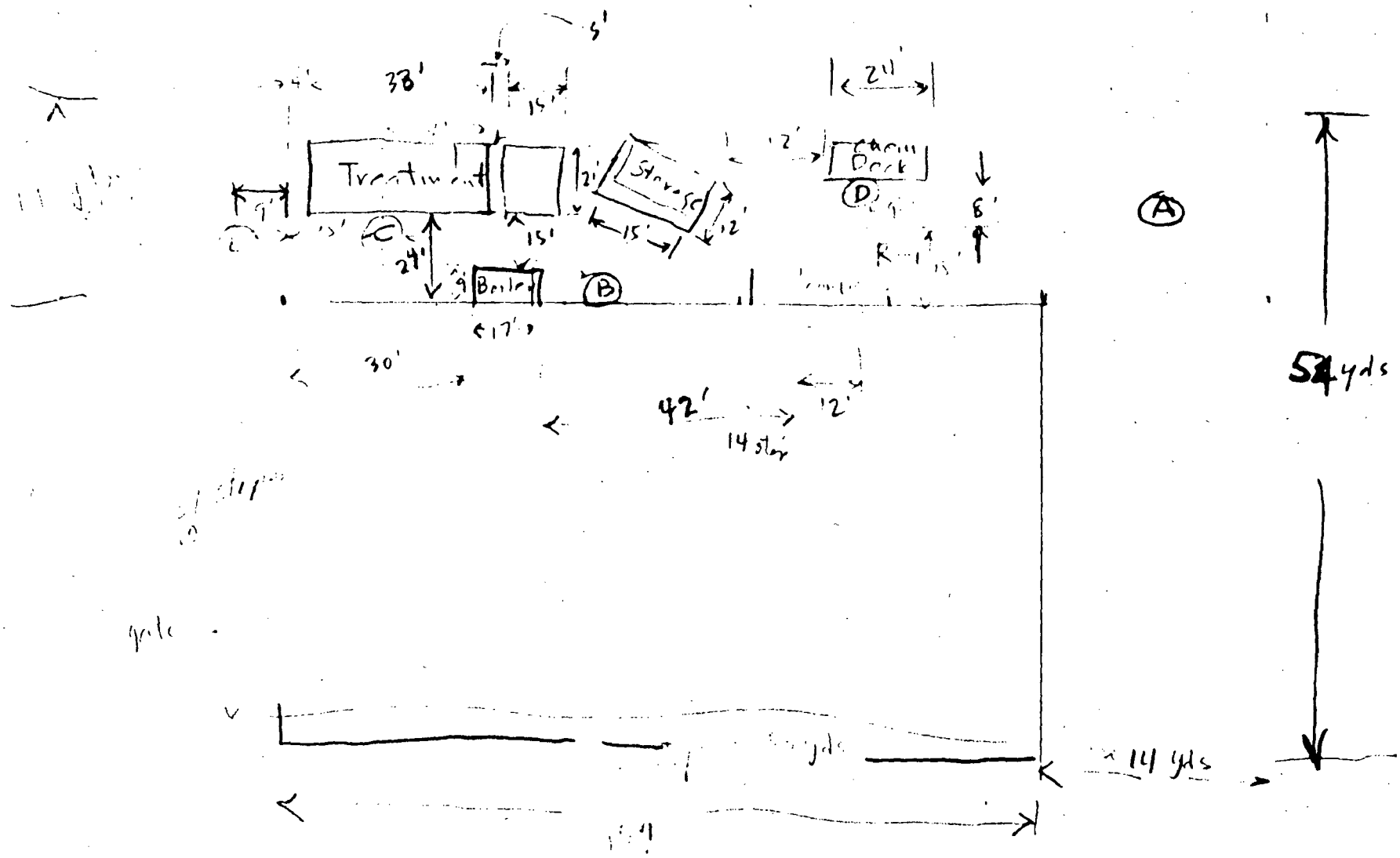
E → C 7 steps or yds
C → B 15
B → D 15
D → A 24



EXTENT OF CONTAMINATION
CHEMICAL STORAGE AREA (D)
Capital Metal Finishing

CONCENTRATION, mg/liter

DEPTH feet	CADMIUM	CHROMIUM	LEAD	NICKEL	ZINC	CYANIDE
Surface	260	1590	1010	3350	1850	0.86
2	4.5					
4	0.05	42.5	7	49.5	11	
6	0.05					
16	0.05					
Background	0.05	10.5	11	18	26	0.05

44

Percent (%) above background

DEPTH feet	CADMIUM	CHROMIUM	LEAD	NICKEL	ZINC	CYANIDE
Surface	519900%	15043%	9082%	18511%	7015%	1620%
2	8900%					
4	0%	305%	-36%	175%	-58%	
6	0%					
16	0%					

EXTENT OF CONTAMINATION
EQUIPMENT STORAGE YARD (A)
Capital Metal Finishing

CONCENTRATION, mg/liter

DEPTH feet	CADMIUM	CHROMIUM	LEAD	NICKEL	ZINC	CYANIDE
Surface	14.5	35.5	160	285	157	0.7
2	0.05					
4	0.05	7	13.5	37	18.4	
6	0.05					
16	0.05					
Background	0.05	10.5	11	18	26	0.05

Percent (%) above background

DEPTH feet	CADMIUM	CHROMIUM	LEAD	NICKEL	ZINC	CYANIDE
Surface	28900%	238%	1355%	1483%	504%	1300%
2	0%					
4	0%	-33%	23%	106%	-29%	
6	0%					
16	0%					

EXTENT OF CONTAMINATION
TREATMENT AREA (C)
Capital Metal Finishing
Sampled 7/13/88

CONCENTRATION, mg/liter

DEPTH feet	CADMIUM	CHROMIUM	LEAD	NICKEL	ZINC	CYANIDE
Surface	175	48	<0.05	390	285	4.4
2	53.7					
6	2.05	14	4	26.5	14	
16	<0.05					
Background	<0.05	10.5	11	18	26	<0.05

78 79

Percent (%) above background

DEPTH feet	CADMIUM	CHROMIUM	LEAD	NICKEL	ZINC	CYANIDE
Surface	349900%	357%	-100%	2067%	996%	8700%
2	107300%					
6	4000%	33%	-64%	47%	-46%	
16	0%					

EXTENT OF CONTAMINATION
FUSE BOX (B)
Capital Metal Finishing

CONCENTRATION, mg/liter

DEPTH feet	CADMIUM	CHROMIUM	LEAD	NICKEL	ZINC	CYANIDE
Surface	80.5	118	2	120	300	2.3
1	248	329	4.5	60	293	4.3
2	16					
4	<0.05	128	7.5	45	14	
6	<0.05					
16	<0.05					
Background	0.05	10.5	11	18	26	<0.05
	<.5	9.5	13	11	30	10

63
77 [illegible]

Percent (%) above background

DEPTH feet	CADMIUM	CHROMIUM	LEAD	NICKEL	ZINC	CYANIDE
Surface	160900%	1024%	-100%	567%	1054%	4500%
1	495900%	3033%	-59%	233%	1027%	8500%
2	31900%					
4	0%	1219%	68%	250%	54%	
6	0%					
16	0%					

EXTENT OF CONTAMINATION
NORTH of FENCE (E)
Capital Metal Finishing

CONCENTRATION, mg/liter

DEPTH feet	CADMIUM	CHROMIUM	LEAD	NICKEL	ZINC	CYANIDE
Surface	234	70	79	275	190	0.14
2	108					
4	4.5	11.5	6	27	25.5	
6	0.25					
16	0.05					
Background	0.05	10.5	11	18	26	0.05

Percent (%) above background

DEPTH feet	CADMIUM	CHROMIUM	LEAD	NICKEL	ZINC	CYANIDE
Surface	467900%	567%	618%	1428%	631%	180%
2	215900%					
4	8900%	10%	-45%	50%	-2%	
6	400%					
16	0%					

HAYS
ENVIRONMENTAL
ENGINEERING, INC.

February 15, 1989

RECEIVED
FEB 16 1989
ENFORCEMENT SECTION

Mr. Tim Chaney, Hydrologist
Hazardous & Solid Waste Enforcement Section
TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

RE: Capitol Metal Finishing, Inc. Remediation Project, Austin, Texas

Dear Mr. Chaney:

At our last meeting with you and Ms. Susan Adams, there was a lack of agreement as to what was the appropriate or "correct" definition of how to determine background levels for heavy metals for sites like CMF's. We felt that background should be determined by including sites where ordinary industrial activity had influenced levels of various pollutants. Also, you gave us until February 15 to complete the remediation. This deadline has now been passed, obviously.

As you know, there has been discussions among the Attorneys involved in this Compliance Order as to what actually constitutes "background" and how it should be determined in the field. These discussions have not been completed yet. Also, it is my understanding that there has been a change in Legal Staff within the TWC, which could have further contributed to the delay.

At the request of Mr. Biff Jones, and as an independent Engineering Consultant to help certify the site's ultimate remediation, I would like to report that Capitol Metal Finishing, Inc. agrees that final remediation of the site will be accomplished as soon as the legal definition of "background" levels of heavy metals has been determined by the WATER COMMISSION's legal staff, in conjunction with CMF Attorneys. It is hoped that you will recognize this as a justifiable delay in progress. How can remediation be done correctly otherwise?

Please find enclosed below for your files lab analysis results of a composite soil sample taken with Ms. Adams at two locations on the asphalt parking lot of CMF. Mr. Chaney, thank you for your continued interest and help in working out the concerns of this project.

Very sincerely,
HAYS ENVIRONMENTAL ENGINEERING, INC.

Al Hays

Al Hays, P.E., Ph.D.
President

Sample results: (ppm)				
	Cyanide	0.353	Cadmium	5.00
	Chromium	7.00	Lead	<1.00
	Nickel	16.00	Zinc	7.20

3908 Holt Drive
Austin, Texas 78749
512 • 282 • 2075

HAYS
ENVIRONMENTAL
ENGINEERING, INC.

March 6, 1989

MAR 1 0 89
FIELD OPERATIONS
DISTRICT 14

Mr. Tim Chaney, Hydrologist
Hazardous & Solid Waste Enforcement Section
TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

RE: Capitol Metal Finishing, Inc. Remediation Project

Dear Mr. Chaney:

At the request of Mr. Benjamin Jones, the Project Director for this work, I would like to submit several comments for your consideration at the meeting on March 8 in the TWC Offices. First, let me again say that I am acting in the capacity of an Engineering Consultant, whose job it is to simply certify as to clean up and sampling and to help communicate with the TWC. In this capacity, let me recount the following steps of progress made thus far on this project:

1. A Site Assessment was conducted by taking surface soil samples at seven locations on the property to identify areas of highest levels of heavy metals.

2. A second soils sampling program was conducted at five locations on the site in the vertical plane, with samples as deep as 16 feet. Samples were analyzed for selected parameters.

3. On the basis of these sampling results, approximately 24 cubic yards of the soils containing the highest levels of metals were classified, removed, transported, and disposed of at TECO in Robstown, Texas.

4. Next, a composite soils sample was collected with TWC Personnel from several roadside locations near the plant site on Warehouse Row; these samples were to be used to determine a "background" or baseline level for various metals. Afterwards, several other background samples were collected at sites around the plant site, including the plant site itself, by the author and Mr. Jones.

5. Our crucial meeting with you back in November 1988 indicated that there was some disagreement concerning how to best determine a true background sampling strategy. We petitioned the Company's Attorney to work with TWC Attorneys to resolve the question we had of how to best determine background levels.

It was my understanding that a legal staff agreement had been reached where background was best determined by simply collecting samples on the plant site and on other industrial sites in the area, where it was fairly well certain that other spills of hazardous wastes had never occurred. The idea was to include sites where industrial uses had influenced pollutant levels, so that we could compare "apples with apples".

3908 Holt Drive
Austin, Texas 78749
512 • 282 • 2075

Mr. Chaney, as far as I can now tell from all discussions so far, the proper means to determine background is to simply not sample spots where spills have occurred. If this is the case, then I recommend that we determine background by using the following samples:

	Location	Cadmium	Keep ?	
a.	Grassy Roadside	<0.05 ppm	No	x
b.	25' east of site	1.40 "	Yes	
c.	Rick Hull Supply	14.20 "	No	x
d.	10' west of Hull	0.31 "	Yes	
e.	6' N. of N. wall Company Yard	5.90 "	Yes	
f.	Creek Bank - Agric.	0.41 "	Yes	
g.	Composite of 2 samples under asphalt on Company site	5.00 "	Yes	

(This amounts to throwing out the low and the high values.)

The use of the above samples gives a mean of 2.60 ppm Cd and standard deviation of 2.65 ppm Cd. This data correlates fairly well with a similar TWC legal settlement for Astro Plating Co. of San Antonio, where 3.00 ppm Cd could be left in the ground, as long as the sample's EP Toxicity was less than 0.5 ppm Cd and it's TWC Leachate Test results gave less than 0.1 ppm Cd. (There are some additional restrictions that applied there, but the primary metal, in our case, is cadmium.)

6. Lastly, we took a composite soils sample from beneath the asphalt on the south side of the plant site with Ms. Susan Adams; the results of this sample's analysis have already been reported to you.

Mr. Chaney, this represents the situation for this project to the best of my knowledge. It is hoped that you and other members of the TWC Staff will accept the above recommendation as to background levels; the plant Owner is ready to complete the remediation work as soon as the background levels can be mutually agreed upon. Please contact me should you have any questions; thank you.

Very sincerely,
HAYS ENVIRONMENTAL ENGINEERING, INC.

Al Hays

Al Hays, P.E., Ph.D.
President

NO. SW 01340

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row
Austin

County Travis Basin Colorado

Method of Collection teflon scoop into mason jar w/ teflon liner.
split with Al Hays

Point of Collection Bead Blaster dust #1

Type facility: [ ] Drum, [ ] Tank, [ ] Impoundment, [ ] Landfill
[X] Waste pile, [ ] Landfarm, [ ] Other

Time Collected 3:00 pm Date Shipped 2-17-89

Add COC #

ODOR: [ ] Yes, [ ] No, Describe

S.W. Registration	Permit Number	Page No.	Date Mo.	Date Day	Date Yr.
31593	[redacted]		02	16	89

Susan Adams (Collector's Signature)
Tim Chaney

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC 0849 (Rev 05 23 86)

NO. SW 01340

District 14 Org. No. 334 Work No. 532 A Lab TDH

Material Sampled: [X] Solid waste (W), [ ] Liquid waste (L); [ ] Soil (E), [ ] Well (M);
[ ] Stream (S), [ ] Other (O)

Comments
EP Tox metals: Cd, Cr, Pb
Total metals: Cd, Cr, Pb, Ni, Zn (continued on back)

Lab Only	Date	rec'd:	(Lab No.)
		cmplt:	
		Analyst sign:	

Preservation: [ ] None, [ ] Ice, [ ] H_2SO_4, [ ] HNO_3
Other

Auxiliary Tags
LEACHATE [X] EP Toxicity Series, [ ] TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
[redacted]					
00403					
[redacted]					
00340					
[redacted]					
00680					
[redacted]					

TWC

DISTRICT 14

NO. SW 01340

TEXAS WATER COMMISSION TWC 0849 (Rev. 05 23 86)

NO. SW 01341

District 14 Org. No. 334 Work No. 532A Lab TDH

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row Austin

County Travis Basin Colorado

Method of Collection teflon scoop into mason jar @ teflon liner

Split Al Harp

Point of Collection SW of Chem. Stor. Bldg + SE of chem dock area. #2

Type facility: Drum Tank Impoundment Landfill Waste pile Landfarm X Other soil

Time Collected 3:10 pm Date Shipped 2-17-89

Add. COC #s

ODOR Yes No Describe

S.W. Registration	Permit Number	Page No.	Date Mo.	Day	Yr.
31593			02	16	89

Susan Adams (Collector's Signature) + Tim Chaney

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC 0849 (Rev. 05 23 86)

NO. SW 01341

District 14 Org. No. 334 Work No. 532A Lab TDH

Material Sampled: Solid waste (W); Liquid waste (L); X Soil (E); Well (M); Stream (S); Other (O)

Comments Cyanide, Tot metal: Cd, Cr, Ni, Pb, Zn

EP tox metals: Cd, Cr, Pb (continued on back)

Lab Only Date

Preservation: None Ice H_2SO_4 HNO_3 Other

Auxiliary Tag

LEACHATE X EP Toxicity Series TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
[redacted]					
00403					
[redacted]					
00340					
[redacted]					
00680					
[redacted]					

TWC 0849

DISTRICT 14

NO. SW 01341

NO. SW 01342 District 14 Org. No. 334 Work No. 532A Lab TDH

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row Austin

County Travis Basin Colorado

Method of Collection teflon scoop into Mason jar @ teflon liner.

Split @ Al Hays.

Point of Collection just North of above ground piping. #3

Type facility: [ ] Drum [ ] Tank [ ] Impoundment [ ] Landfill [ ] Waste pile [ ] Landfarm [X] Other soil

Time Collected 320 (am/pm) Date Shipped 2-17-89

Add. COC #

ODOR [ ] Yes [ ] No Describe

S.W. Registration	Permit Number	Page No.		Date Mo.	Day	Yr.	
1 9	10 18	19 21	22	23 24	25 26	27 28	29
31593				02	16	89	

Susan Adams
(Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC 0849 (Rev. 05 23 86)

NO. SW 01342

District 14 Org. No. 334 Work No. 532 A Lab TDH

Material Sampled: [ ] Solid waste (W), [ ] Liquid waste (L); [X] Soil (E), [ ] Well (M); [ ] Stream (S), [ ] Other (O)

Comments Total Cyanide Tot metals: Cd, Cr, Ni, Pb, Zn

EP Tox metals: Cd, Cr, Pb.

(continued on back)

Lab Only	Date	
	rec'd	
		(Lab No.)
	Analyst sign	

Preservation: [ ] Ice [ ] H_2SO_4 [ ] HNO_3 [ ] Other

Auxiliary Fac.

LEACHATE [X] EP Toxicity Series [ ] TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
[redacted]					
00403					
[redacted]					
00340					
[redacted]					
00680					
[redacted]S					

TWC 084

DISTRICT 14

NO. SW 01342

District 17 Org. No. 334 Work No. 532A Lab TDH

NO. SW 01343

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row Austin

County Travis Basin Colorado

Method of Collection teflon scoop into Mason jar w teflon liner

Split w al Hays

Point of Collection just north of north fenceline, east of gate #4

Type facility: [ ] Drum, [ ] Tank, [ ] Impoundment, [ ] Landfill, [ ] Waste pile, [ ] Landfarm, [X] Other soil

Time Collected 3 26 pm Date Shipped 2-17-89

Add. COC #s

ODOR [ ] Yes [ ] No [ ] Describe

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	(22)	Date Mo. (23–24)	Date Day (25–26)	Date Yr. (27–28)	(29)
31593				02	16	89	

Susan Adams
(Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC 0849 (Rev 05 23 86)

NO. SW 01343

District 14 Org. No. 334 Work No. 532 A Lab TDH

Material Sampled: [ ] Solid waste (W), [ ] Liquid waste (L), [X] Soil (E), [ ] Well (M), [ ] Stream (S), [ ] Other (O)

Comments Total Cyanide Total metals: Cd, Cr, Ni, Pb, Zn

EP Tox Metals: Cd, Cr, Pb

(continued on back)

Preservation: None, Ice, [ ] H_2SO_4, [ ] HNO_3, Other

Auxiliary Tags

LEACHATE [X] EP Toxicity Series, [ ] TWC

Lab Only	Date		
		Recd	
		Sent	(Lab No.)
		Analyst	

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
[redacted]					
00403					
[redacted]					
00340					
[redacted]					
00680					
[redacted]					

TWC 0849

DISTRICT 14

NO. SW 01343

TEXAS WATER COMMISSION TWC 0849 (Rev. 05-2-86)

District 14 Org. No. (532A) Work No. (334) Lab TDH

NO. SW 01344

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row Austin

County Travis Basin Colorado

Method of Collection [redacted] mason jar w/ teflon liner dipped into tank

Split w/ Al Hays

Point of Collection Discontinued Cd plating line, Dead rinse awaiting treatment #6

Type facility [ ] Drum, [X] Tank, [ ] Impoundment, [ ] Landfill, [ ] Waste pile, [ ] Landfarm, [ ] Other

Time Collected 3:30 pm Date Shipped 2-17-89

Add COC #

ODOR [ ] Yes [ ] No Describe

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	(22)	Date Mo. (23–24)	Date Day (25–26)	Date Yr. (27–28)	(29)
31593				02	16	89	

Susan Adams (Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC 0849 (Rev. 05-23-86)

NO. SW 01344

District 14 Org. No. 334 Work No. 532 A Lab TDH

Material Sampled: [ ] Solid waste (W), [ ] Liquid waste (L), [ ] Soil (F), [ ] Well (M); [ ] Stream (S), [ ] Other (O)

Comments Total Cyanide * Maybe HIGH * Total metals: Cd, Cr, Ni, Pb, Zn

(continued on back)

Lab Only	Date	rec'd	(Lab No.)
		cmplt	
		Analyst Cont.	

Preservation: [ ] None, [ ] Ice, [ ] H_2SO_4; [ ] HNO_3, Other

Auxiliary Tags

LEACHATE [ ] EP Toxicity Series, [ ] TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
pH					
00403					
[redacted]					
00340					
[redacted]					
00680					
[redacted]					

TWC 08

DISTRICT 14

NO. SW 01344

TEXAS WATER COMMISSION TWC 0849 (Rev 05 23 86)

District 14 Org. No. 334 Work No. 532A Lab TDH

NO. SW 01345

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse ROW Austin

County Travis Basin Colorado

Method of Collection # Mason jar dipped into tank.

Split (w) Al Hays

Point of Collection "Trash tank" in discontinued Cd plating Line. #7

Type facility [ ] Drum [X] Tank [ ] Impoundment [ ] Landfill [ ] Waste pile [ ] Landfarm [ ] Other

Time Collected 3 35 (am, pm) Date Shipped 2-17-89

Add COC #s

ODOR [ ] Yes [ ] No Describe

S.W. Registration	Permit Number	Page No.	Date Mo.	Day	Yr.
1 9	10 18	19 21	23 24	25 26	27 28
31593			02	16	89

Susan Adams (Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC 0849 (Rev 05 23 86)

NO. SW 01345

District 14 Org. No. 334 Work No. 532A Lab TDH

Material Sampled: [ ] Solid waste (W), [X] Liquid waste (L), [ ] Soil (E), [ ] Well (M); [ ] Stream (S); [ ] Other (O)

Comments Cyanide * Maybe HIGH *

Total metals: Cd, Cr, Ni, Pb, Zn (continued on back)

Lab Only | Date | rec'd | imp'd | (Lab No.) | Analyst sign

Preservation [ ] None [ ] Ice [ ] H_2SO_4 [ ] HNO_3 Other

Auxiliary Tags

[ ] EACHATE [ ] EP Toxicity Series [ ] TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
pH					
00403					
COD					
00340					
TOC					
00680					
GC/MS					

TWC-0849

TEXAS WATER COMMISSION

DISTRICT 14

NO. SW 01345

NO. SW 01346

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row Austin

County TRAVIS Basin Colorado

Method of Collection mason jar dipped into barrell.

Point of Collection barrel inside small tank in discontinued Cd plating line # 8

Type facility Drum X Tank Impoundment Landfill Wastepile Landfarm Other

Time Collected 3 40 pm Date Shipped 2-17-89

Add COC #

CDOR Yes No Desk

S.W. Registration	Permit Number	Page No.	Date Mo	Day	Yr
31593			02	16	89

Susan Adams
Collector's Signature

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value

TEXAS WATER COMMISSION TWC 0849 (Rev. 0[illegible])

NO. SW 01346

District 14 Org. No. 334 Work No. 532A Lab TDH

Material Sampled Solid waste (W) X Liquid waste (L) Soil (E) Water (M) Stream (S) Other (O)

Comments Cyanide * may be HIGH *

Total Metals: Cd, Cr, Ni, Pb, Zn

Lab Only Date

EP Toxicity Series TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value
pH					
00403					
~~[illegible]~~					
00340					
~~[illegible]~~					
00680					
~~[illegible]~~					

TWC 0849

DISTRICT 14

NO. SW 01346

District 14 Org. No. 334 Work No. 4001 Lab TDH

NO. SW 01209

Site Name Capitol Metal Finishing (CMF)

Site Location 3909 Warehouse Row
Austin

County TRAVIS Basin

Method of Collection Soil composite (2 sites)
2"-4" deep. Background sample
Split with contractor.
Collected by Bif Jones. (Bif 4001)

Point of Collection South of CMF,
North of Wendys — East &
West side of Street. Soil

Type facility: ☐ Drum; ☐ Tank; ☐ Impoundment; ☐ Landfill
☐ Waste pile; ☐ Landfarm; ☐ Other

Time Collected 3 30 pm Date Shipped 6.23.88

Add. COC #s

ODOR; ☐ Yes; ☐ No; Describe

S.W. Registration	Permit Number	Page No.	Date Mo.	Day	Yr.
1 9	10 18	19 21	23 24	25 26	27 28
31593	[illegible]		06	20	88

Susan Adams
(Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86) JUL 20 1988

NO. SW 01209

District 14 Org. No. 334 Work No. 4001 Lab TDH

Material Sampled: ☐ Solid waste (W); ☐ Liquid waste (L); ☒ Soil (E); ☐ Well (M);
☐ Stream (S); ☐ Other (O)

Comments Total Metals: Cd, Ce, Cu, Pb, Ni, Ag, Zn
Total Cyanides.

(continued on back)

Lab Only | Date | rec'd: JUL 23 88 | cmplt: | Analyst sign.:

EH8 1212

Preservation: ☒ None; ☐ Ice; ☐ H_2SO_4; ☐ HNO_3
Other

Auxiliary Tags

LEACHATE: ☐ EP Toxicity Series; ☐ TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
[redacted]	CN mg/Kg	Cadmium	mg/kg	Silver	mg/kg
00403	1.		<0.5		<0.5
[redacted]		Chromium		Zinc	
00340			9.5		30
[redacted]		Copper			
00680			8.2		
[redacted]		Lead			
			13		
		Nickel			
			11		

FIELD OPERATIONS
DISTRICT 14

District 14 Org. No. 334 Work No. 4001 Lab TDH

NO. SW 01211

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row
Austin

County Travis Basin

Method of Collection Sand 4"-8" deep
total Cr & Ni
total cyanide
(Bif 4002)

Point of Collection Southeast portion of CMF LOT.

Type facility: ☐ Drum; ☐ Tank; ☐ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☐ Other

Time Collected 3 45 (pm) Date Shipped 6-23-88

Add. COC #s

ODOR: ☐ Yes; ☐ No; Describe

S.W. Registration	Permit Number	Page No.	Date Mo.	Day	Yr.
1 9	10 18	19 21	23 24	25 26	27 28
31593			06	20	88

Susan Adams
(Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86)

JUL 20 1988

NO. SW 01211

District 14 Org. No. 334 Work No. 4001 Lab TDH

Material Sampled: ☐ Solid waste (W); ☐ Liquid waste (L); ☒ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments total Cr & Ni
total Cyanide
(continued on back)

1st soil

Lab Only | Date | rec'd: JUN 23 '88 | cmplt: | EH8 1209 | Analyst sign.: M.

Preservation: ☐ None; ☐ Ice; ☐ H_2SO_4; ☐ HNO_3
Other
Auxiliary Tags
LEACHATE: ☐ EP Toxicity Series; ☐ TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
pH		Chromium	mg/kg		
00403			50		
COD		Nickel			
00340			301		
TOC		CN	mg/kg		
00680			3,66		
GC/MS					

RECEIVED JUL 22 88 FIELD OPERATIONS DISTRICT 14

NO. SW 01212 District 14 Org. No. 334 Work No. 4001 Lab

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row
Austin TX

County Travis Basin

Method of Collection fill dirt 2"-8" deep

Split with Contractor (Bif 4003)

Point of Collection In Back of Plating area next to fuse Box

Type facility: ☐ Drum; ☐ Tank; ☐ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☐ Other

Time Collected 4:00 pm Date Shipped 6-23-88

Add. COC #s

ODOR; ☐ Yes; ☐ No; Describe

S.W. Registration	Permit Number	Page No.	Date Mo.	Day	Yr.	
1 9	10 18	19 21	23 24	25 26	27 28	29
31593			06	20	88	

Susan Adams
(Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86) JUL 20 1988

NO. SW 01212

District 14 Org. No. 334 Work No. 4001 Lab

Material Sampled: ☐ Solid waste (W); ☐ Liquid waste (L); ☒ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments Total Cyanide
Tot metals: Cd, Cr, Ni, Pb

(continued on back)

Lab Only | Date | rec'd: 6-23-88 | cmplt: | Analyst sign.: | EH8 1211

Preservation: ☒ None; ☐ Ice; ☐ H_2SO_4; ☐ HNO_3
Other
Auxiliary Tags
LEACHATE: ☐ EP Toxicity Series; ☐ TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value mg/kg	58 Code	63 Parameter Value
pH	CN mg/Kg	Cadmium			
00403	62.9		87		
COD		Chromium			
00340			150		
TOC		Nickel			
00680			79		
GC/MS		Lead			
			5.2		

RECEIVED JUL 22 88 FIELD OPERATIONS DISTRICT 14

NO. SW 01213 District 14 Org. No. 334 Work No. 4001 Lab TDH

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row Austin

County Travis Basin

Method of Collection Soil 2"-8" deep

Split with contractor (Bif 4004)

Point of Collection Next to pretreatment concrete vault.

JUN 27 1988

Type facility: ☐ Drum; ☐ Tank; ☐ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☐ Other

Time Collected 4:10 (pm) Date Shipped 6-23-88

Add. COC #s

ODOR; ☐ Yes; ☐ No; Describe

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	Date Mo. (23–24)	Date Day (25–26)	Date Yr. (27–28)	Sign (29)
31593			06	20	88	

Susan Adams (Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86)

NO. SW 01213 JUL 20 1988

District 14 Org. No. 334 Work No. 4001 Lab TDH

Material Sampled: ☐ Solid waste (W); ☐ Liquid waste (L); ☒ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments total cyanide total Cr + Ni

1qt. soil

(continued on back)

Lab Only | Date | rec'd: 11 23 88 | cmplt: | EH8 1210 | Analyst sign.: [illegible]

Preservation: ☐ None; ☐ Ice; ☐ H_2SO_4; ☐ HNO_3

Other

Auxiliary Tags

LEACHATE: ☐ EP Toxicity Series; ☐ TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value
pH		Chromium	mg/kg		
00403			56		
COD		Nickel			
00340			299		
TOC		CN	mg/kg		
00680			78.79		
GC/MS					

RECEIVED JUL 22 88 FIELD OPERATIONS DISTRICT 14

District 14 Org. No. 334 Work No. 4001 Lab TDH

NO. SW 01214

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row
Austin

County Travis Basin

Method of Collection
Soil 2"-8" deep on west side of Chemical Storage building. (Bif 4005)

Point of Collection

JUN 27 1988

Type facility: ☐ Drum; ☐ Tank; ☐ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☐ Other

Time Collected 4:20 (am, pm) Date Shipped 6-23-88

Add. COC #s

ODOR; ☐ Yes; ☐ No; Describe

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	Cont. Type (22)	Date Mo. (23–24)	Date Day (25–26)	Date Yr. (27–28)	Sub. Seq. (29)
31593				06	20	88	

Susan Adams
(Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value (71)

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86) JUL 20 1988

NO. SW 01214

District 14 Org. No. 334 Work No. 4001 Lab TDH

Material Sampled: ☐ Solid waste (W); ☐ Liquid waste (L); ☒ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments Total cyanide
Tot metal: Cd, Cr, Cu, Ni, Pb, Ag, Zn
(continued on back)

Lab Only | Date | rec'd: JUN 23 '88 | cmplt: | EH8 1213 | Analyst sign.:

Preservation: ☒ None; ☐ Ice; ☐ H_2SO_4; ☐ HNO_3
Other
Auxiliary Tags
LEACHATE: ☐ EP Toxicity Series; ☐ TWC

1gt soil

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value (71)
[redacted] CN	mg/Kg	Cadmium	mg/kg	Silver	mg/kg
00403	44.4		330		1.1
[redacted]		Chromium		Zinc	
00340			1890		2200
[redacted]		Copper			
00680			440		
[redacted]		Nickel			
			3820		
		Lead			
			1070		

JUL 22 86

FIELD OPERATIONS

NO. SW 01210 District 17 Org. No. 337 Work No. 4001 Lab TDH

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row Austin

County Travis Basin

Method of Collection Soil below fill dirt (12"-18" deep) IN Back of Plating area next fuse box. Split with contractor (Bif 4006).

Point of Collection

Type facility: ☐ Drum; ☐ Tank; ☐ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☒ Other Soil

Time Collected 4:30 (pm) Date Shipped

Add. COC #s

ODOR; ☐ Yes; ☐ No; Describe

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	Card Type (22)	Date Mo. (23–24)	Date Day (25–26)	Date Yr. (27–28)	Sub Date (29)
31593				06	20	88	

Susan Adams (Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86) JUL 20 1988

NO. SW 01210 District 14 Org. No. 334 Work No. 4001 Lab TDH

Material Sampled: ☐ Solid waste (W); ☐ Liquid waste (L); ☒ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments Tot Metals: Cd, Ca, Cu, Ni, Pb, Zn, Ag Total Cyanide.

(continued on back)

Lab Only Date rec'd: JUL 23 88 cmplt: Analyst sign.: EH8 1214

Preservation: ☒ None; ☐ Ice; ☐ H_2SO_4; ☐ HNO_3 Other

Auxiliary Tags

LEACHATE: ☐ EP Toxicity Series; ☐ TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
1gd Soil					
[redacted]	CN mg/kg	Cadmium	mg/kg	Zinc	mg/kg
00403	77		300		410
[redacted]		Chromium		Silver	
00340			542		<0.5
~~TOC~~		Copper			
00680			9.9		
~~CO/MS~~		Nickel			
			29		
		Lead			
			5.2		

RECEIVED JUL 22 88 FIELD OPERATIONS

EXAS WATER COMMISSION
.O. Box 13087, Capitol Station
ustin, Texas 78711-3087

ase print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form approved. OMB No. 2050-0039, expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of	Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Capitol Metal Finishing, Inc.
2000 Warehouse Row, Austin, Tex. 78704
4. Generator's Phone (512) 444-6616

A. State Manifest Document Number NO 00515025
B. State Generator's ID 31593

5. Transporter 1 Company Name | 6. US EPA ID Number
C. State Transporter's ID 41286
D. Transporter's Phone 713-930-2540

7. Transporter 2 Company Name | 8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address | 10. US EPA ID Number
G. State Facility's ID WDVV-169
H. Facility's Phone 713-930-2525

11A HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Corrosive liquid, n.o.s., 8002 Corrosive material UN 1760	001	DM		G	D002 902520
	b.					
	c.					
	d.					

J. Additional Descriptions for Materials Listed Above
D-W 1 Rec. 05
001 manifestream number 89-01066

K. Handling Codes for Wastes Listed Above
D-80

15. Special Handling Instructions and Additional Information

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford

Printed/Typed Name	Signature	Month	Day	Year

17. Transporter 1 Acknowledgement of Receipt of Materials — Date

Printed/Typed Name	Signature	Month	Day	Year

18. Transporter 2 Acknowledgement of Receipt of Materials — Date

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19. — Date

Printed/Typed Name	Signature	Month	Day	Year

(211) (Rev. 11-06-86) White - original Pink-TSD Facility Yellow-Transporter Green-Generator's first copy

FOR HELP IN CHEMICAL EMERGENCIES INVOLVING SPILL, LEAK, FIRE OR EXPOSURE CALL TOLL-FREE 1-800-424-9300 DAY OR NIGHT

THIS MEMORANDUM

is an acknowledgment that a bill of lading has been issued and is not the Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

Shipper's No. _____

Carrier's No. _____

CARRIER: SCAC Date 2-20-89

TO:
Consignee Austex Metal Finishing
Street St. Elmo St.
Destination Austin, tx Zip 78745

FROM:
Shipper CMF
Street 3409 Warehouse Row
Origin Austin, tx Zip 78704

Route.

Vehicle Number

No. Shipping Units	HM	Kind of Packages, Description of Articles (IF HAZARDOUS MATERIALS - PROPER SHIPPING NAME)	HAZARD CLASS	I.D. Number	WEIGHT (subject to correction)	RATE	LABELS REQUIRED (or exemption)
1	X	Cadmium Cyanide Solution	Poison - B	UN1689	450#		Poison
2		Cadmium Anodes			100#		
10		Anode BSKTS	NA		50#		NA

Remit C.O.D. to.
Address:
City State: Zip:

COD Amt: $

C.O.D. FEE:
Prepaid ☐
Collect ☐ $

NOTE - Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

FREIGHT CHARGES
☐ PREPAID ☐ COLLECT

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.
Shipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.
Per

PLACARDS REQUIRED yes

PLACARDS SUPPLIED ☐ YES ☒ NO — FURNISHED BY CARRIER
DRIVER SIGNATURE

SHIPPER: CMF
PER: C Bost
DATE: 2-20-89

CARRIER: [signature] AMF
PER:
DATE: 2-20-89

FOR HELP IN CHEMICAL EMERGENCIES INVOLVING SPILL, LEAK, FIRE OR EXPOSURE CALL TOLL-FREE 1-800-424-9300 DAY OR NIGHT

9-BLS-A4
(Rev. 6/87)

FOR HELP IN CHEMICAL EMERGENCIES INVOLVING SPILL, LEAK, FIRE OR EXPOSURE CALL TOLL-FREE 1-800-424-9300 DAY OR NIGHT

THIS MEMORANDUM

is an acknowledgment that a bill of lading has been issued and is not the Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

Shipper's No. 247

Carrier's No. 501

CARRIER: Preferred SCAC Date 2-17-89

TO: Consignee Teck Plating
Street Wyche Street
Destination Dallas, TX Zip

FROM: Shipper CMK
Street 3409 Warehouse Row
Origin Austin, TX Zip 78704

Route: I-35

Vehicle Number 501

No. Shipping Units	HM	Kind of Packages, Description of Articles (IF HAZARDOUS MATERIALS - PROPER SHIPPING NAME)	HAZARD CLASS	I.D. Number	WEIGHT (subject to correction)	RATE	LABELS REQUIRED (or exemption)
66		Zinc Cyanide - RQ	Poison - B	UN1713	33000#		Poison
1		Zinc Cyanide - RQ	Poison - B	UN1713	110#		Poison
8		Zinc Purifier -	NA		400#		
2		CF-250 Zinc Brightener	NA		80#		

Remit C.O.D. to:
Address
City State: Zip:

COD Amt: $

C.O.D. FEE: Prepaid ☐ Collect ☐ $

NOTE – Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

FREIGHT CHARGES ☐ PREPAID ☐ COLLECT

RECEIVED subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

PLACARDS REQUIRED yes

PLACARDS SUPPLIED ☒ YES ☐ NO — FURNISHED BY CARRIER

DRIVER SIGNATURE:

SHIPPER: CMK
PER:
DATE: 2-17-89

CARRIER: Preferred Inc
PER:
DATE: 2-17-89

FOR HELP IN CHEMICAL EMERGENCIES INVOLVING SPILL, LEAK, FIRE OR EXPOSURE CALL TOLL-FREE 1-800-424-9300 DAY OR NIGHT

9-BLS-A4 (Rev 6/87)

Texas Water Commission

INTEROFFICE MEMORANDUM

TO : Sam Pole, Chief, Enforcement Section, Hazardous and Solid Waste Division **DATE**: March 16, 1989

THRU : Ernie Heyer, Chief, Program Services Unit, Field Operations Division

FROM : Susan Adams, Assistant District Manager, District 14 Office

SUBJECT: Capitol Metal Finishing, Inc. (SW 31593), Agreed Order 3-09-88. Follow-up Inspection, February 16, 1989 Tim Chaney - Enforcement Coordinator

On February 16 and 28, 1989, I conducted a Compliance Schedule Evaluation to determine compliance status regarding an Agreed Order dated 3-9-88 with Capitol Metal Finishing, Inc. (CMF) located at 3909 Warehouse Row in Austin.

Resolved violations: None.

Unresolved violations:
1. 31 TAC 335.4 and Agreed Order #8 - Unauthorized discharge. Failure to remediate past spills at the site.
2. 31 TAC 335.69 and Agreed Order # 5 and # 2 - Accumulating hazardous waste in unmarked containers and exceeding the 90 day storage limit.
3. 31 TAC 335.6 - Failure to notify new waste management methods.
4. 31 TAC 335.62 and Agreed Order # 1 - No waste determination.
5. Agreed Order # 6 and # 7 - Although a contingency plan and personnel training plan were prepared, they were not available at the site for review during the inspection.

New violations:
1. 31 TAC 335.2 and .43 - Permit required to process hazardous waste.
2. 31 TAC 335.9 and and .70 - No records available for review.
3. 31 TAC 335.10 - Failure to complete manifest before shipment.
4. Agreed Order # 4 - No Records for inspecting tanks and containers.

See the Technical Recommendations in the Enforcement Report for other important issues. Attached is the CMEL Form coded as a CSE, the Enforcement Report, and the Inspection Checklist with attachments. If you have any questions, please call me at 3-7803.

Susan Adams
Susan Adams

Approval: John Young
Wm. John Young

RECEIVED
MAR 21 1989
FIELD OPERATIONS

REFERENCE 5

1509 Main Street, Suite 900
Dallas, Texas
75201-4809

214/744-1641

ICF TECHNOLOGY INCORPORATED

TO: File

FROM: Warren P. Mitchell

DATE: December, 4, 1990

SUBJ: Off-Site Reconnaissance Inspection of Capitol Metal Finishing

The FIT conducted an off site reconnaissance inspection of the Capitol Metal Finishing (CMF) facility in Austin, Texas, on November 16, 1990.

The site is located North of Ben White Blvd. (Highway 71). There are several warehouse buildings in the area, within 50 feet of the facility. The front of the building is accessible to the public, while the sides and rear are surrounded by a chain-linked fence. The gate to the side of the building is locked with posted warning signs. There is an excavated area and two wastepiles along the south side of the site. A surface impoundment and three small buildings are at the rear of the building.

The site is located in an commercial and light industrial area. The site is inactive and appears to be abandoned.

There are no on-site residents.

REFERENCE 6

RECORD OF COMMUNICATION

TXD987989340

TYPE: Phone Call DATE: November 14, 1990 TIME: 3:56pm

TO: Leanne Pacappe
Austin City Hall
(512)499-6423

FROM: Trudy K. Tannen
FIT Chemical Engineer
ICF Technology, Inc.
(214)744-1641

SUBJECT: Population of Austin

SUMMARY OF COMMUNICATION

The City of Austin covers approximately 224.61 square miles and has a population of approximately 461,046 residents.

REFERENCE 7

PREFACE

U.S. DEPARTMENT OF COMMERCE
LUTHER H. HODGES, Secretary

WEATHER BUREAU
F. W. REICHELDERFER, Chief

TECHNICAL PAPER NO. 40

RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years

Prepared by
DAVID M. HERSHFIELD
Cooperative Studies Section, Hydrologic Services Division
for
Engineering Division, Soil Conservation Service
U.S. Department of Agriculture

NOTICE
Rainfall-frequency information for durations of 1 hour and less for the Central and Eastern States has been superseded by NOAA Technical Memorandum NWS HYDRO-35 Five to Sixty-Minute Precipitation Frequency for the Eastern and Central United States. This publication (Accession No. PB 272-112/AS) is obtainable from:

National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

WASHINGTON, D.C.
May 1961

THIS ATLAS IS OBSOLETE FOR THE FOLLOWING 11 WESTERN STATES: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

NOAA ATLAS 2: PRECIPITATION-FREQUENCY ATLAS OF THE WESTERN UNITED STATES (GPO: 11 Vols., 1973) supersedes the Technical Paper 40 data for these states.

All but 3 of the 11 state volumes are out of print, and no reprint is presently planned.

Institutions in the eleven western states likely to have copies of these volumes for their state for public inspection are:

US Department of Agriculture Soil Conservation Service Offices
US Army Corps of Engineers Offices
Selected University Libraries
National Weather Service Offices (may also have volumes for adjacent states).
National Weather Service Forecast Offices (may have all eleven volumes)

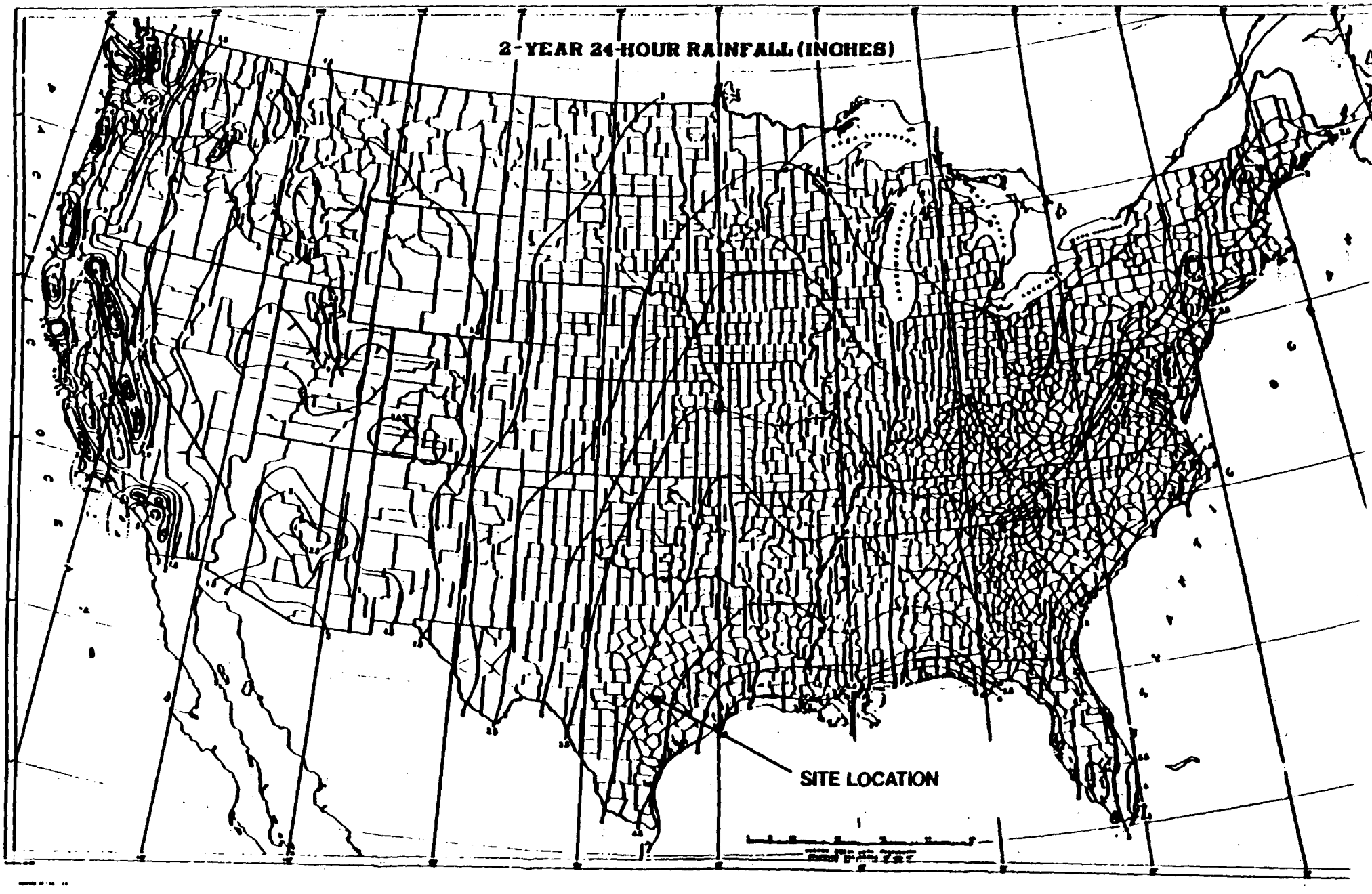
Elsewhere, libraries of universities where hydrology and meteorology degree programs are offered may shelve some of the eleven volumes.

The three volumes in print as of 1 Jan 1983 at the GPO are:

Vol	State	GPO Stock Number	Price
IV	New Mexico	003-017-00158-0	$10.00
VI	Utah	003-017-00160-1	12.00
VII	Nevada	003-017-00161-[illegible]	9.50

The GPO order number is 202-[illegible] for VISA and MASTERCARD orders which

8011


2-YEAR 24-HOUR RAINFALL (INCHES)
SITE LOCATION

REFERENCE 8

TEXAS WATER COMMISSION

B. J. Wynne, III, Chairman
John E. Birdwell, Commissioner
Cliff Johnson, Commissioner

John J. Vay, General Counsel
Michael E. Field, Chief Hearings Examiner
Brenda W. Foster, Chief Clerk

Allen Beinke, Executive Director

November 14, 1990

Mr. Warren Mitchell
I C F
1509 Main ST, STE 900
Dallas, TX 75201-4809

Re: Water Rights Downstream of the Confluence of Blunn Creek and the Colorado River
Colorado River Basin
Travis County

Dear Mr. Mitchell:

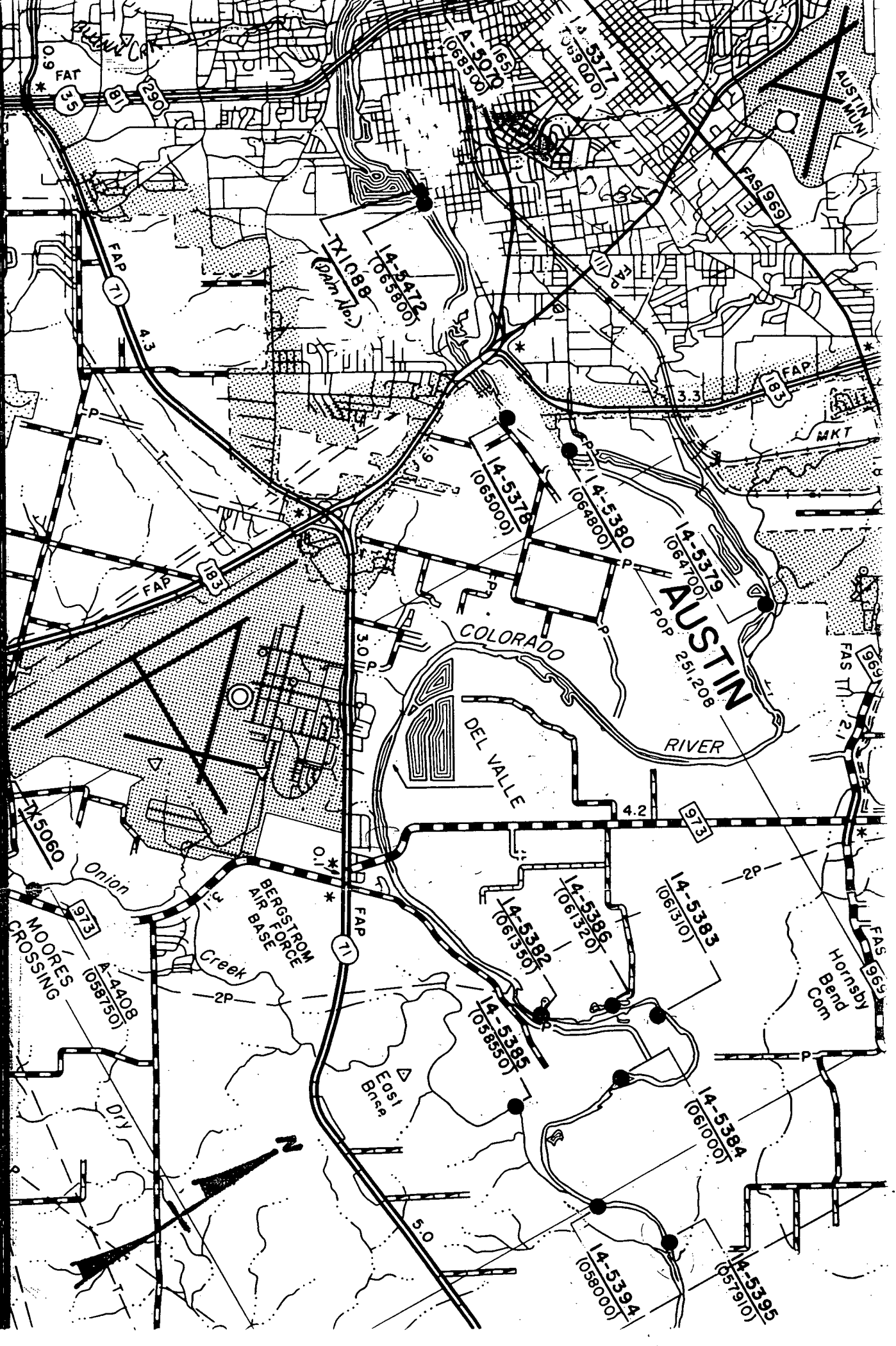
Enclosed please find a map showing water rights (8) for 15 miles downstream of the confluence of Blunn Creek and the Colorado River as per our conversation today. Please note that Certificate of Adjudication No. 14-5394 is shown on the Colorado River but is listed on Onion Creek.

If you have any other questions concerning this matter, please call me at 512/371-6389.

Sincerely,

Mark Evans
Applications Unit
Surface Water Section

JME
Enclosure



AUSTIN
POP 251,208
COLORADO
RIVER
DEL VALLE
BERGSTROM AIR FORCE BASE
MOORES CROSSING
Onion
Creek
Dry
East Base
Hornsby Bend Com
AUSTIN MUNI
MKT
FAP
FAS
FAT
TX1088 (Dam No.)
TX5060
A-5070 (068500)
14-5377 (069000)
14-5472 (065800)
14-5378 (065000)
14-5380 (064800)
14-5379 (064700)
14-5382 (061350)
14-5386 (061320)
14-5383 (061310)
14-5385 (058550)
14-5384 (061000)
14-5394 (058000)
14-5395 (057910)
A-4408 (058750)

REFERENCE 9

Report 276

OCCURRENCE, AVAILABILITY, AND QUALITY OF GROUND WATER IN TRAVIS COUNTY, TEXAS

GB
1025.T4T7
B7

TEXAS DEPARTMENT OF WATER RESOURCES

June 1983

TEXAS DEPARTMENT OF WATER RESOURCES

REPORT 276

OCCURRENCE, AVAILABILITY, AND QUALITY OF GROUND WATER IN TRAVIS COUNTY, TEXAS

By

Gunnar Brune
and
Gail L. Duffin
Geologists

June 1983

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altered to serpentine. The uplift continued and the Cretaceous seas retreated to the south and east marking the end of the Cretaceous period in central Texas.

In Tertiary time, only the extreme eastern portion of Travis County was transgressed by the sea. At this time, the Eocene Midway Group was deposited.

During the Cenozoic era, in Miocene and Pliocene times, much readjustment of the previously deposited sediments took place, resulting in the extensive faulting in the Balcones fault zone. During Pleistocene time, the many river terraces and high gravel deposits were laid down upon the older sediments.

Stratigraphy

Stratigraphic units underlying Travis County range in age from the Ordovician Ellenburger Group to Recent alluvium. Of these, the most important water-bearing units are of Cretaceous age. The Smithwick Shale, Strawn Group, Hammett Shale, Walnut Formation, Del Rio Clay, and Eagle Ford Group carry no significant amounts of fresh water.

The stratigraphic units underlying the county are composed largely of limestone, chalk, shale, sand, and clay. Smaller amounts of gravel, silt, dolomite, gypsum, anhydrite, conglomerate, siltstone, and sandstone are also present. In some localities, igneous basalt and pyroclastics and metamorphic phyllites and quartzites also occur. Table 1 summarizes the approximate maximum thickness, lithologic characteristics, and water-bearing properties of these units.

Pre-Cretaceous stratigraphic units, including the Ellenburger Group and those above it, have a maximum thickness of about 3,200 feet (975 m). Normally the thickness is considerably less, however, because of erosion of the upper formations. According to Table 1, Cretaceous and younger formations have a maximum thickness of approximately 5,980 feet (1,822.7 m).

The Cretaceous System is divided in two series, Comanche and Gulf. The oldest is the Comanche Series which is composed of three groups: Trinity, Fredericksburg, and Washita. The Gulf Series is divided into four groups: Eagle Ford, Austin, Taylor, and Navarro. Lithologically, the Eagle Ford, Austin, Taylor, and Navarro Groups consist predominantly of marl, shale, limestone, and igneous rocks. With the exception of the Eagle Ford, they all yield very small quantities of ground water.

The Trinity, Fredericksburg, and Washita Groups are the most important water-bearing units in Travis County. Each group is divided into separate stratigraphic units (Table 1).

Listed in order from the oldest to youngest, the Trinity Group is divided into the Travis Peak, Glen Rose, and Paluxy Formations.

The Travis Peak Formation is composed of the Hosston, Sligo, Hammett Shale, Cow Creek Limestone, and Hensell Sand Members. The Hosston, Sligo, Cow Creek Limestone, and Hensell Sand Members of the Travis Peak Formation consist of limestone, sand, and shale, which are capable of yielding small to moderate quantities of water. The Hammett Shale is composed of shale and is not known to yield usable water in Travis County.

Table 1.—Geologic Units and Their Water-Bearing Properties

System	Series	Group	Stratigraphic unit	Hydrologic unit	Approximate maximum thickness (feet)	Character of rocks	Water-bearing properties
Quaternary	Recent		Alluvium	Alluvium and terrace deposits	60	Water-stratified deposits of unconsolidated calcareous gravel, sand, silt, and clay, with coarser materials usually concentrated in the lower section.	Yields small to very large quantities of fresh to slightly saline water, chiefly along the Colorado River in eastern Travis County.
	Pleistocene		Terrace deposits		60	Water-stratified deposits of unconsolidated calcareous gravel, sand, silt, and clay, with the coarser materials at the base.	Yields very small to moderate quantities of fresh to moderately saline water.
			Onion Creek Marl		50	Water-stratified deposits of calcareous gravel, sand, silt, and clay, often cemented with *calcium carbonate*.	
			High gravel		20	Gravel and sand, sometimes mixed with clay from underlying formations.	
Tertiary	Eocene	Midway		Midway	300	Clay, silt, glauconitic sand, and thin beds of limestone and sandstone with gypsum, phosphatic nodules, and calcareous concretions.	Yields very small quantities of fresh to moderately saline water.
	Gulf	Navarro		Navarro and Taylor Groups	1,200	Massive beds of shale and marl with clayey chalk, clay, sand, and some nodular and phosphatic zones.	Yields very small quantities of fresh to moderately saline water.
		Taylor					
		Austin	Igneous rocks	Igneous rocks	700	Altered pyroclastics, limburgite, basalt intrusions and flows, and nontronite.	Yields very small quantities of fresh water.
				Austin Chalk	500	Massive beds of chalk and marl with bentonitic seams, glauconite, and pyrite nodules.	Yields small to very small quantities of fresh water.
		Eagle Ford			45	Massive calcareous shale with thin interbeds of silty and sandy, flaggy limestone.	Not known to yield water in Travis County.
		Washita	Buda Limestone		50	Massive, fine-grained, burrowed, shell-fragment limestone. The upper portion is harder and bluff-forming.	Not known to yield water in Travis County.
			Del Rio Clay		75	Clay and marl with gypsum, pyrite, and a few thin siltstone and sandstone beds.	Not known to yield water in Travis County.
			Georgetown Formation		100	Thin interbeds of richly fossiliferous, nodular, massive fine-grained limestone and marl.	Yields small to very large quantities of fresh water, especially from cavernous zones in the Edwards Limestone.
			Kiamichi Formation	Edwards and associated limestones	10	Marl, thin limestone seams, clay, and shell aggregates. Not present at the surface in Travis County.	Not known to yield water in Travis County.
			Edwards Limestone		350	Massive, brittle, vugular limestone and dolomite with nodular chert, gypsum, anhydrite, and solution-collapse features.	Yields small to very large quantities of fresh water, especially from cavernous zones.
Cretaceous		Fredericksburg	Comanche Peak Limestone		60	Fine-grained, fairly hard, nodular, fossiliferous, marly, extensively burrowed limestone.	Yields little or no water in Travis County.
	Comanche		Walnut Formation		120	Hard and soft limestones, marls, clays, and shell beds.	Yields little or no water in Travis County.
		Trinity	Paluxy Formation	Upper Trinity	10	Fine-grained quartz sand, in part indurated by calcium carbonate cement. Locally contains thin beds of limestone and marl.	Yields very small to moderate quantities of fresh, and occasionally slightly saline water.
			Glen Rose Formation: Upper Member		600	Alternating beds of limestone, dolomite, shale, and marl with some anhydrite and gypsum.	
			Glen Rose Formation: Lower member	Middle Trinity	330	Massive, fossiliferous limestone and dolomite in the *basal part grading upward into thin beds of limestone*, shale, marl, and gypsum. Corbula martinae bed at top.	Yields very small to moderate quantities of fresh to moderately saline water. The moderately saline water appears to be confined to north-central Travis County. Many small and medium springs issue from the base of the Hensell Sand in Travis County.
			Hensell Sand Member		70	Sand, gravel, conglomerate, sandstone, siltstone, and shale in western Travis County. Grades into sandy limestone and dolomite in eastern Travis County.	
			Travis Peak Formation: Cow Creek Limestone Member		100	Massive, often sandy, dolomitic limestone, frequently forming cliffs and waterfalls. Contains gypsum and anhydrite beds.	
			Travis Peak Formation: Hammett Shale Member		60	Shale and clay with some sand, dolomitic limestone, and conglomerate.	Not known to yield water in Travis County.
			Travis Peak Formation: Sligo Member	Lower Trinity	300	Limestone, dolomite, occasionally sandy, and shale. Thins to the west and is not present in northwest Travis County.	Yields small to moderate, and with acidizing, large quantities of fresh to moderately saline water.
			Travis Peak Formation: Hosston Member (Sycamore Sand in outcrop)		800	Basal conglomerate grading upward into a mixture of sand, *siltstone, and shale, with some limestone beds.*	
Pennsylvanian	Lower Pennsylvanian	Strawn			800	Alternating beds of sandstone and shale, with some conglomerates.	Not known to yield water in Travis County.
		Bend	Smithwick Shale		500	Shale with sandstone and siltstone in the upper portion. Metamorphosed to phyllites and quartzites in the Ouachita Fold Belt.	Not known to yield water in Travis County.
			Marble Falls Limestone		400	Cavernous, massive, siliceous, fossiliferous limestone.	Not known to yield water in Travis County, but may yield small to moderate quantities of slightly to moderately saline water.
Ordovician	Lower Ordovician	Ellenburger			1,500	Cavernous, crystalline, fossiliferous limestone and dolomite.	Not known to yield water in Travis County.

The Glen Rose Formation is predominantly a limestone and yields small to moderate quantities of water. In this report, the Glen Rose is divided into an upper and a lower member.

The Paluxy Formation consists of a fine-grained sand which crops out only in a very small area in the northwest corner of the county. It is capable of yielding small quantities of water. The Trinity Group will be discussed in detail in the section covering the stratigraphy of water-bearing units.

Four formations make up the Fredericksburg Group. These are the Walnut Formation, Comanche Peak Limestone, Edwards Limestone, and Kiamichi Formation. The Walnut and Comanche Peak consist of shale and limestone and yield little or no water. The Edwards is a massive vugular limestone and in some areas yields large amounts of good quality water. The Kiamichi is a shale and is not known to yield water.

The Washita Group is divided into the Georgetown Formation, Del Rio Clay, and Buda Limestone. The Georgetown is a fine-grained limestone and yields small amounts of usable quality water. The Georgetown Formation and the Edwards Limestone are in hydraulic continuity and are discussed in this report as the Edwards and associated limestones. The Del Rio Clay and Buda Limestone consist of shale and limestone and neither are known to yield water in Travis County.

Those formations or stratigraphic units, which are exposed at the surface, are shown on the geologic map (Figure 4). The geologic units generally crop out in northeast-southwest trending bands. However, in western Travis County, where topographic relief is prominent, the outcrops of the various units are controlled principally by surface elevation.

Principal faults and fault zones in the area are also shown on the geologic map. Faults with little displacement are not shown. Pre-Cretaceous stratigraphic units or formations (the Strawn Group and older rocks) do not now crop out on the surface in the county. Barnes (1948) mapped some small areas of Smithwick Shale in western Travis County along the Colorado River, but these are now covered by Lake Travis.

Geologic sections (Figures 26 through 30) show the stratigraphic relationship and structural attitude of each unit. Three of the sections (Figures 26, 28, and 29) are oriented in a downdip direction and two (Figures 27 and 30) lie along the strike of the formations.

Structure

Geologic structures affecting ground water within Travis County are the regional dip and the uneven pre-Cretaceous erosional surface, the Balcones fault zone, the Llano uplift, the San Marcos arch, and the Luling-Mexia-Talco fault zone. These regional structures are shown in Figure 5.

Upper Member of the Glen Rose Formation

The upper member of the Glen Rose Formation consists of shale and marl alternating with thin beds of impure limestone and dolomite. Beds of gypsum and anhydrite may occur, but often these have been dissolved, leaving solution channels. Gypsum and anhydrite are not known to occur in surface outcrops and usually not above the water table, since they have been removed by solution (Stricklin, Smith, and Lozo, 1971). A stair-step topography, formed by the alternating beds of limestone and shale or marl, typifies the upper member of the Glen Rose. As shown in Figure 4, the upper member outcrops in the northwestern two-thirds of Travis County. Its downdip thickness ranges from 220 feet (67 m) in the northwestern part of the county, to about 600 feet (183 m) in the southeast. The upper 100 feet (30 m) contains much weathered, soft, porous dolomite and burrowed limestone (Rodda, Garner, and Dawe, 1970). Hence, it forms relatively gentle slopes and has many springs.

Paluxy Formation

The Paluxy Formation is present only in a very small area in the north-northwest corner of Travis County (Figure 4). It consists of fine- to very fine-grained, compact, white quartz sand, partially indurated with calcium carbonate, interbedded with silty and calcareous clay and shale. Some lenses and thin beds of limestone and marl occur locally. To the southeast, there is a facies change from sand to limestone. On electric logs this facies is indistinguishable from the upper member of the Glen Rose and is included with it. The Paluxy is approximately 10 feet (3 m) thick.

Edwards and Associated Limestones

Table 1 summarizes the water-bearing properties of the Edwards and associated limestones aquifer. The Edwards and associated limestones represent the upper portion of the Fredericksburg Group and the lower portion of the Washita Group of the Cretaceous System. They lie above the Walnut Formation and below the Del Rio Clay. Collectively, these limestones are considered the principal aquifer in Travis County and include, in ascending order, the Comanche Peak Limestone, Edwards Limestone, Kiamichi Formation, and Georgetown Formation.

The Comanche Peak Limestone consists of marly, grayish-white limestone containing nodules and fossils. It has considerable flaking and jointing which gives it a fractured appearance. In the northwest part of the county, the Comanche Peak is approximately 20 feet (6 m) thick. The Comanche Peak reaches 60 feet (18 m) in the subsurface, and it pinches out to the east and south (Garner and Young, 1976). Because it is believed to be hydrologically connected with the Edwards Limestone, the two formations are not separated on the geologic sections (Figures 26 through 30). The Comanche Peak does not appear to be present south of the Colorado River. This formation yields little or no ground water.

The Edwards Limestone outcrops extensively within the Balcones fault zone east of the Mount Bonnell fault and caps the high topography in the west as shown in Figure 4. This outcrop is part of the water-table portion of the aquifer which extends from Travis County west through the Edwards Plateau to west Texas. The formation also outcrops northward into Williamson and Bell Counties. In the subsurface, the Edwards consists of 200 to 360 feet (61 to 107 m) of brittle,

thick-bedded to massive limestone, commonly dolomitic, containing minor beds of shale, clay, and siliceous limestone. Beds of chert and flint are common. "Honeycomb" limestone beds are also common and represent voids, many interconnected, from which shell material has been dissolved. Dolomitic beds commonly have a sugary texture and often are designated as "sandstone" or "sandy limestone" by many drillers.

There are several solution-collapse zones in the Edwards Limestone which represent former beds of gypsum (originally anhydrite) that have been removed by solution (Rodda, Garner, and Dawe, 1970). About 60 to 80 feet (18 to 24 m) from the base is a 5- to 10-foot (2- to 3-m) thick solution-collapse zone. One-third to one-half of the distance from the top of the formation is a 20-foot (6-m) thick, iron-stained, cavernous, solution-collapse zone containing brecciated limestone, dolomite, chert, crystalline calcite, and residual red clay. This widespread zone in central Texas represents the former extent of a thick gypsum and anydrite unit called the Kirschberg Evaporite. Where the gypsum and anhydrite have largely been removed, it is called the Kirschberg solution zone. It can be readily recognized on geophysical logs about 50 to 75 feet (15 to 23 m) below the Kiamichi Formation. Near the top of the Edwards Limestone is another thin solution zone. These solution-collapse zones, especially the Kirschberg solution zone, are the main water-bearing horizons in the Edwards and associated limestones aquifer. Well yields vary from small (10 to 30 gallons per minute or 0.63 to 1.9 liters per second) to very large (over 300 gallons per minute or over 19 liters per second) and the quality of the ground water is fresh.

About 10 feet (3 m) of marl, clay, thin limestone seams, and shell aggregates make up the Kiamichi Formation. It is recognizable only in the subsurface in Travis County where it can readily be picked on geophysical logs. It is equivalent to the "Regional Dense Bed" (Rose, 1972). In northern Travis County, it separates the Edwards Limestone and the Georgetown Formation, and in the southern part of the county, it occurs within the Edwards Limestone. Because the Kiamichi is not known to contain water in Travis County, it is included in the Edwards Limestone and is not shown on the geologic sections (Figures 26 through 30).

The Georgetown Formation is a nodular limestone, usually gray to tan, massive, and interbedded with layers of marl or marly shale. It is fossiliferous, commonly contains burrows filled with fossil fragments, and also contains some minor solution zones. Downdip thicknesses of the formation range from 40 to 100 feet (12 to 30 m). The Georgetown and Edwards are hydrologically connected throughout Travis County and are seldom differentiated by drillers in the area.

Total thickness of the Edwards and associated limestones aquifer, where fresh to slightly saline water occurs, ranges from 250 to 450 feet (76 to 137 m).

Regionally, the dip of the Edwards and associated limestones aquifer is to the east-southeast at a rate of 50 to 100 feet per mile (9 to 19 m/km). The direction and rate of dip at the top of the aquifer is shown on Figure 10.

Austin Chalk

The Austin Chalk consists of a light gray chalk, limy marl, and chalky limestone. Some bentonite, glauconite, and pyrite nodules are also present in the unit. Near igneous intrusions and

Alluvium and Terrace Deposits

Source and Occurrence

Recent alluvium and terrace deposits which occur in the east-southeast portion of Travis County are treated as one undifferentiated hydrologic unit because of their similar hydrologic and lithologic characteristics. The Recent alluviums have the largest outcrop area and the thickest deposits which consist of unconsolidated material, chiefly gravel, sand, and silt. They are located along the Colorado River in eastern Travis County.

Primary sources of ground water to the alluvium and terrace deposits are rainfall, lakes, and streams which cross their outcrops. Water occurs primarily in the void spaces between particles of gravel and sand. It is usually under water-table conditions, and the aquifer may not be completely saturated.

Recharge, Movement, and Discharge

Recharge to the alluvium and terrace deposits is mainly from rainfall which falls on the outcrops and from the tributaries of the Colorado River which cross the outcrops. A small amount of recharge probably originates as underflow from Town Lake. Additionally, small amounts may be contributed by the Colorado River during periods of flooding. In the area along the Colorado River between Town Lake and the east county line, much recharge is undoubtedly rejected, as the aquifer is in constant contact with the river. The configuration of the water table also confirms this movement (Figure 22).

The average annual recharge to the alluvium and terrace deposits probably ranges from 5 to 8 percent of the mean annual rainfall. Using 5 percent of the mean annual rainfall or 1.68 inches over the outcrop area, the amount of effective recharge available would be about 6,000 acre-feet per year (7.40 hm^3/yr).

Ground water in the alluvium and terrace deposits moves slowly downdip to the east and south parallel to the recharging streams and rivers. Water-level measurements indicate that the hydraulic gradient of the potentiometric surface is about 16 to 44 feet per mile (3 to 8 m/km).

Pumpage from wells accounts for nearly all the discharge from the Recent alluviums. A small amount is believed to return to stream channels in the form of seepage during periods of low streamflow. Springs at the base of the terrace deposits account for most of their discharge. These springs are especially numerous in an area southeast of Manor, where they issue from the base of high gravel deposits which overlie clay and shale of the Navarro, Taylor, and Midway Groups.

Hydraulic Characteristics

Results of pumping tests performed on wells developed in the Recent alluvium in Travis County are shown in Table 3. Permeability coefficients range from 8,200 to 14,600 $(gal/d)/ft^2$ or 334,100 to 594,800 $(l/d)/m^2$. Because of the great range in permeability and in the thickness of

water-saturated materials, transmissibility coefficients of 0 to 400,000 (gal/d)/ft or 0 to 4,967,200 (l/d)/m may be expected. It should be pointed out that the tested wells penetrated a large amount of coarse gravel. In most cases, the alluvium contains a large percentage of fine materials; consequently, the permeability and transmissibility will usually be much lower than the values obtained in these tests. As shown in Table 3, the coefficient of storage varies from 0.08 to 0.15.

Changes in Water Levels

The approximate altitude of water levels in selected wells completed in the alluvium and terrace deposits in 1978 is shown in Figure 22. Table 6 presents water levels for these aquifers in selected observation wells. The hydraulic gradient is generally to the south and east parallel to the river. The fluctuation of water levels in well 58-50-802, completed in the terrace deposits, indicates no definite trend in water levels (Figure 19). The fluctuations are caused chiefly by changes in the stage of nearby streams.

Chemical Quality

Ground water in the alluvium and terrace deposits is generally a calcium carbonate water, very hard, usually fresh, and is normally neutral. Sulfate, chloride, and dissolved-solids content in water from selected wells in the alluvium and terrace deposits are shown in Figure 13. Records of chemical analyses from selected wells completed in the alluvium and terrace deposits are given in Table 7.

The source, significance, and range in concentrations of chemical constituents of ground water collected from the alluvium and terrace deposits are given in Table 2. Iron content in the alluvium and terrace deposits ranged from 0 to 0.02 mg/l in four samples. Sulfate content ranged from less than 4 to 2,544 mg/l in 134 samples with only 9 percent exceeding 300 mg/l. Chloride content ranged from 6 to 2,500 mg/l in 134 samples with 5 percent of the samples containing more than the recommended 300 mg/l. Fluoride content ranged from less than 0.1 to 5.8 mg/l in 113 samples with only 3 percent of the samples collected in Travis County exceeding the upper recommended limit of 1.4 mg/l. The range in nitrate content was from less than 0.4 to 540 mg/l in 127 samples with 17 percent exceeding 45 mg/l. Dissolved-solids content ranged from 170 to 6,953 mg/l in 134 samples with only 8 percent exceeding the recommended 1,000 mg/l.

The majority of alluvium and terrace deposits waters fall in the medium (C2) to high (C3) salinity hazard class and low (S1) sodium hazard class as shown in Figure 14.

Water samples collected from the alluvium and terrace deposits had a specific conductance which ranged from 274 to 10,000 micromhos at 25°C. Fifty-three percent of the samples exceeded 750 micromhos at 25°C. Usually, ground waters with a specific conductance of less than 750 micromhos at 25°C are considered satisfactory for irrigation.

The sodium-adsorption ratio (SAR) ranged from 0.1 to 10.5 in water samples collected from the alluvium and terrace deposits. Less than 1 percent of the samples showed ratios higher than 10.

Utilization and Development

Alluvium and terrace deposits are used extensively as a source of public supply and domestic water. Although the City of Austin primarily uses surface water from the Colorado River, it is also a relatively large user of ground water. Its usage of ground water from the alluvium deposits began about 1934. At the present time, the water is used to air-condition the city auditorium and as a supply for Deep Eddy swimming pool. Many other smaller communities such as Garfield (well 58-52-304), River Timbers (well 58-52-313), Colorado River Ranchettes (wells 58-52-614 and 615), and other municipal water-supply corporations use ground water from the alluvium and terrace deposits. Many of the farms and ranches in the county, when usable supplies are available, obtain their water from the alluvium and terrace deposits.

There were approximately 177 wells and springs inventoried during this study which produced from the alluvium and terrace deposits in Travis and adjacent counties. Of this amount, 25 were used for public supply, 10 for irrigation, 1 for industrial purposes, and 98 for domestic and livestock supply. There were also approximately 43 unused wells either abandoned or destroyed.

During 1976, approximately 2,550 acre-feet (3.14 hm^3) of ground water was pumped from the alluvium and terrace deposits which was approximately 52 percent of the total ground water used in the county. Approximately 2,153 acre-feet (2.65 hm^3) of ground water was used for municipal purposes from the alluvium and terrace deposits in 1976 which was about 77 percent of the total municipal usage. About 25 acre-feet (0.31 hm^3) was used from these aquifers for irrigation in 1976.

There was only one industrial well inventoried during this study and no pumpage record was available.

The alluvium and terrace deposits supplied approximately 373 acre-feet (0.460 hm^3) of ground water for domestic and livestock purposes in 1976, which represented about 18 percent of the total domestic and livestock usage.

Availability of Ground Water for Development

Based on the previously discussed conservative estimate of effective recharge of 6,000 acre-feet per year (7.40 hm^3/yr), the amount of fresh to slightly saline ground water available for additional development from the alluvium and terrace deposits annually in Travis County would be approximately 3,150 acre-feet (3.88 hm^3). This availability is based on the following data. In 1976, approximately 2,550 acre-feet (3.14 hm^3) of ground water was used for municipal, irrigation, and domestic and livestock purposes. During the period from September 1972 through April 1973, springs were inventoried and measured which were flowing from the terrace deposits. They had an estimated total annual discharge of about 300 acre-feet (0.370 hm^3). Therefore, the total annual discharge from the alluvium and terrace deposits is about 2,850 acre-feet (3.51 hm^3). This figure subtracted from an estimated effective recharge of 6,000 acre-feet per year (7.40 hm^3/yr) leaves approximately 3,150 acre-feet per year (3.88 hm^3/yr) for future development.

Theoretically, the entire 3,150 acre-feet (3.88 hm^3) would be available for development by wells. However, it would be impractical to do this because it would require the interception of all of the natural ground-water discharge by numerous, evenly spaced, low-capacity wells.

Other Aquifers

Other hydrologic units which produce a small amount of ground water in Travis County are the Austin Chalk and the Taylor and Navarro Groups. Igneous rocks around Pilot Knob also produce small quantities of good quality water. There were only two water wells in Travis County that were completed in the igneous rocks. Additionally, the Midway Group is an unreliable source of very small quantities of fresh to moderately saline ground water.

Twenty-three wells and springs were inventoried during this study that were completed in the Austin Chalk. Out of this total, eight wells were either abandoned or not presently in use. Twenty-eight wells were inventoried in the Navarro and Taylor Groups with 16 of them either abandoned or not used. Only one well (58-45-206) was inventoried in the Midway Group, and it had a depth of 20 feet.

In the Austin Chalk and Taylor and Navarro Groups, ground water usually occurs in the upper, weathered outcrop portion of the units which is the most permeable. The Austin Chalk contains numerous fractures and joints which are now water saturated. Water can also be present in the softer marls which occur throughout the Austin Chalk. The Taylor and Navarro Groups contain montmorillonitic clays which are known for their swelling and shrinking characteristics. During dry periods, large cracks may open in the surface of the outcrop which may allow water to enter the water-bearing unit. Water also occurs in the voids in some thin sand beds. Ground water occurs primarily under water-table conditions in the Austin Chalk and Taylor and Navarro Groups. Although the Midway is not generally considered to be a significant aquifer, a small amount of water occurs in the thin sandy layers. The formations are not completely saturated, and the ground water occurs primarily under water-table conditions.

All of these water-bearing units are recharged from rainfall which falls on their outcrops, streams which cross them, and farm ponds or lakes which lose water into them. Ground water moves in various directions, largely controlled by the topography, through joints, crevices, faults, and the more permeable bedding planes. Spring flow accounts for most of the discharge from the Austin Chalk. Ground water in the Navarro, Taylor, and Midway Groups is discharged by pumping wells.

Hydraulic properties of the Austin, Taylor, Navarro, and Midway are undetermined due to a lack of sufficient data. To compensate for the low specific capacity, wells are often constructed with a large diameter so that the storage capacity in the well will offset drawdown during periods of use. These shallow wells sometimes fail during periods of prolonged drought.

Fluctuations in water levels in an Austin Chalk well are shown in Figure 19. There seems to be no definite trend to water levels. Minor fluctuations are caused chiefly by variations in rainfall and recharge. The lowest levels were reached from 1954 to 1956, near the end of the drought in this area. There was no historical water-level data for the Taylor, Navarro, and Midway Groups, but water levels fluctuate in response to rainfall.

Ground water in the Austin Chalk may be described as a calcium carbonate type. It is very hard, usually fresh, and is normally neutral. As shown in Figure 13, its quality appears to range within the same limits regardless of the location within the county. Ground water in the Navarro and Taylor Groups may be described as a calcium carbonate water which becomes a sodium chloride water downdip. The westernmost portion of the outcrop contains fresh water while in the southeast the water rapidly deteriorates to slightly saline and then moderately saline (Figure 13). A chemical analysis of the water from well 58-45-206 shows it to be a calcium carbonate water with a dissolved-solids content of 254 mg/l. The water is hard. Ranges of the chemical constituents and the source and significance of the dissolved minerals found in waters of the Austin Chalk and Taylor and Navarro Groups are presented in Table 2.

The Austin Chalk and Taylor and Navarro Groups are used mainly as a source of domestic, livestock, and irrigation water. There were three Austin Chalk springs inventoried during this study. On March 22, 1973, spring 58-35-606 had a measured yield of 250 gal/min (16 l/s). In 1976, the estimated amount of ground water used from the Austin Chalk and Taylor and Navarro Groups was approximately 150 acre-feet (0.18 hm^3), which was about 3 percent of the total amount of ground water used in Travis County.

GROUND-WATER PROBLEMS

Well Construction and Completion

Improper well construction in Travis County can be related to one or all of the following: (1) well casing, (2) well screens, (3) gravel packing, (4) cementing, and (5) well development.

Wells having insufficient casing or no casing at all may permit the bore hole to collapse at any point or sand-up at the water-producing interval. Some of the more common types of wells used in Travis County and their casing requirements are shown in Figure 23. For deep wells, the casing size is generally determined by the size of the pump to be used. New or used steel casing is ordinarily used. Polyvinyl chloride (PVC) plastic casing is coming into increasing use. It is cheaper and is not subject to corrosion. However, it is not as strong as steel and cannot be forced through resistant shale and clay beds without breaking. For shallow wells, where storage capacity is of primary concern, large-diameter concrete rings are usually employed as shown in Figure 23a. A common mistake in Travis County is to drill the well without the use of drilling mud and then attempt to place casing in the well. This mistake is usually made in drilling to the Hosston Member of the Travis Peak Formation. The Hosston is overlain by the Hammett Shale Member of the Travis Peak Formation and without the use of a heavy drilling mud, the Hosston will cave in immediately after drilling. More serious than this, however, is that the Hammett Shale begins to expand into the freshly drilled well immediately when water from the underlying Hosston saturates the shale. As a result, the casing cannot be forced past the Hammett Shale, and the shale below the casing closes the well and prevents the Hosston water from ascending the borehole. In some hard units such as the limestones of the Edwards and Glen Rose aquifers, no casing is required as shown in Figure 23c. However, casing may be required above these aquifer units when incompetent beds are encountered.

Some typical well-screen installations in Travis County are shown in Figures 23b and 23d. A well should usually be drilled deep enough to penetrate all of the water-bearing zones of an

Table 5.--Records of Wells, Test Holes, and Springs in Travis and Adjacent Counties

All wells are drilled unless otherwise noted in remarks column.

Water-bearing unit : Qal, Alluvium; Qter, Terrace deposits; Ki, Igneous rocks; Tm, Midway Group; Kgn-Kgt, Navarro and Taylor Groups; Kgac, Austin Chalk; Kce, Edwards and associated limestones; Kcgr, Glen Rose Formation undifferentiated; Kcgru, upper member of Glen Rose Formation; Kcgrl, lower member of Glen Rose Formation; Kche, Hensell Sand Member of Travis Peak Formation; Kccc, Cow Creek Limestone Member of Travis Peak Formation; Kcho, Hosston Member of Travis Peak Formation; Pnbmf, Marble Falls Limestone; Oe, Ellenburger Group.

Water Levels : Reported water levels given in feet; measured water levels given to the nearest tenth or hundredth of a foot.

Method of lift and type of power: C, cylinder; Cf, centrifugal; E, electric; G, natural gas, butane, or gasoline; H, hand; J, jet; N, none; S, submersible; T, turbine; W, windmill.

Use of Water : D, domestic; Ind, industrial; Irr, irrigation; N, none; P, public supply; S, livestock.

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing: Diameter (in.)	Casing: Depth (ft)	Water bearing unit	Altitude of land surface (ft)	Water level: Below land-surface datum (ft)	Water level: Date of measurement	Method of lift	Use of water	Remarks
							Travis County						
* YD-57-32-201	J. L. Turner	--	--	--	5	--	--	1,089	263.30	Aug. 24, 1970 July 24, 1973	C, W	D, S	Well A-1 in 1957 Travis County Report. 4/
* 501	do	--	--	225	4	--	Kcho	905	150	Aug. 25, 1972	C, E	D, S	--
* 601	T. H. Varner	John Heine	1910	75	6	75	Kche	850	65 50.60	July 1950 June 7, 1971	C, W	N	Abandoned. Well A-27 in 1957 Travis County report. 4/ 5/
* 801	H. P. Hensel	S. W. Sanford	1948	125	6	40	Kcho	765	40 37.40	1949 June 8, 1971	C, E	D, S	Well A-25 in 1957 Travis County report. 4/ 5/
* 802	do	--	--	28	36	28	Kche	770	23.35 23.50	June 2, 1966 Mar. 15, 1978	C, W	D	Well A-26 in 1957 Travis County report. 4/ 5/
* 803	R. H. Henry	S. W. Sanford	1947	103	6	103	Kche	860	76.32 76.90	July 13, 1950 Mar. 16, 1978	J, E	D, S	Well A-21 in 1957 Travis County report. 4/ 5/
804	H. P. Hensel	Mason-Johnston and Associates	1953	214	--	--	Kcho	870	--	--	N	N	--
* 805	G. H. Turner	--	--	Spring	--	--	Kche	790	--	--	Flows	D, S	Estimated flow 5 gal/min on Aug. 25, 1972.
* 901	H. P. Hensel	--	1944	75	6	--	Kche	720	--	--	C, E	D, S	--
* 902	do	--	--	Spring	--	--	Kche	700	--	--	Flows	--	Spring in conglomerate with several openings. Another small spring at house. Reported flow 10 gal/min on May 10, 1966. Well A-28 in 1957 Travis County report. 4/
* 39-905	Larry Hollingsworth	Central Texas Drilling Company	1967	176	8	176	Kcho	925	48.80 48.95	Mar. 11, 1974 Mar. 15, 1977	S, E	D, S	Reported yield 10 gal/min on Aug. 18, 1972. Slotted from 116 to 176 feet. 2/
* 40-201	J. D. Singleton	Doyle Baker	1949	159	4	159	Kcho	760	90.27	Mar. 16, 1978	S, E	D, S	Well B-9 in 1957 Travis County report. 4/ 5/
* 202	do	Wright Drilling Company	1960	129	6	129	Kcho	725	--	--	C, E	D	Temp. 73°F on April 19, 1967. 5/
* 203	do	--	--	Spring	--	--	Kcgrl	770	--	--	Flows	S	Cherry Spring. Estimated flow 5 gal/min on August 25, 1972
* 301	V. E. Grove	Sterzing Drilling Company	1965	425	7 5	99 367	Kcho	970	300 240.50	Sept. 20, 1965 May 26, 1967	S, E	D, S	Open hole completion from 367 to 425 ft. Pumping level 325 ft at 12 gal/min on Sept. 20, 1965. Temp. 73°F. 5/
302	J. W. Bridgewater	Farrer Well Drilling Company	1963	180	7	179	Kcho	715	70	Dec. 12, 1963	S, E	D	Slotted 47 ft at bottom. Reported pumping level of 103 ft at 15 gal/min in Dec. 1966. Pump set at 168 ft. 3/ 5/
303	Emmett Bone	Sterzing Drilling Company	1962	210	6	210	Kcho	695	16.20 37.11	May 16, 1968 Mar. 15, 1978	J, E	D	Perforated from 165 to 185 ft. Cemented from 2 ft to surface. 5/

See footnotes at end of table.

Table 5.--Records of Wells, Test Holes, and Springs in Travis and Adjacent Counties--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing: Diameter (in.)	Casing: Depth (ft)	Water bearing unit	Altitude of land surface (ft)	Water level: Below land-surface datum (ft)	Water level: Date of measurement	Method of lift	Use of water	Remarks
							Travis County Continued						
* YD-58-33-214	Hillside Washateria	James Calhoun	1971	418	8	20	Kcgr	820	234	Aug. 11, 1971	S, E	Ind	Reported pumping level 50 ft at 50 gal/min for 4.5 hours.
* 215	Gregg Point	Powell Drilling	1969	640	8 6 5	86 500 640	Kcgrl, Kcho	820	242 256.20	Jan. 14, 1969 Mar. 17, 1978	S, E	P	Reported drawdown 233 ft after bailing 20 gal/min for 2 hours on Jan. 4, 1969. Supplies 32 homes. 3
* 216	Panoramic Hills	James Calhoun	1972	544	5	50	Kcgrl, Kcho	930	293.30	Nov. 13, 1973	S, E	P	--
* 301	John Johnson	Sterzing Drilling Company	1963	545	7 6	65 208	Kcgrl, Kcho	770	105 111.40	Feb. 23, 1963 May 30, 1966	S, E	P	Estimated yield 15 gal/min.
* 302	John Chamberlain	Powell Drilling	1963	665	--	--	Kcho	880	--	--	S, E	D	5
* 303	Weldon Horton	Sterzing Drilling Company	1965	530	5	530	Kcho	720	75	Apr. 30, 1965	--	D	Reported yield 15 gal/min. 5
* 304	Scott Broaddus	W. H. Glass and Son	1963	360	--	--	Kcgrl	740	--	--	S, E	D	5
305	Walter Schwarzer	Sterzing Drilling Company	1966	345	7	207	Kcgrl	740	183.98	Mar. 16, 1978	--	D	Pumping level 200 ft at 12 gal/min in 1966. 5
* 306	R. L. Rose	W. H. Glass and Son	1967	480	7	260	Kcgr	940	150	Sept. 10, 1968	S, E	D	Estimated yield 8 gal/min.
* 307	J. A. Shaffer	Thomas Arnold	1972	660	5 3	20 660	Kcgr	960	235.10 239.40	May 4, 1973 Mar. 17, 1978	S, E	D	--
* 308	A. R. Stone	do	1973	740	5	120	Kcho	980	285.60	Nov. 13, 1973	S, E	D	Slotted from 640 to 740 ft.
309	James Weaver	do	1976	400	5	20	Kcgru	962	210 207.70	June 8, 1976 May 23, 1978	S, E	D	3
* 401	Frank De Groot	S. W. Glass	1938	422	6	14	Kcgrl	970	342	Nov. 9, 1938	C, W	S	Reported 80 ft drawdown after bailing 5 gal/min for 40 minutes. Well C-31 in 1957 Travis County report. 4 5
* 402	Ivan Pearson	Audrey E. Sanford	1964	535	7	30	Kcgr	950	231.50	June 1, 1966	C, W	S	5
* 403	J. H. Shepler	Layne-Texas Drilling Company	1965	462	8 6	446 462	Kcho	770	136.47 165.88	Apr. 11, 1967 Mar. 8, 1978	S, E	N	Slotted from 446 to 459 ft. Pumping level 244.31 ft at 23.5 gal/min on Apr. 13, 1967. Water-level recorder installed on Mar. 22, 1974. 1 2 5
* 404	--Harris	--	1943	305	5	20	Kcgr	1,000	--	--	S, E	D	Well C-4 in 1957 Travis County report. 4
405	Chuck Van Cleave	Powell Drilling	1972	390	5	390	Kcgrl	910	220 244	Jan. 1972 Mar. 23, 1978	--	N	Estimated yield 25 gal/min. 1
* 501	John Johnson	Sterzing Drilling Company	1962	422	7	25	Kcgr	785	162.60	Apr. 12, 1967	S, E	P	Estimated yield 5 gal/min. 5
* 502	--Walters	S. W. Glass	1951	520	8	490	Kcho	715	90 39.70	Sept. 7, 1951 Nov. 21, 1966	S, E	D	Well C-89 in 1957 Travis County report. 4 5
* 503	Hershel Murray	E. W. Glass	1970	68	5	68	Kcgrl	700	35 42	Oct. 18, 1970 Mar. 21, 1978	J, E	D	Reported yield 20 gal/min
504	D & W Railroad	--	--	Spring	--	--	Kcgru	720	--	--	Flows	S	Cox Springs. No flow on June 6, 1972.
* 601	John Johnson	Sterzing Drilling Company	1962	422	7	44	Kcgr	740	140	--	S, E	P	Reported yield 10 gal/min. Cemented from 5 ft to surface. 3 5

See footnotes at end of table.

Table 5.--Records of Wells, Test Holes, and Springs in Travis and Adjacent Counties--Continued

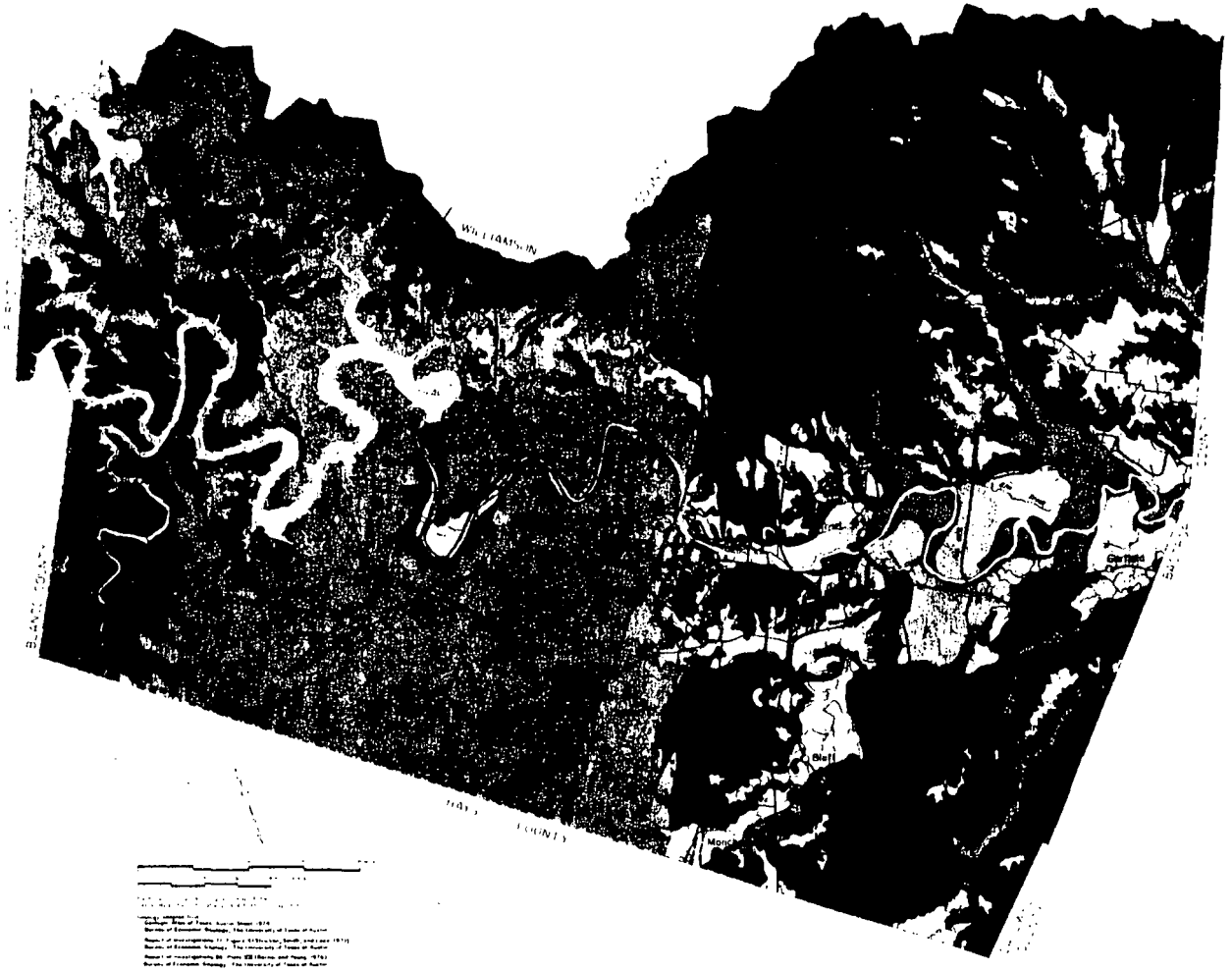
Well	Owner	Driller	Date completed	Depth of well (ft)	Casing: Diameter (in.)	Casing: Depth (ft)	Water bearing unit	Altitude of land surface (ft)	Water level: Below land-surface datum (ft)	Water level: Date of measurement	Method of lift	Use of water	Remarks
						Travis County--Continued							
* YD-58-34-713	Bobby Monroe	Delby Glass	1970	450	5	55	Kcgru	1,045	210	Sept. 21, 1970	S, E	D	--
* 714	Scuba Point Travis	Central Texas Drilling Company	1972	770	7	136	Kcgr	1,059	445	Feb. 4, 1972	S, E	Ind	Reported drawdown 100 ft after air jetting for 1 hour at 15 gal/min on Feb. 4, 1972.
* 801	W. L. Richards	A. J. Bartuge	1949	968	5	710	Kcho	740	126 157.90	Feb. 27, 1950 June 10, 1971	S, E	D	Well D-10 in 1957 Travis County report. 3/ 4/ 5/
* 802	Feed Lot Restaurant	Robert Crouch	1972	950	7	820	Kcho	1,000	380	June 1972	--	N	Cemented from 0 to 820 ft. Reported pumping level 125 ft at 45 gal/min for 4 hours. Not used because of poor quality water. 1/
* 803	do	do	1972	400	4	400	Kcgru	1,000	150	May 20, 1972	S, E	D	Reported drawdown 75 ft after air jetting for 3 hours at 12 gal/min on May 20, 1972.
* 901	H. O. Simons	L. Daniels	1929	150	6	--	Kcgru	613	8.15 7.22	June 14, 1940 Aug. 12, 1952	C, E	S	Well 419. 4/ Well D-110. 5/ 6/ Deepened in 1948 from 112 to 150 ft.
* 902	S. D. Williams	--	--	53	--	--	Kce	902	36.06 32.09	Nov. 15, 1939 Mar. 28, 1946	H	S	Well D-85 in 1957 Travis County report. 3/ 4/
903	Great Hills	J. M. Wright	1971	1,222	8 6	722 1,100	Kcho	890	241.90	Oct. 31, 1972	--	P	Reported yield 100 gal/min.
904	do	do	1971	1,222	8	3	Kcgr	910	193	do	--	N	Reported yield 50 gal/min. Caved to 932 ft before Oct. 31, 1972.
* 35-104	Austin White Lime Company	W. H. Glass and Son	1948	375	6	12	Kcgr, Kce	800	--	--	C, E	N	Well D-37 in 1957 Travis County report. 4/
* 201	Lorene Bolt	A. Z. Daniels	1939	270	6	90	Kce	904	225.19 227.74	Oct. 4, 1940 Mar. 15, 1977	C, W	D, S	Well D-41 in 1957 Travis County report. 3/ 4/
* 205	L. M. Meese	--Robinson	1900	280	5	100	Kce	825	--	--	S, E	D	Well D-42 in 1957 Travis County report. 4/
* 206	Joe Bailey	--Glass	1945	700	6	650	Kce	850	300 215.25	Nov. 2, 1949 Mar. 21, 1978	C, E	D	Well D-45 in 1957 Travis County report. 4/
* 207	N. J. Stramler	Joe Robinson	1910	330	5	40	Kce	905	230	Oct. 4, 1940	S, E	D, S	Well D-43 in 1957 Travis County report. 4/
* 208	A. F. Mc Donald	--Robertson	1920	300	5	--	Kce	820	--	--	C, W	D, S	Well D-47 in 1957 Travis County report. 4/
* 209	William Bratton	--	1890	20	60	--	Kgac	860	5 8.60	June 3, 1940 Sept. 29, 1970	H	D	Dug well. Well D-48 in 1957 Travis County report. 4/
* 210	do	Robertson and McBride	1894	362	5	318	Kce	860	318 269.42	1894 Mar. 2, 1978	C, W	D, S	Well D-49 in 1957 Travis County report. 4/
* 211	J. A. Pearson	--Adams	1904	317	6	100	Kce	838	180	June 6, 1940	C, E	D, S	Well D-44 in 1957 Travis County report. 4/
* 212	Stuckey Candy Company	Stersing Drilling Company	1962	320	5	147	Kce	825	120	Feb. 10, 1962	S, E	P	Reported yield 10 gal/min. 3/
* 301	Annie Jacobson Estate	--Adams	1903	352	5	177	Kce	810	--	--	C, W	D, S	Well F-1 in 1957 Travis County report. 4/
302	Carl Wieland	Johnson, Dye, and Hughes	1933	535	--	--	Kce	820	--	--	N	N	Well F-2 in 1957 Travis County report. 4/ Oil test. Destroyed.
* 303	do	--	--	552	5	373	Kce	820	--	--	C, E	N	Well F-3 in 1957 Travis County report. 4/
* 304	Paul Jones	Central Texas Drilling Company	1973	360	5	189	Kce	813	158	Sept. 11, 1973	S, E	D, S	--

See footnotes at end of table.

Table 5.--Records of Wells, Test Holes, and Springs in Travis and Adjacent Counties--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing: Diameter (in.)	Casing: Depth (ft)	Water bearing unit	Altitude of land surface (ft)	Water level: Below land-surface datum (ft)	Water level: Date of measurement	Method of lift	Use of water	Remarks
							Travis County -Continued						
* YD-58-50-213	Bill Bolger	--	--	300	7	--	Kce	705	226.10 219.10	Jan. 17, 1973 Mar. 13, 1978	S, E	D	--
216	U.S. Geological Survey	Texas Department of Water Resources	1978	582	4	580	Kce	792	--	--	N	N	Test well. Slotted from 180 to 480 ft. 1/
217	do	do	1978	217	4	144	Kce	567	--	--	N	N	Test well. 1/
218	do	do	1978	214	4	136	Kce	567	126	Aug. 8, 1978	N	N	Do.
* 301	John Lovelady	Gus Sanders	1949	388	5	296	Kce	640	209.00 178.76	July 29, 1949 Mar. 24, 1978	N	N	Well H-139 in 1957 Travis County report. 1/ 2/ 4/
* 302	Merle Goodnight	--	1936	18	36	8	Qter	640	12.70 13.42	Aug. 3, 1937 May 24, 1939	J, E	D, S	Dug well. Well H-112 in 1957 Travis County report. 2/ 4/
* 303	J. D. Elliot	Earl Johnson	1938	156	6	10	Kgac	630	45.50	Sept. 29, 1938	C, W	N	Abandoned. Reported drawdown 2 ft after pumping 30 gal/min for 1 hour. Well H-140 in 1957 Travis County report. 4/
E 304	St. Edwards University	--	1885	1,200	--	--	Kce, Kcgrl	668	--	--	N	N	Abandoned. Reportedly deepened to 3,000 ft. Formerly supplied swimming pool, laundry, and baths at St. Edwards University.
305	Ralph Lowry	Nance and Baily	1923	780	--	--	--	640	--	--	N	N	Abandoned oil test. Well H-114 in 1957 Travis County report. 3/ 4/
* 401	Travis Howard	--Glass	1967	404	7	252	Kce	740	249.80	Mar. 14, 1978	S, E	D	3/
* 402	Edward Yturri	S. W. Glass	1967	335	7	198	Kce	750	233.10 213.90	Feb. 12, 1969 Mar. 17, 1978	S, E	D	Reported drawdown 60 ft after bailing 45 gal/min for 1 hour. 3/
* 403	William Bethes	do	1968	264	7	154	Kce	750	100	June 17, 1968	--	D	Reported drawdown 0 ft after bailing 20 gal/min for 1 hour on Mar. 17, 1968. Cemented from 154 to 134 ft.
* 404	Robert Glenn	Central Texas Drilling Company	1967	358	5	352	Kce	740	90	Dec. 1967	S, E	D	3/
* 405	John Cameron	--Fowler	--	365	5	365	Kce	850	51.20	Oct. 22, 1970	C, G	N	Well J-89 in 1957 Travis County report. 4/
* 406	George Slaughter	John Glass	1946	325	5	100	Kce	800	245 288.30	May 1946 Mar. 14, 1978	C, E	D, S	Well J-88 in 1957 Travis County report. 4/
* 407	John Wood	E. R. Owen	1970	320	7	83	Kce	775	170	Mar. 16, 1971	S, E	D	Reported drawdown 0 ft after bailing 50 gal/min.
* 408	Donald Rogers	E. W. Glass	1971	439	7	125	Kce	772	178.60	Mar. 9, 1978	S, E	D	Reported drawdown 0 ft after pumping 15 gal/min for 1 hour on Mar. 18, 1971.
* 409	Circle C Ranch	W. H. Glass	1972	340	7	180	Kce	796	178.90	Mar. 17, 1978	S, E	D	3/
* 410	do	--	1950	--	--	--	--	783	--	--	C, W	N	--
501	L. J. Garner	--	--	--	7	--	--	726	214.56 163.01	Aug. 5, 1949 July 9, 1958	--	N	Well H-156 in 1957 Travis County report. 3/ 4/
* 502	R. W. Herndon	--Glass	1937	300	5	168	Kce	752	250.00 243.30	Aug. 22, 1949 Mar. 8, 1978	C, E	D, S	Well H-159 in 1957 Travis County report. 3/ 4/
* 503	Otto Schwartz	Felix Sanders	1926	451	5	300	Kce	705	197.22 203.19	Jan. 19, 1937 Dec. 21, 1939	C, E	D, S	Measured yield 3 gal/min. Well H-169 in 1957 Travis County report. 3/ 4/

See footnotes at end of table.



EXPLANATION

Alluvium

Terrace deposits
Includes Onion Creek Marl and high terrace deposits

Midway Group

Navarro and Taylor Groups

Austin Chalk

Igneous rocks (basalt and tuff)

Eagle Ford Group and Buda Limestone

Del Rio Clay

Georgetown Formation

Fredericksburg Group, Kcfr
Includes Edwards Limestone, Kced;
Comanche Peak Limestone, Kcc;
Keys Valley Marl Member of Walnut Formation, Kckv;
Cedar Park Limestone Member of Walnut Formation, Kccp; and
Bee Cave Marl Member of Walnut Formation, Kcbc

Paluxy Formation

Glen Rose Formation
Upper member, Kgru, and lower member, Kgrl

Travis Peak Formation
Includes Hensell Sand Member, Kthe;
Cow Creek Limestone Member, Kccc;
Hammett Shale Member, Kth; and
Sycamore Sand Member, Ktsy

Contact
Dashed where concealed or approximately located

Fault
U, upthrown side; D, downthrown side
Dashed where approximately located

Figure 4
Geologic Map of Travis County

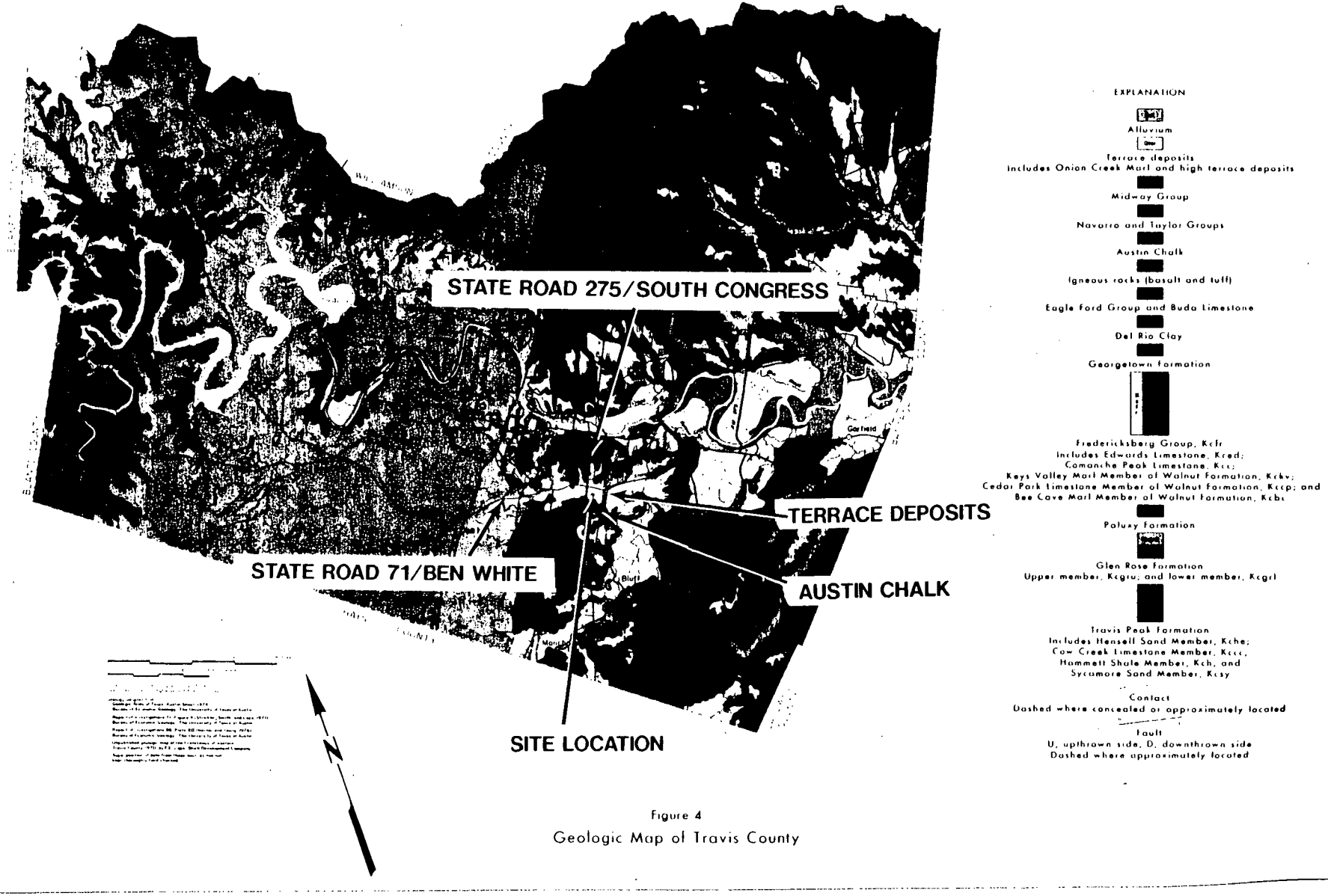


Figure 4

Geologic Map of Travis County

EXPLANATION

Well used for control
Number indicates altitude of water level in the alluvium and terrace deposits aquifer, Spring 1978, in feet above mean sea level

Line showing approximate altitude of water level in the alluvium and terrace deposits aquifer
Dashed where control is absent or limited
Interval 10 feet
Datum is mean sea level

Outcrop of the alluvium and terrace deposits

Fault
U, upthrown side, D, downthrown side
Dashed where approximately located

Figure 22
Approximate Altitude of Water Levels in Selected Wells Completed in the Alluvium and Terrace Deposits, Spring 1978

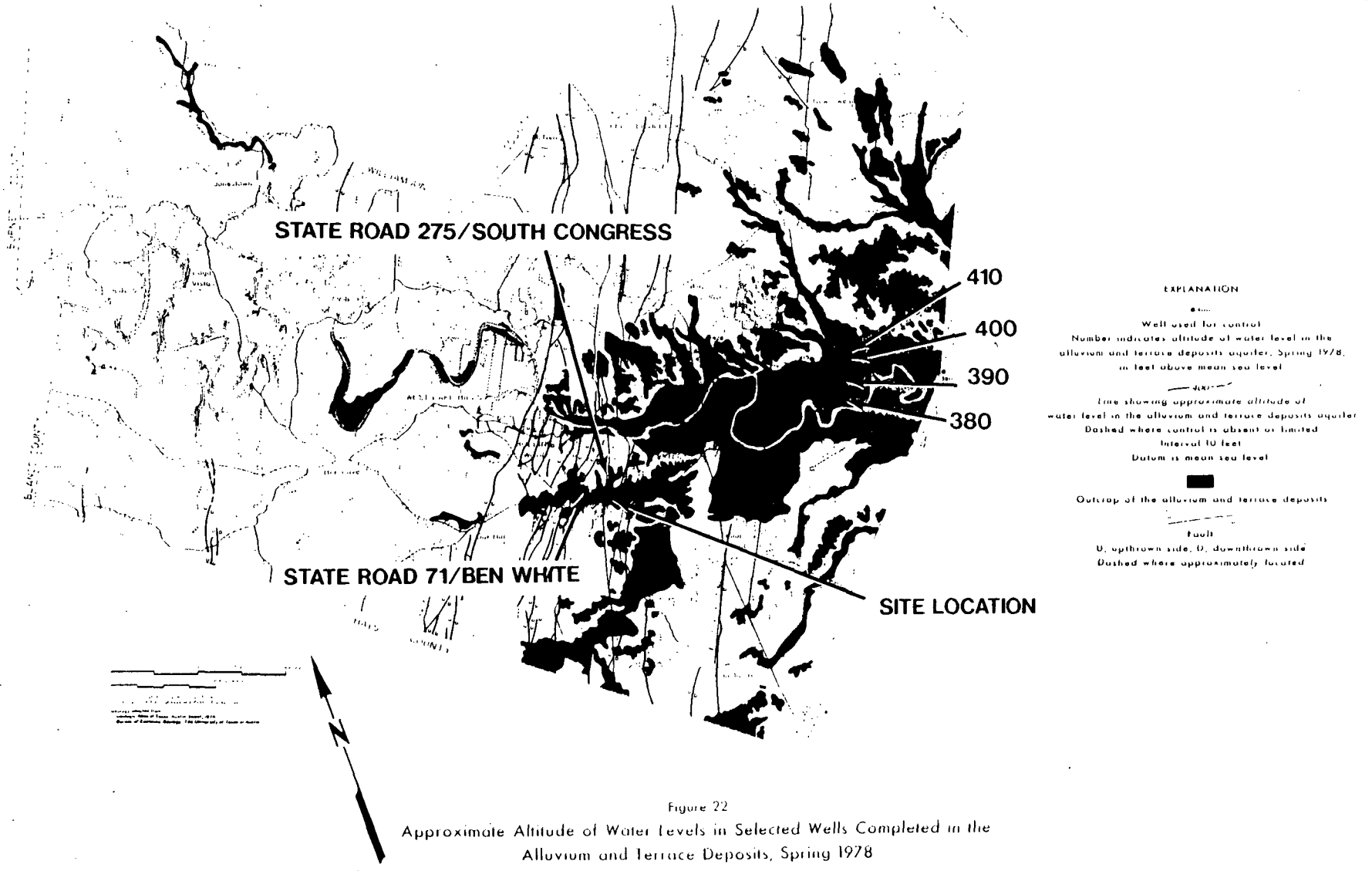


Figure 22

Approximate Altitude of Water Levels in Selected Wells Completed in the Alluvium and Terrace Deposits, Spring 1978

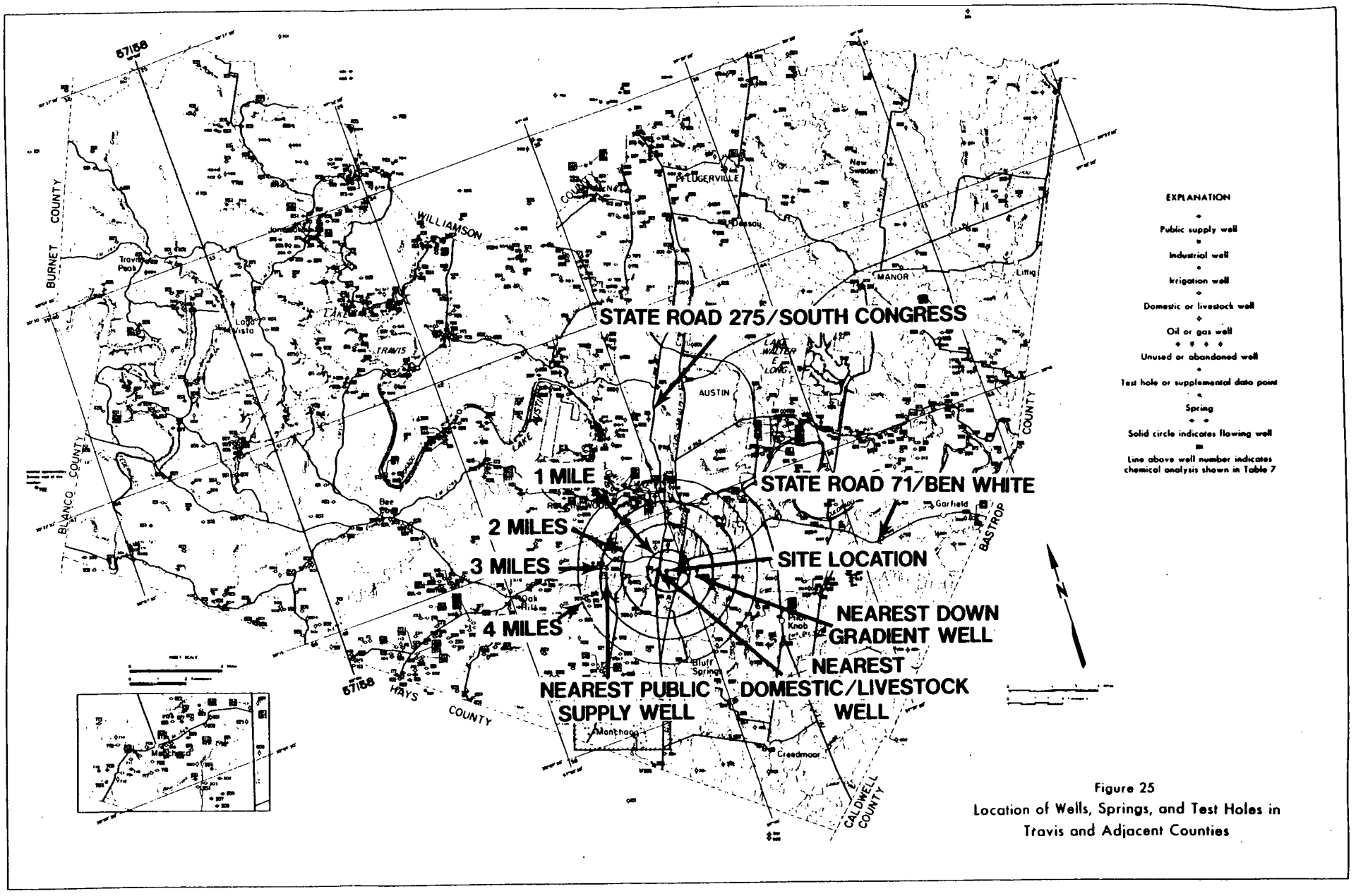


Figure 25
Location of Wells, Springs, and Test Holes in Travis and Adjacent Counties

REFERENCE 10

RECORD OF COMMUNICATION

TXD987989340

TYPE: Phone Call DATE: December 3, 1990 TIME: 2:45pm

TO: Alfredo Delgado
Consumer Affairs
City of Austin Water and
Waste Water Utility
(512)322-2710

FROM: Trudy K. Tannen TKT
FIT Chemical Engineer
ICF Technology, Inc.
(214)744-1641

SUBJECT: Drinking Water for Austin

SUMMARY OF COMMUNICATION

The City of Austin obtains its drinking water from the Colorado River. One intake is located just northwest of Town Lake near Palmer Auditorium. There may be other drinking water intakes on the river in Austin. The utility service has approximately 150,000 metered connections. The service area includes the community of Del Valle, east of Austin. The City of Austin does not use any ground water in the drinking supply.

REFERENCE 11

COMMISSIONERS

CHUCK NASH
Chairman San Marcos

GEORGE C. "TIM" HIXON
Vice-Chairman
San Antonio

BOB ARMSTRONG
Austin

LEE M. BASS
Ft. Worth

HENRY C. BECK, III
Dallas

DELO H. CASPARY
Rockport

JOHN WILSON KELSEY
Houston

BEATRICE CARR PICKENS
Dallas

A.R. (TONY) SANCHEZ, JR.
Laredo

TEXAS
PARKS AND WILDLIFE DEPARTMENT
4200 Smith School Road • Austin, Texas 78744 • 512-389-4800

ANDREW SANSOM
Executive Director

November 20, 1990

Trudy K. Tannen
ICF Technology, Inc.
1509 Main Street, Suite 900
Dallas, Texas 75201

Dear Ms. Tannen:

In response to your November 15, 1990 request for information on sensitive species and natural communities within or near the Travis County preliminary ranking site, we offer the following comments. A search of the Texas Natural Heritage Program Information System revealed occurrences of special species and managed areas within the four mile radius and along Onion Creek.

Federal and State Endangered--
- Vireo atricapillus (Black-capped Vireo) G2G3 S2

Federal Category 2--
- Eurycea sp. (Barton Springs Salamander) G1 S1
- Streptanthus bracteatus (bracted twistflower) G2 S2
- Physostegia correllii (Correll's false dragon-head) G2 S2
- Notropis buccula (Smalleye Shiner) G2 S2 - believed introduced population
- Micropterus treculi (Guadalupe Bass) G3 S3 - known from Onion Creek and the Colorado River; endemic to eastern Edwards Plateau streams
- Thamnophis sirtalis annectens (Texas Garter Snake) G5T3 S3 - known from the Austin area and in the Onion Creek area

Other Sensitive Features--
- Invertebrate Cave

Managed Areas--
- McKinney Falls State Park - along Onion Creek
- Onion Creek Preserve - along Onion Creek
- Blunn Creek Preserve
- Zilker Preserve

The Heritage Program information included here is based on the best data currently available to the state regarding threatened, endangered, or otherwise sensitive species. However, these data do not provide a definite statement as to the presence or absence of special species or natural communities within your project area, nor can these data substitute for an evaluation by qualified biologists. This information is intended to assist you in avoiding harm to species that occur on your site.

This letter does not constitute an review of fish and wildlife impacts that might result from the activity for which this information is provided. Should you need an impact review from the Texas Parks and Wildlife Department, contact the Environmental Assessment Branch of the Resource Protection Division, attention Mr. Bob Spain, or contact him at 512/389-4725. All requests for reviews must be in writing.

Please contact the Texas Parks and Wildlife Department's Heritage Program before publishing or otherwise disseminating any specific locality information. Thank you for contacting us. Please feel free to call me at 512/448-4311 if you have questions.

Sincerely,

Dorinda Sullivan

Dorinda Sullivan, Data Manager
Texas Natural Heritage Program
Resource Protection Division

FEDERAL STATUS

LE - Listed Endangered
LT - Listed Threatened
LELT - Listed Endangered in part of range, Threatened in a different part
PE - Proposed to be listed Endangered
PT - Proposed to be listed Threatened
PEPT - Proposed Endangered, Threatened
S - Synonyms
C1 - Candidate, Category 1. USFWS has substantial information on biological vulnerability and threats to support proposing to list as endangered or threatened. Data are being gathered on habitat needs and/or critical habitat designations.
C2 - Candidate, Category 2. Information indicates that proposing to list as endangered or threatened is possibly appropriate, but substantial data on biological vulnerability and threats are not currently known to support the immediate preparation of rules. Further biological research and field study will be necessary to ascertain the status and/or taxonomic validity of the taxa in Category 2.
3 - Taxa no longer being considered for listing as threatened or endangered. Three subcategories indicate the reasons for removal from consideration.
3A - Former Candidate, rejected because presumed extinct and/or habitats destroyed
3B - Former Candidate, rejected because not a recognized taxon; i.e. synonym or hybrid
3C - Former Candidate, rejected because more common, widespread, or adequately protected
blank - Not currently listed

STATE STATUS

E - Listed as Endangered in the State of Texas
T - Listed as Threatened in the State of Texas
blank - Not currently listed

GLOBAL RANK

G1 - Critically imperiled globally, extremely rare, 5 or fewer occurrences. [Critically endangered throughout range.]
G2 - Imperiled globally, very rare, 6 to 20 occurrences. [Endangered throughout range.]
G3 - Very rare and local throughout range or found locally in restricted range, 21 to 100 occurrences. [Threatened throughout range.]
G4 - Apparently secure globally.
G5 - Demonstrably secure globally.
GA - Accidental in North America, now G#NA.
GE - An exotic species established in North America, now G#NE.
GH - Of historical occurrence through its range.
GU - Uncertain; most likely rank/uncertain (G2?), range (G1G2)
GX - Believed to be extinct throughout range.
Q - Qualifier denotes questionable rank or taxonomic assignment.
T - Subrank of subspecies or variety.

STATE RANK

S1 - Critically imperiled in state, extremely rare, very vulnerable to extirpation, 5 or fewer occurrences.
S2 - Imperiled in state, very rare, vulnerable to extirpation, 6 to 20 occurrences.
S3 - Rare in state, 20+ occurrences.
S4 - Apparently secure in state.
S5 - Demonstrably secure in state.
SA - Accidental in state.
SE - An exotic species established in state.
SH - Of historical occurrence in state. May be rediscovered.
SX - Apparently extirpated from State.

REFERENCE 12

MITRE

26 May 1989
W52-21[illegible]

Ms. Lucy Sibold
U.S. Environmental Protection Agency
401 M Street, S.W.
Room 2636, Mail Code WH-548A
Washington, D.C. 20460

Dear Ms. Sibold:

Enclosed is a copy of the draft revised HRS net precipitation values for 3,345 weather stations where data were available. The data are presented by state code, station name, latitude longitude, and net precipitation in inches. A list of state codes is also enclosed.

The net precipitation values are provided to assist the Phase II - Field Testing efforts. It is suggested that the value from the nearest weather station in a similar geographic setting be used as the net precipitation value for a site.

If there are any questions regarding this material, please contact Dave Egan at (703) 883-7866.

Sincerely,

Andrew M. Platt
Group Leader
Hazardous Waste Systems

AMP:DEE/hme

Enclosures

cc: Scott Parrish

The MITRE Corporation
Civil Systems Division
7525 Colshire Drive, McLean, Virginia 22102-3481
Telephone (703) 883-6000 Telex 248923

FIELD NAME	FIELD DEFINITION
STATE-NUMBER	Characters 1-2 Cooperative State Code for each State.

STATE CODE LISTING

01 Alabama	28 New Jersey
02 Arizona	29 New Mexico
03 Arkansas	30 New York
04 California	31 North Carolina
05 Colorado	32 North Dakota
06 Connecticut	33 Ohio
07 Delaware	34 Oklahoma
08 Florida	35 Oregon
09 Georgia	36 Pennsylvania
10 Idaho	37 Rhode Island
11 Illinois	38 South Carolina
12 Indiana	39 South Dakota
13 Iowa	40 Tennessee
14 Kansas	41 Texas
15 Kentucky	42 Utah
16 Louisiana	43 Vermont
17 Maine	44 Virginia
18 Maryland	45 Washington
19 Massachusetts	46 West Virginia
20 Michigan	47 Wisconsin
21 Minnesota	48 Wyoming
22 Mississippi	49 Not Used
23 Missouri	50 Alaska
24 Montana	51 Hawaii
25 Nebraska	66 Puerto Rico
26 Nevada	67 Virgin Islands
27 New Hampshire	91 Pacific Islands

STATION-NUMBER	Characters 3-6 Cooperative Station Number Range = 0001-9999.
DATA-CODE	Character 7 Data Indicator Code 1 = Maximum Mean Temperature 2 = Minimum Mean Temperature 3 = Average (Mean) Temperature 4 = Heating Degree Days 5 = Cooling Degree Days 6 = Precipitation (1951-80 Normals only)

OBS	STATE	NAME		LATNUM	LONNUM	NETPREC
2641	41	MC COOK		26.30	98.23	0.3647
2642	41	FALFURRIAS		27.13	98.09	1.0903
2643	41	LAREDO NO 2		27.31	99.28	0.0233
2644	41	KINGSVILLE		27.32	97.53	1.0121
2645	41	ALICE		27.44	98.04	1.6890
2646	41	CORPUS CHRISTI WSO	R	27.46	97.30	1.7390
2647	41	CORPUS CHRISTI		27.48	97.24	1.6836
2648	41	ENCINAL 3 NW		28.05	99.22	0.8944
2649	41	PORT O CONNOR		28.26	96.26	7.9240
2650	41	BEEVILLE 5 NE		28.27	97.42	3.5263
2651	41	COTULLA FAA AIRPORT		28.27	99.13	0.5928
2652	41	PORT LAVACA NO 2		28.38	96.38	8.0207
2653	41	GOLIAD		28.40	97.24	4.8189
2654	41	DILLEY		28.40	99.10	1.5284
2655	41	CRYSTAL CITY		28.41	99.50	0.3470
2656	41	MATAGORDA NO 2		28.42	95.58	9.0031
2657	41	EAGLE PASS		28.42	100.29	0.2235
2658	41	PALACIOS FAA AIRPORT		28.43	96.15	9.8209
2659	41	VICTORIA WSO	R	28.51	96.55	5.0430
2660	41	BAY CITY WATERWORKS		28.59	95.58	9.3658
2661	41	POTEET		29.02	98.35	2.8271
2662	41	DANEVANG 2 SE		29.03	96.11	7.1052
2663	41	ANGLETON 2 W		29.09	95.27	15.2626
2664	41	UVALDE		29.13	99.46	1.1524
2665	41	PIERCE 1 E		29.14	96.11	9.1547
2666	41	NEW GULF		29.16	95.55	8.4050
2667	41	NIXON		29.16	97.45	4.5626
2668	41	CHISOS BASIN		29.16	103.18	0.0000
2669	41	GALVESTON WSO	R	29.18	94.48	8.4305
2670	41	YOAKUM		29.18	97.09	5.7008
2671	41	DEL RIO WSO		29.22	100.55	0.0497
2672	41	HALLETTSVILLE		29.27	96.56	6.6609
2673	41	SAN ANTONIO WSO	R	29.32	98.28	3.7339
2674	41	PRESIDIO		29.33	104.21	0.0000
2675	41	SUGAR LAND		29.37	95.38	11.0523
2676	41	FLATONIA 2 W		29.41	97.08	7.4017
2677	41	LULING		29.41	97.40	6.6844
2678	41	NEW BRAUNFELS		29.42	98.07	6.0682
2679	41	BOERNE		29.47	98.44	5.7313
2680	41	SAN MARCOS		29.53	97.57	7.1484
2681	41	PORT ARTHUR WSO	R	29.57	94.01	16.1905
2682	41	HOUSTON INCONT AP		29.58	95.21	12.3027
2683	41	LIBERTY		30.03	94.49	17.2173
2684	41	BLANCO		30.06	98.25	7.9951
2685	41	BRENHAM		30.09	96.24	11.2405
2686	41	FREDERICKSBURG		30.16	98.52	3.0630
2687	41	AUSTIN WSO	R	30.18	97.42	5.4840
2688	41	CONROE		30.19	95.27	14.9689
2689	41	ALPINE		30.21	103.40	0.0000
2690	41	JUNCTION		30.30	99.47	1.6214
2691	41	SONORA		30.34	100.39	0.8081
2692	41	COLLEGE STATION FAA AP		30.35	96.21	10.9234
2693	41	TAYLOR		30.35	97.24	8.7022
2694	41	MOUNT LOCKE		30.40	104.00	0.0615
2695	41	HUNTSVILLE		30.43	95.33	14.0649

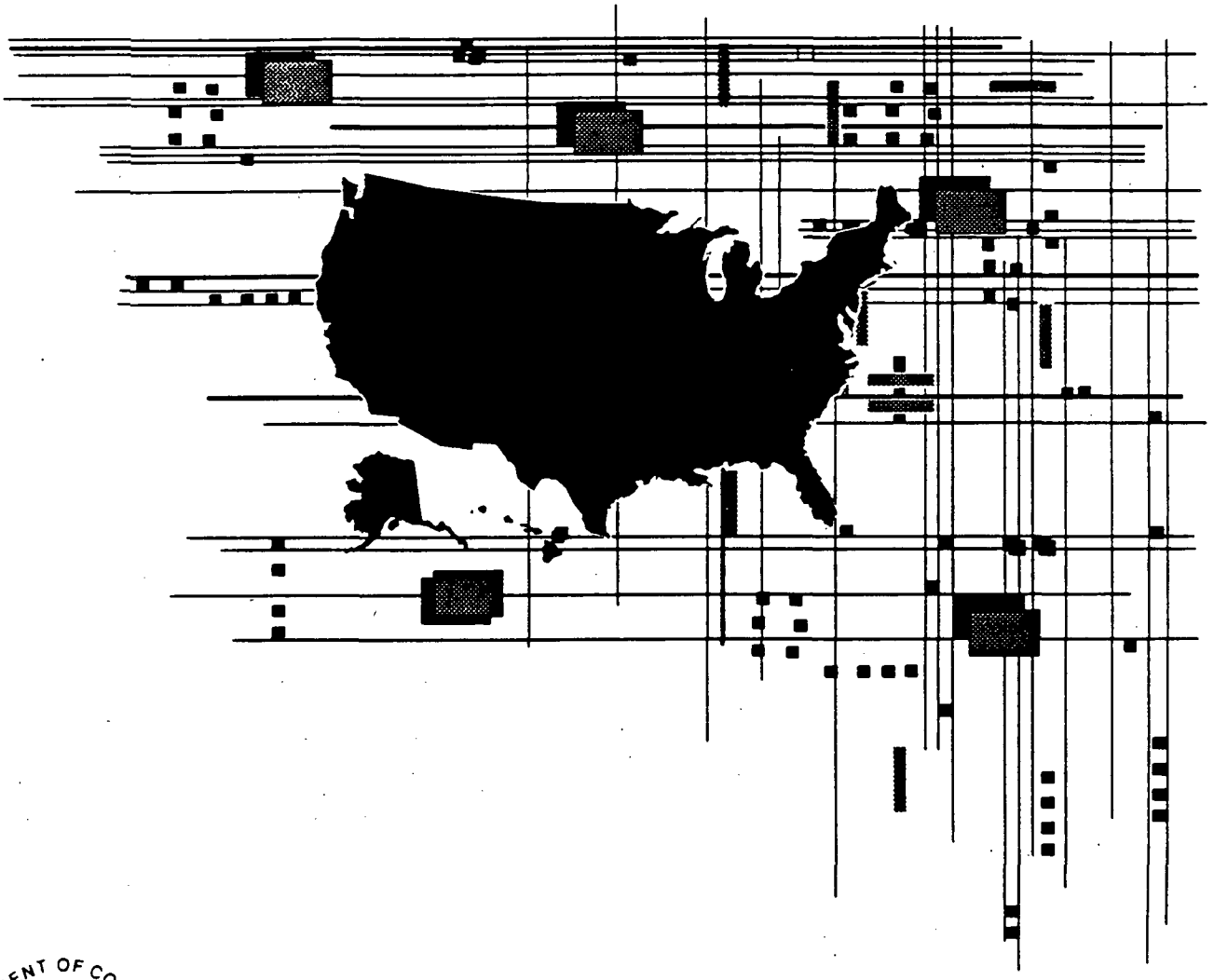
REFERENCE 13

CURRENT POPULATION REPORTS

Special Studies

Series P-23, No. 156

Estimates of Households, for Counties: July 1,1985



U.S. Department of Commerce
BUREAU OF THE CENSUS

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B. Percent errors in 1980 household estimates for counties, classified by type of 1980 age data 6

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APPENDIX TABLE

A-1. Corrections to 1980 census counts of population and housing units, for selected States and counties 69

Table 1. Estimates of Households, for Counties: July 1, 1985—Continued

(A dash (-) represents zero or rounds to zero. Estimates are consistent with special censuses since 1980. Corrections to 1980 census counts are not included. See text concerning rounding and average population per household)

State and county	Households				Average population per household		Population			
	July 1, 1985 (estimate)	April 1, 1980 (census)	Change, 1980-85 Number	Change, 1980-85 Percent	July 1, 1985 (estimate)	April 1, 1980 (census)	July 1, 1985 (estimate)	April 1, 1980 (census)	Change, 1980-85 Number	Change, 1980-85 Percent
Texas—Continued										
Nolan	6,500	6,446	100	0.8	2.71	2.66	17,800	17,359	400	2.6
Nueces	100,100	86,989	13,200	15.1	2.94	3.04	298,600	268,215	30,300	11.3
Ochiltree	4,000	3,486	500	14.6	2.73	2.73	11,000	9,588	1,400	14.4
Oldham	800	674	100	14.4	2.60	2.80	2,500	2,283	200	7.7
Orange	28,600	27,918	700	2.5	2.90	2.98	83,600	83,838	-200	-0.3
Palo Pinto	9,800	8,977	800	8.8	2.67	2.63	26,500	24,062	2,400	10.1
Panola	7,800	7,434	300	4.5	2.80	2.74	22,100	20,724	1,300	6.4
Parker	19,900	15,640	4,300	27.4	2.80	2.81	56,500	44,609	11,900	26.6
Parmer	3,400	3,489	-100	-1.5	3.14	3.13	10,900	11,038	-200	-1.4
Pecos	5,600	4,567	1,100	23.0	3.05	3.19	17,200	14,618	2,600	17.7
Polk	10,800	8,909	1,900	21.2	2.69	2.72	29,200	24,407	4,800	19.8
Potter	41,800	37,769	4,000	10.7	2.52	2.58	107,000	98,637	8,300	8.5
Presidio	1,800	1,680	100	8.5	3.08	3.08	5,600	5,188	400	8.5
Rains	2,200	1,911	300	15.1	2.61	2.53	5,700	4,839	900	18.5
Randall	31,200	26,709	4,500	16.9	2.72	2.73	86,700	75,062	11,700	15.5
Reagan	1,500	1,305	200	16.5	3.25	3.16	5,000	4,135	800	19.7
Real	1,000	900	100	10.4	2.75	2.74	2,700	2,469	300	10.8
Red River	5,700	6,042	-300	-5.7	2.70	2.62	15,700	16,101	-400	-2.6
Reeves	5,100	4,789	300	6.1	3.10	3.26	15,900	15,801	100	0.9
Refugio	3,000	3,168	-100	-4.2	2.81	2.91	8,600	9,289	-700	-7.4
Roberts	400	426	-100	-16.2	2.88	2.79	1,000	1,187	-200	-13.5
Robertson	5,900	5,518	400	6.5	2.69	2.62	16,000	14,653	1,300	9.2
Rockwall	7,000	4,865	2,200	44.2	2.99	2.96	21,200	14,528	6,600	45.7
Runnels	4,600	4,496	100	1.8	2.69	2.61	12,500	11,872	600	5.0
Rusk	15,300	15,011	300	1.9	2.77	2.71	43,000	41,382	1,600	3.9
Sabine	3,900	3,336	500	16.3	2.51	2.59	9,800	8,702	1,100	13.1
San Augustine	3,300	3,133	200	6.6	2.58	2.74	8,800	8,785	-	0.5
San Jacinto	4,800	4,088	700	17.8	2.88	2.79	13,900	11,434	2,400	21.3
San Patricio	18,700	17,551	1,200	6.7	3.25	3.28	61,200	58,013	3,200	5.5
San Saba	2,200	2,385	-200	-6.6	2.48	2.54	5,700	6,204	-500	-8.5
Schleicher	1,100	988	100	10.9	2.78	2.82	3,100	2,820	300	9.3
Scurry	7,000	6,376	600	9.1	2.81	2.80	19,900	18,192	1,700	9.6
Shackelford	1,400	1,493	-	-3.0	2.66	2.58	3,900	3,915	-	0.1
Shelby	9,000	8,555	500	5.6	2.62	2.67	23,900	23,084	900	3.7
Sherman	1,200	1,117	100	4.7	2.66	2.81	3,100	3,174	-	-0.8
Smith	55,300	46,042	9,200	20.0	2.67	2.73	150,500	128,366	22,200	17.3
Somervell	1,600	1,531	100	4.9	2.77	2.68	4,500	4,154	300	8.3
Starr	8,900	6,858	2,100	29.9	3.84	3.94	34,500	27,266	7,200	26.5
Stephens	4,200	3,928	300	6.6	2.49	2.51	10,500	9,926	600	5.6
Sterling	600	413	200	36.4	2.81	2.85	1,600	1,206	400	34.7
Stonewall	900	941	-	-5.2	2.57	2.48	2,400	2,406	-100	-2.3
Sutton	1,700	1,675	100	3.1	3.04	3.04	5,300	5,130	200	2.9
Swisher	3,200	3,294	-100	-4.1	2.81	2.93	8,900	9,723	-800	-8.0
Tarrant	388,200	310,272	77,900	25.1	2.68	2.72	1,059,600	860,880	198,700	23.1
Taylor	44,200	38,515	5,700	14.8	2.62	2.69	122,600	110,932	11,600	10.5
Terrell	500	570	-	-5.3	2.81	2.80	1,500	1,595	-100	-4.7
Terry	5,200	4,841	300	6.5	2.94	2.98	15,300	14,581	700	5.0
Throckmorton	900	853	-	5.2	2.39	2.38	2,200	2,053	100	5.5
Titus	8,500	7,740	700	9.2	2.67	2.73	23,000	21,442	1,500	7.1
Tom Green	35,400	30,369	5,100	16.7	2.64	2.67	97,500	84,784	12,700	15.0
Travis	206,700	158,432	48,300	30.5	2.48	2.53	533,700	419,573	114,100	27.2
Trinity	4,400	3,647	800	21.3	2.60	2.55	11,700	9,450	2,300	23.8
Tyler	6,700	5,870	800	14.1	2.73	2.73	18,500	16,223	2,300	14.0
Upshur	11,000	10,082	1,000	9.6	2.88	2.82	32,000	28,595	3,400	12.0
Upton	1,800	1,560	300	16.3	3.04	2.95	5,500	4,619	900	19.9
Uvalde	7,900	6,960	900	12.9	3.05	3.16	24,400	22,441	2,000	8.9

REFERENCE 14

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
AUSTIN, TEXAS
TRAVIS COUNTY

PANEL 80 OF 105
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
480624 0080 B

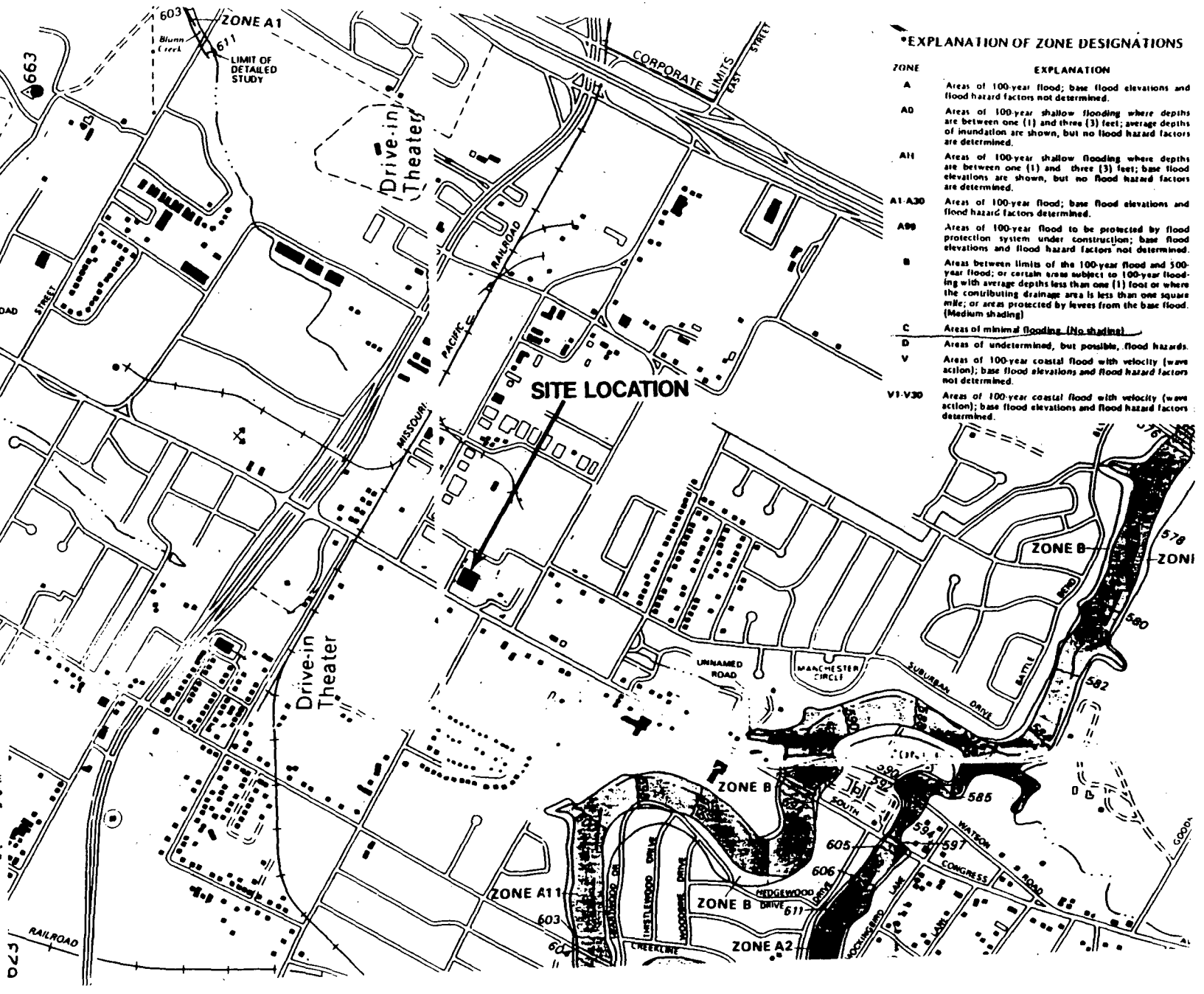
EFFECTIVE DATE:
SEPTEMBER 2, 1981

federal emergency management agency
federal insurance administration

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE



*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
AO	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

REFERENCE 15

Texas Water Commission

INTEROFFICE MEMORANDUM

TO : Files DATE: 04/26/90

THRU : Ernest W. Heyer, Chief, Program Services Unit, Field Operations Division

FROM : Daniel Brashear, Field Investigator, District 14 Field Office

SUBJECT: Capitol Metal Finishing, Reg. No. 31593, Sampling Inspections conducted January 24,1990, February 6, and April 24, 1990

Sampling inspections were conducted on January 24, 1990, February 6, 1990, and April 24, 1990 at Capitol Metal Finishing in order to determine the extent of site remediation. Copies of the C.O.C. tags are attached with a sketch showing sampling locations.

The April 24, 1990 inspection found that all tanks and containers, except for the large 3000 gallon fiberglass tank, had been shipped offsite since the February 6, 1990 inspection. The 3000 gallon tank was empty April 24, 1990. Records of these waste shipments offsite were not reviewed since Mr. Benjamin Jones, consultant, stated that the records were kept by Carl Booth at his "other facility" in Round Rock.

A sample collected from the 3000 gallon tank (SW 01435) on January 24, 1990 verified the pH to be 0.8 and the concentration of Chromium to be 2240 ppm. EP tox metal concentration was not requested since the sample was entirely a liquid phase. The tank was labeled Hazardous Waste for D002 and D007 with an accumulation start date of September 9, 1989. A sample of the absorbent at the base of the tank on February 6, 1990 found 6.5 ppm cyanide (SW 05557). Another tank sampled on February 6, 1990 (SW 05558) found 27,900 ppm EP Tox Chromium. This tank was a vat containing about 500 gallons of liquid and sludge. The tank was not labeled or dated.

Mr. Jones stated during the April 24, 1990 inspection that the concrete floors had all been acid etched and triple rinsed. Most of the floor surface had visible crystals on the surface. The crystals ranged in color from green to yellow to black. The crystals appeared to have formed in areas that liquid had pooled on the slab and evaporated, however some of the crystalline formations formed into mounds that were as much as two inches high. A composite sample was collected from the various "crystalline mounds" and will be forwarded later.

The April 24, 1990 inspection found that excavation of the contaminated soil on the south side and east side of the building has

stopped. A mound of excavated soil, about 80 cubic yards, remains piled on the south side of the building. The mound was not covered with plastic on April 24, 1990. A sample of the waste pile was collected and will be forwarded later. Several open pits contained rainwater. A sample of the accumulated rainwater collected on February 6, 1990 found slight contamination (SW 05560). A sample of the soil collected within one of the pits on the same day found high levels of contamination (SW 05559). Analysis of that sample are as follows:

EP Tox Chromium	72 ppm
Total Chromium	156 ppm
EP Tox Cadmium	0.5 ppm
Total Cadmium	156 ppm
Total Nickel	1100 ppm
Total Zinc	193 ppm
Total Cyanide	24 ppm

The building was not secured during any of the inspections. As of April 24, 1990, a fence had been constructed around the backyard, however a garage door had been left unlocked.

These inspections document that site remediation is incomplete. The observations of crystals forming from the concrete indicate that additional sampling should be conducted to determine the source. Samples of the roof, slab and foundation base should be analyzed to determine the extent of contamination. Please include this information with ongoing enforcement.

Attached is the CMEL coded as a Sampling Inspection. If you have any questions feel free to call me at 463-7803.

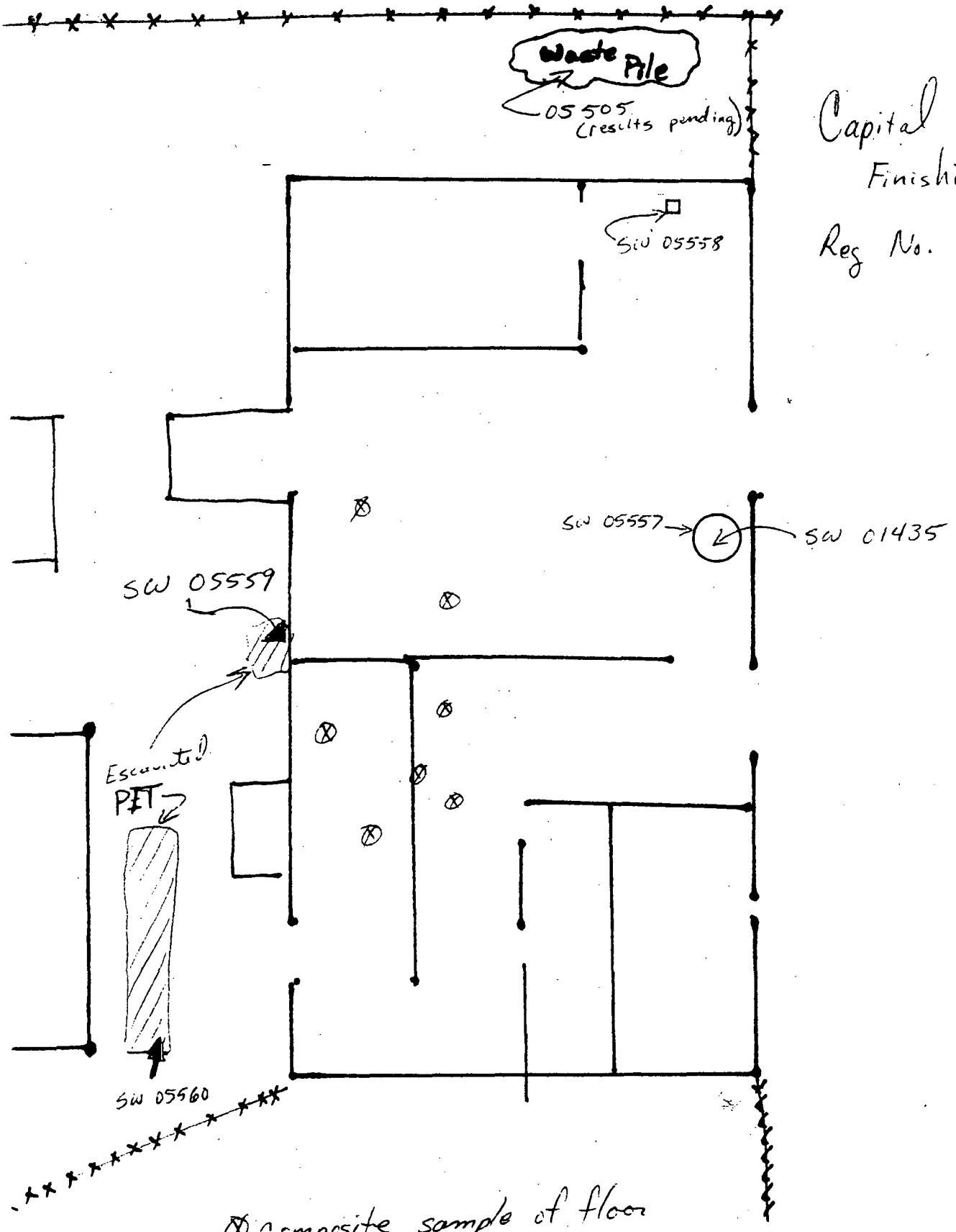
Daniel Brashear

Approval: Wm. John Young

:db

MAY 2

FIELD OPERATIONS



Capital Metal Finishing
Reg No. 31593

⊗ composite sample of floor sweepings of crystalline powder
SW 05504 - results pending

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86)

NO. SW 01435

District 14 Org. No. 334 Work No. 1716 Lab TDH

Site Name Capital Metal Priority #602

Site Location Warehouse Row

Point of Collection tank on west enhace ≈ 3000 gall - from lid

County _____ Basin _____

Method of Collection teflon Bailer

Type facility: ☐ Drum; ☒ Tank; ☐ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☐ Other

Time Collected 4:08 (am/pm) Date Shipped 1-25-90

Add. COC #s AT13546

ODOR; ☒ Yes; ☐ No; Describe

JAN 2 6 ...

RECEIVED
FEB 07 1990
FIELD OPERATIONS
DISTRICT 14

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	Date Mo. (23–24)	Day (25–26)	Yr. (27–28)	Date (29)
31593			01	24	90	

David Broken
(Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86)

NO. SW 01435

PRIORITY # 602

District 14 Org. No. 334 Work No. P416 Lab TDH

Material Sampled: ☐ Solid waste (W); ☒ Liquid waste (L); ☐ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments

29¢ LW

(continued on back)

Lab Only | Date | rec'd: MN 25 XII | cmplt: FEB 5 1990 | EH-0 [redacted]

Analyst sign.: [signature]

Preservation: ☐ None; ☒ Ice; ☐ H_2SO_4; ☐ HNO_3

Other

Auxiliary Tags

LEACHATE: ☐ EP Toxicity Series; ☐ TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
pH 00403	0.8	Total Ni mg/l	609		
~~COD~~ ~~00340~~		Total Cd	20.4		
~~TOC~~ ~~00680~~		Total Zn	530		
~~GC/MS~~		Total Cn mg/L	2.31		
		Total Cr	2240		

NO. SW 05560

District 14 Org. No. 334 Work No. P416 Lab TDH

Site Name Capital Metal 610

Site Location Warehouse Row

County Travis Basin Colorado

Method of Collection M.C. rinsed jar

Point of Collection Pit on NE corner of site - next to old WW treat. tanks -

Type facility: ☐ Drum; ☐ Tank; ☒ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☐ Other

Time Collected 3 20 (am/pm) Date Shipped 2-7-90

Add. COC #s

ODOR; ☐ Yes; ☒ No; Describe

FEB 6 1990

RECEIVED
MAR 01 1990
FIELD OPERATIONS
DISTRICT 14

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	Card Type (22)	Date Mo. (23–24)	Date Day (25–26)	Date Yr. (27–28)	Mat. Sample (29)
31593				02	06	90	

(Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86) 610

NO. SW 05560

District 14 Org. No. 334 Work No. P416 Lab TDH

Material Sampled: ☐ Solid waste (W); ☒ Liquid waste (L); ☐ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments May contain CN

1qt. LW

(continued on back)

Lab Only | Date | rec'd: | cmplt: FEB 23 1990 | EHO 938

Analyst sign.:

Preservation: ☐ None; ☒ Ice; ☐ H_2SO_4; ☐ HNO_3

Other

Auxiliary Tags FEB

LEACHATE: ☐ EP Toxicity Series; ☐ TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
pH		Total Cd	µg/L		
00403	9.3		52~~48~~		
~~COD~~		Total Cr			
00340			332~~234~~		
~~TOC~~		Total Ni			
00680			402		
~~GC/MS~~		Total Zn			
			256		
		Total CN			
			0.19		

NO. SW 05557

District 14 Org. No. 334 Work No. P416 Lab TDH

Site Name Capitol Metal Finishing

Site Location Warehouse Row

County Travis Basin Colorado

Method of Collection teflon scoop - m.c. rinsed jar

Point of Collection bottom and outside at base of green acid tank on west side and inside of building

Type facility: ☐ Drum; ☒ Tank; ☐ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☐ Other

Time Collected 2:30 (am, pm) Date Shipped 2-7-90

Add. COC #s

ODOR; ☐ Yes; ☐ No; Describe did not smell it

RECEIVED
MAR 01 1990
FIELD OPERATIONS
DISTRICT 14

FEB 23 1990

(Collector's Signature)

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	Cont. Type (22)	Date Mo. (23–24)	Date Day (25–26)	Date Yr. (27–28)	Mat. Sum (29)
31593				02	06	90	

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86)

NO. SW 05557

District 14 Org. No. 334 Work No. P416 Lab TDH

Material Sampled: ☒ Solid waste (W); ☐ Liquid waste (L); ☐ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments

1 qt. SW

(continued on back)

Lab Only | Date | rec'd: 07 | cmplt: FEB 23 1990 | FH 0 937

Analyst sign.: 2

Preservation: ☒ None; ☒ Ice; ☐ H_2SO_4; ☐ HNO_3

Other

Auxiliary Tags

LEACHATE: ☐ EP Toxicity Series; ☐ TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
pH		Total Ni mg/kg			
00403	5.0		108		
~~COD~~		TOTAL Cd			
00340			8.8		
~~TOC~~		TOTAL Zn			
00680			202		
~~GC/MS~~		Total CN mg/L			
			6.5		

TEXAS WATER COMMISSION TWC 0849 (Rev.05-23-86)

District 14 Org. No. 334 Work No. P416 Lab TDH

NO. SW 05558

Site Name Capital Metal 610

Site Location Ware House Row

County Travis Basin Colorado

Method of Collection teflon scoop - MC. rinsed jar

Point of Collection that on south side and inside of building - near SW corner

Type facility: ☐ Drum; ☒ Tank; ☐ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☐ Other

Time Collected 2 40 (am/pm) Date Shipped 2-7-90

Add. COC #s

ODOR; ☐ Yes; ☐ No; Describe not smelled

RECEIVED
MAR 01 1990
FIELD OPERATIONS
DISTRICT 14

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	Cont Form (22)	Date Mo. (23–24)	Date Day (25–26)	Date Yr. (27–28)	Lab Seq (29)
3 1 5 9 3				0 2	0 6	9 0	

(Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value (71)

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86) 610

NO. SW 05558

District 14 Org. No. 334 Work No. P414 Lab TDH

Material Sampled: ~~☒~~ DB Solid waste (W); ☒ Liquid waste (L); ☐ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments ~~☒~~ may contain significant amounts of cyanide

(continued on back)

Lab Only — Date rec'd: cmplt: FEB 23 1990 — EH 0 940 (Lab No.) — Analyst sign.:

Preservation: ☐ None; ☒ Ice; ☐ H_2SO_4; ☐ HNO_3

Other

Auxiliary Tags FEB 28 1990

LEACHATE: ☐ EP Toxicity Series; ☐ TWC

1/2 gt. LW

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value (71)
~~pH~~ DB PH 00403	3.7	Total Cd mg/L	102	EP TOX mg/L ~~Cd~~ DB Cd	101
~~COD~~ 00340		Total Cr	2800	EP TOX Cr	2740 0
~~TOC~~ 00680		Total Ni	2770		
~~GC/MS~~		Total Zn	699		
		Total CN	<0.4		

NO. SW 05559

District 14 Org. No. 334 Work No. P416 Lab TDH

Site Name Capital Metal

Site Location Warehouse Row

County Travis Basin Colorado

Method of Collection teflon scoop

Point of Collection base of slab on east side and behind of build - outside - side wall of escavation

Type facility: ☐ Drum; ☐ Tank; ☐ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☒ Other soil

Time Collected 3:00 am, pm Date Shipped 2-7-90

Add. COC #s

ODOR; ☐ Yes; ☒ No; Describe

FEB 8 1990

S.W. Registration	Permit Number	Page No.	Card Type	Date Mo.	Date Day	Date Yr.	Mail Sample
1 9	10 18	19 21	22	23 24	25 26	27 28	29
3 1 5 9 3				0 2	0 6	9 0	

(Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86)

NO. SW 05559

District 14 Org. No. 334 Work No. P416 Lab TDH

Material Sampled: ☐ Solid waste (W); ☐ Liquid waste (L); ☒ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments

(continued on back)

Lab Only | Date | rec'd: | cmplt: FEB 28 1990 | EH 0 939

Analyst sign.: 2

Preservation: ☐ None; ☒ Ice; ☐ H_2SO_4; ☐ HNO_3

Other

Auxiliary Tags MAR 1 1990

LEACHATE: ☐ EP Toxicity Series; ☐ TWC

RECEIVED
MAR 05 1990
FIELD OPERATIONS
DISTRICT 14

3/4 qt soil

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
~~pH~~		Total Cd mg/kg		EP TOX Cd mg/L	
0 0 4 0 3			1 5 6		0 . 5 8 4
~~COD~~		Total Cr		EP Tox Cr	
0 0 3 4 0			2 7 8 0		7 2 . 0
~~TOC~~		Total Ni			
0 0 6 8 0			1 1 0 0		
~~GC/MS~~		Total Zn			
			1 9 3		
		Total CN			
			2 4 . 4		

REFERENCE 16

code of federal regulations

Protection of Environment

40

PARTS 190 TO 299

Revised as of July 1, 1989

NATIONAL ARCHIVES AND RECORDS ADMINISTRATION
1985

§ 261.21 Characteristic of ignitability.

(a) A solid waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

(1) It is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume and has flash point less than 60°C (140°F), as determined by a Pensky-Martens Closed Cup Tester, using the test method specified in ASTM Standard D-93-79 or D-93-80 (incorporated by reference, see § 260.11), or a Setaflash Closed Cup Tester, using the test method specified in ASTM Standard D-3278-78 (incorporated by reference, see § 260.11), or as determined by an equivalent test method approved by the Administrator under procedures set forth in §§ 260.20 and 260.21.

(2) It is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard.

(3) It is an ignitable compressed gas as defined in 49 CFR 173.300 and as determined by the test methods described in that regulation or equivalent test methods approved by the Administrator under §§ 260.20 and 260.21.

(4) It is an oxidizer as defined in 49 CFR 173.151.

(b) A solid waste that exhibits the characteristic of ignitability, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number of D001.

[45 FR 33119, May 19, 1980, as amended at 46 FR 35247, July 7, 1981]

§ 261.22 Characteristic of corrosivity.

(a) A solid waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties:

(1) It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using either an EPA test method or an equivalent test method approved by the Administrator under the procedures set forth in §§ 260.20 and 260.21. The EPA test method for pH is specified as Method 5.2 in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (incorporated by reference, see § 260.11).

(2) It is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55°C (130°F) as determined by the test method specified in NACE (National Association of Corrosion Engineers) Standard TM-01-69 as standardized in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (incorporated by reference, see § 260.11) or an equivalent test method approved by the Administrator under the procedures set forth in §§ 260.20 and 260.21.

(b) A solid waste that exhibits the characteristic of corrosivity, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number of D002.

[45 FR 33119, May 19, 1980, as amended at 46 FR 35247, July 7, 1981]

§ 261.23 Characteristic of reactivity.

(a) A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has *any* of the following properties:

(1) It is normally unstable and readily undergoes violent change without detonating.

(2) It reacts violently with water.

(3) It forms potentially explosive mixtures with water.

(4) When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

(5) It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

(6) It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

(7) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.

(8) It is a forbidden explosive as defined in 49 CFR 173.51, or a Class A explosive as defined in 49 CFR 173.53

or a Class B explosive as defined in 49 CFR 173.88.

(b) A solid waste that exhibits the characteristic of reactivity, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number of D003.

§ 261.24 Characteristic of EP toxicity.

(a) A solid waste exhibits the characteristic of EP toxicity if, using the test methods described in Appendix II or equivalent methods approved by the Administrator under the procedures set forth in §§ 260.20 and 260.21, the extract from a representative sample of the waste contains any of the contaminants listed in Table I at a concentration equal to or greater than the respective value given in that Table. Where the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering, is considered to be the extract for the purposes of this section.

(b) A solid waste that exhibits the characteristic of EP toxicity, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number specified in Table I which corresponds to the toxic contaminant causing it to be hazardous.

TABLE I—MAXIMUM CONCENTRATION OF CONTAMINANTS FOR CHARACTERISTIC OF EP TOXICITY

EPA hazardous waste number	Contaminant	Maximum concentration (milligrams per liter)
D004	Arsenic	5.0
D005	Barium	100.0
D006	Cadmium	1.0
D007	Chromium	5.0
D008	Lead	5.0
D009	Mercury	0.2
D010	Selenium	1.0
D011	Silver	5.0
D012	Endrin (1,2,3,4,10,10-hexachloro-1,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo, endo-5,8-dimethano-naphthalene.	0.02
D013	Lindane (1,2,3,4,5,6-hexa- chlorocyclohexane, gamma isomer.	0.4
D014	Methoxychlor (1,1,1-Trichloro-2,2-bis [p-methoxyphenyl]ethane).	10.0
D015	Toxaphene ($C_{10}H_{10}Cl_8$, Technical chlorinated camphene, 67-69 percent chlorine).	0.5

TABLE I—MAXIMUM CONCENTRATION OF CONTAMINANTS FOR CHARACTERISTIC OF EP TOXICITY—Continued

EPA hazardous waste number	Contaminant	Maximum concentration (milligrams per liter)
D016	2,4-D, (2,4-Dichlorophenoxyacetic acid).	10.0
D017	2,4,5-TP Silvex (2,4,5-Trichlorophenoxypropionic acid).	1.0

Subpart D—Lists of Hazardous Wastes

§ 261.30 General.

(a) A solid waste is a hazardous waste if it is listed in this subpart, unless it has been excluded from this list under §§ 260.20 and 260.22.

(b) The Administrator will indicate his basis for listing the classes or types of wastes listed in this Subpart by employing one or more of the following Hazard Codes:

Ignitable Waste	(I)
Corrosive Waste	(C)
Reactive Waste	(R)
EP Toxic Waste	(E)
Acute Hazardous Waste	(H)
Toxic Waste	(T)

Appendix VII identifies the constituent which caused the Administrator to list the waste as an EP Toxic Waste (E) or Toxic Waste (T) in §§ 261.31 and 261.32.

(c) Each hazardous waste listed in this subpart is assigned an EPA Hazardous Waste Number which precedes the name of the waste. This number must be used in complying with the notification requirements of Section 3010 of the Act and certain recordkeeping and reporting requirements under Parts 262 through 265, 268, and Part 270 of this chapter.

(d) The following hazardous wastes listed in § 261.31 or § 261.32 are subject to the exclusion limits for acutely hazardous wastes established in § 261.5: EPA Hazardous Wastes Nos. FO20, FO21, FO22, FO23, FO26, and FO27.

[45 FR 33119, May 19, 1980, as amended at 48 FR 14294, Apr. 1, 1983; 50 FR 2000, Jan. 14, 1985; 51 FR 40636, Nov. 7, 1986]

§ 261.31 Hazardous wastes from non-specific sources.

The following solid wastes are listed hazardous wastes from non-specific sources unless they are excluded under §§ 260.20 and 260.22 and listed in Appendix IX.

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)

REFERENCE 17

RECORD OF COMMUNICATION

TYPE: Phone Call **DATE:** 8/23/91 **TIME:** 2:30 p.m.

TO: Mark Evans
Applications Unit
Surface Water Section

FROM: Warren P. Mitchell
FIT Biologist
ICF Technology, Inc.

SUBJECT: Names and uses of intakes for 15 miles downstream of the confluence of Blunn Creek and the Colorado River.

SUMMARY OF COMMUNICATION

In a telephone conversation with Mark Evans with the TWC, the following information was disclosed:

The following is a listing of names and uses assigned to surface water intakes for 15 miles downstream of the confluence of Blunn Creek and the Colorado River. This is a follow-up on information obtained on a November 14, 1990 memorandum (attachment).

TX 1088:	Longhorn Dam.
065800:	City of Austin/Municipal-industrial use.
065000:	Capital Aggregate/Mining use.
064700:	(b) (6) [redacted]/Irrigation.
061350:	(b) (6) [redacted]/Irrigation.
061320:	TXI/ Mining.
061310:	Syntex Materials/Mining.
061000:	Shepherd Farms/Irrigation.

TEXAS WATER COMMISSION

B. J. Wynne, III, Chairman
John E. Birdwell, Commissioner
Cliff Johnson, Commissioner

John J. Vay, General Counsel
Michael E. Field, Chief Hearings Examiner
Brenda W. Foster, Chief Clerk

Allen Beinke, Executive Director

November 14, 1990

Mr. Warren Mitchell
I C F
1509 Main ST, STE 900
Dallas, TX 75201-4809

Re: Water Rights Downstream of the Confluence of Blunn Creek and the Colorado River
Colorado River Basin
Travis County

Dear Mr. Mitchell:

Enclosed please find a map showing water rights (8) for 15 mil downstream of the confluence of Blunn Creek and the Colorado River as p our conversation today. Please note that Certificate of Adjudication No. 14-5394 is shown on the Colorado River but is listed on Onion Creek.

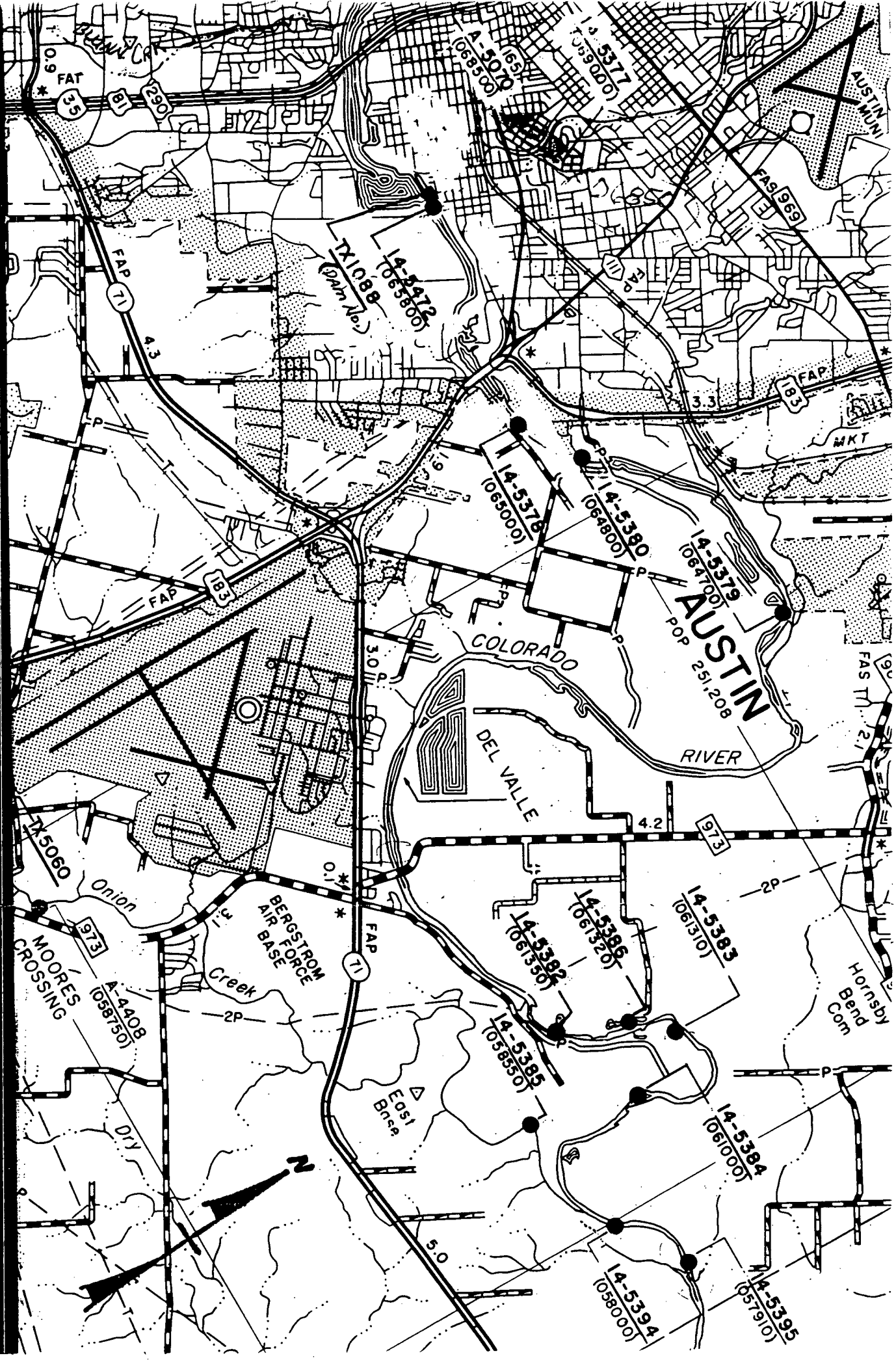
If you have any other questions concerning this matter, please call me at 512/371-6389.

Sincerely,

Mark Evans
Applications Unit
Surface Water Section

JME
Enclosure

P. O. Box 13087 Capitol Station • 1700 North Congress Ave. • Austin, Texas 78711-3087 • Area Code 512/463-7830



FAT
35
81
290
0.9
A-5070
(068500)
165
14-5377
(069000)
AUSTIN MUNI
FAS 969
FAP 111
TX1088
(Dam No.)
14-5472
(065800)
FAP 71
4.3
FAP 183
3.3
MKT
14-5378
(065000)
14-5380
(064800)
14-5379
(064700)
AUSTIN
POP 251,208
COLORADO
RIVER
DEL VALLE
3.0
4.2
973
TX5060
Onion
Creek
BERGSTROM AIR FORCE BASE
MOORES CROSSING
A-4408
(058750)
14-5382
(061350)
14-5386
(061320)
14-5383
(061310)
Hornsby Bend Com
14-5385
(058550)
East Base
14-5384
(061000)
Dry
N
5.0
14-5394
(058000)
14-5395
(057910)

REFERENCE 18

TEXAS SURFACE WATER QUALITY STANDARDS

Informational Copy

Texas Water Commission

December 1986

PREFACE

The Texas Surface Water Quality Standards are the current revision of a document, Water Quality Requirements, which the Texas Water Quality Board staff developed in early 1967. In order to comply with the Federal Water Pollution Control Act Amendments of 1972, the state's standards were revised and approved by the Environmental Protection Agency (EPA) on October 25, 1973. The standards have been amended on five subsequent occasions. In October 1974, the standards for the San Jacinto Basin and the Trinity-San Jacinto Coastal Basin were revised. In January 1975, the standards for designated segments which traverse the Edwards Aquifer were revised. Also, in October 1975, minor revisions of numerical values were incorporated into the Standards document, which was approved by EPA on February 9, 1976. In March 1981, the last required triennial revision of the standards was approved by EPA. A revision of the numerical criteria for the Houston Ship Channel area was approved in April 1984.

Major revisions have been incorporated into the current Texas Surface Water Quality Standards, which were compiled by the Texas Department of Water Resources, approved by the Texas Water Development Board on December 20, 1984, and approved by EPA on February 28, 1985. Under Texas Senate Bill 249, the responsibility for the application and development of the standards was assumed by the Texas Water Commission on September 1, 1985. Water quality standards were written and based on the strategies which are being developed to meet the 1988 goals of Public Law 95-217, as amended by Public Law 97-117. These goals require that, where attainable, water quality support aquatic life and contact recreation uses.

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(22) "Standards" - the designation of water bodies for desirable uses and the general and numerical criteria deemed necessary to protect those uses.

(23) "Suspended solids" - total suspended matter in water which is equivalent to nonfiltrable residue, as defined in the fifteenth edition of Standard Methods for the Examination of Water and Wastewater.

(24) "Water quality management (WQM) program" - the commission's overall program for attaining and maintaining water quality consistent with state standards, as authorized under the Texas Water Code, the commission's rules set forth in the Texas Administrative Code, and §§106, 205(j), 208, 303(e), and 314 of the Clean Water Act (33 USC §1251, et seq.).

(b) Abbreviations.

(1) "AP" - aquifer protection.

(2) "AS" - agricultural water supply.

(3) "CFR" - Code of Federal Regulations.

(4) "CR" - contact recreation.

(5) "CPP" - continuing planning process.

(6) "DO" - dissolved oxygen.

(7) "E" - exceptional quality aquatic habitat.

(8) "°F" - degree(s) Fahrenheit.

(9) "ft^3/s" - cubic feet per second.

(10) "H" - high quality aquatic habitat.

(11) "I" - intermediate quality aquatic habitat.

(12) "IS" - industrial water supply.

(13) "L" - limited quality aquatic habitat.

(14) "mg/L" - milligrams per liter.

(15) "mL" - milliliter.

(16) "N" - navigation.

(17) "NCR" - noncontact recreation.

(18) "NPDES" - National Pollutant Discharge Elimination System, as set out in §402 of the Clean Water Act (33 USC §1342).

(19) "PS" - public water supply.

(20) "7Q2" - seven-day, two-year low flow.

(21) "S" - shellfish waters.

(22) "TDS" - total dissolved solids.

(23) "USC" - United States Code.

(24) "USEPA" - U.S. Environmental Protection Agency.

(25) "USGS" - U.S. Geological Survey.

(26) "WQM" - water quality management.

SECTION VI. APPLICATION OF STANDARDS.

(a) General Criteria. General criteria set forth in Section VII of this title (relating to General Criteria) apply to all surface waters in the state at all times and specifically apply to substances attributed to waste discharges or the activities of man. General criteria do not apply to those instances in which surface water, as a result of natural phenomena, occasionally exhibit characteristics beyond the limits established by Section VII of this title (relating to General Criteria). Specific exemptions stated in this section or in a classified segment water quality standard supersede general criteria.

(b) Numerical Criteria. Numerical criteria may apply to one or more water uses and are set forth in Section VIII of this title (relating to Numerical Criteria) and in Section IX of this title (relating to Water Uses). The criteria apply to segments listed in Appendix A of Section XI of this title (relating to Appendices A through C) and specifically apply to substances attributed to waste discharges or the activities of man. Numerical criteria do not apply to surface waters which, as a result of natural phenomena, occasionally exhibit characteristics beyond the limits established by Section VIII of this title (relating to Numerical Criteria) and Section IX of this title (relating to Water Uses).

(c) Flow Criteria.

(1) Flow criteria in Appendix B of Section XI of this title (relating to Appendices A through C) are solely for the

(2) Table 1. Temperature Criteria for Surface Waters.

Surface Water Bodies	Temperature Criteria	
	Maximum Temperature	Maximum Temperature Differential (rise over ambient)
Freshwater Streams	See Appendix A of Section XI of this title (relating to Appendices A through C) for classified segment value	5°F
Freshwater Impoundments	See Appendix A of Section XI of this title (relating to Appendices A through C) for classified segment value	3°F
Tidal River Reaches, Bay and Gulf Waters		
Fall, Winter, Spring,	95°F	4°F
Summer (June, July, August)	95°F	1.5°F

(f) Bacteriological criteria.

(1) Bacteriological criteria are for fecal coliform organisms and consist of a measure of general quality and a limit on variations from general quality.

(2) Criteria for recreational uses are established in Section IX of this title (relating to Water Uses) and specifically listed for classified segments in Appendix A of Section XI of this title (relating to Appendices A through C).

(3) Criteria for shellfish waters are established in Section IX of this title (relating to Water Uses) and specifically listed for classified segments in Appendix A of Section XI of this title (relating to Appendices A through C).

SECTION IX. WATER USES.

The following list represents uses and supporting criteria deemed desirable by the commission. The order of the following list does not denote priority of use.

(a) Recreation. Recreational use consists of two subcategories, contact recreation waters and noncontact recreation waters.

(1) Contact recreation waters.

(A) Fecal coliform content shall not exceed two-hundred (200) colonies per one-hundred (100) mL as a geometric mean based on a representative sampling of not less than five (5) samples collected over not more than thirty (30) days.

(B) Fecal coliform content shall not equal or exceed four-hundred (400) colonies per one-hundred (100) mL in more than ten (10) percent of all samples, based on a representative sampling of not less than five (5) samples taken during any thirty (30) day period. If ten (10) or fewer samples collected within a thirty (30) day period are analyzed, no more than one (1) sample shall exceed four-hundred (400) colonies per one-hundred (100) mL.

(2) Noncontact recreation waters.

(A) Fecal coliform content shall not exceed two-thousand (2,000) colonies per one-hundred (100) mL as a geometric mean based on a representative sampling of not less than five (5) samples collected over not more than thirty (30) days.

(B) Fecal coliform content shall not equal or exceed four-thousand (4,000) colonies per one-hundred (100) mL in more than ten (10) percent of all samples, but based on at least five (5) samples, taken during any thirty (30) day period. If ten (10) or fewer samples collected within a thirty (30) day period are analyzed, no more than one (1) sample shall exceed four-thousand (4,000) colonies per one-hundred (100) mL.

(b) Domestic water supply.

(1) Use categories. Domestic water supply consists of two use subcategories, public water supply and aquifer protection.

(A) Public water supply. Segments designated for public water supply are those known to be used, or exhibiting characteristics that would allow them to be used as the supply source for community and non-community water supply systems, as defined by regulations promulgated pursuant to the Safe Drinking Water Act (42 USC §300f, et seq.).

(B) Aquifer protection. Segments designated for aquifer protection are capable of recharging the Edwards Aquifer. In accordance with commission rules, the principal purpose of this use designation is to protect the quality of water infiltrating into and recharging the aquifer.

(2) Use criteria. The following use criteria apply to both domestic water supply use subcategories.

(A) Radioactivity associated with dissolved minerals in the freshwater portions of river basin and coastal basin waters should not exceed levels established by regulations promulgated pursuant to the Safe Drinking Water Act unless the conditions are ambient.

(B) Surface waters utilized for domestic water supply shall not exceed toxic material concentrations that prevent them from being treated to meet regulatory requirements promulgated pursuant to the Safe Drinking Water Act.

(C) Chemical and microbiological quality of surface waters used for domestic water supply should conform to regulatory requirements promulgated pursuant to the Safe Drinking Water Act. Surface waters that do not meet drinking water standards but that are the only supply source may be designated for public water supply where chemical and microbiological constituents do not pose a potential health hazard.

(c) Aquatic life.

(1) Aquatic life subcategories. ~~The establishment of~~ numerical criteria for aquatic life is highly dependent on desired use, sensitivities of usual aquatic communities, and local physical and chemical characteristics. Five subcategories of use are established. They include limited quality, intermediate quality, high quality, and exceptional quality aquatic habitat and shellfish waters. Aquatic life subcategories designated for segments listed in Appendix A of Section XI of this title (relating to Appendices A through C) attempt to recognize the natural variability of aquatic community requirements and local environmental conditions.

(2) Limited, intermediate, high, and exceptional quality aquatic habitat.

(A) Limited quality aquatic habitat. Dissolved oxygen (DO) shall be maintained at not less than three (3) mg/L for freshwater aquatic habitat.

(B) Intermediate quality aquatic habitat. Dissolved oxygen (DO) shall be maintained at not less than four (4.0) mg/L for freshwater aquatic habitat and not less than three (3.0) mg/L for saltwater aquatic habitat.

(C) High quality aquatic habitat. Dissolved oxygen (DO) shall be maintained at not less than five (5.0) mg/L for freshwater aquatic habitat and not less than four (4.0) mg/L for saltwater aquatic habitat.

(D) Exceptional quality aquatic habitat. Dissolved oxygen (DO) shall be maintained at not less than six (6.0) mg/L for freshwater aquatic habitat and not less than five (5.0) mg/L for saltwater aquatic habitat.

(3) Shellfish waters.

(A) A one-thousand (1,000) foot buffer zone, measured from the shoreline at ordinary high tide, is established for all bay and gulf waters, except those contained in river or coastal basins as defined in Section III of this title (relating to Classification of Surface Waters). Fecal coliform content in buffer zones shall not exceed two-hundred (200) colonies per one-hundred (100) mL as a geometric mean of not less than five (5) samples collected over not more than thirty (30) days, or equal or exceed four-hundred (400) colonies per one-hundred (100) mL in more than ten (10) percent of all samples taken during a thirty (30) day period.

(B) Median fecal coliform concentration in bay and gulf waters, exclusive of buffer zones, shall not exceed fourteen (14) colonies per one-hundred (100) mL, with not more than ten (10) percent of all samples exceeding forty-three (43) colonies per one-hundred (100) mL.

(C) Shellfish waters should be maintained so that heavy metal and pesticide concentrations do not cause shellfish to exceed accepted guidelines for the protection of public health.

(D) Shellfish areas open to harvesting are identified by the Texas Department of Health in "Classification of Shellfish Harvesting Areas" maps.

(4) Toxic materials.

(A) Concentrations of non-persistent toxic materials shall not exceed one-tenth (0.1) of the ninety-six (96) hour median lethal concentration (LC_{50}) for a representative indigenous aquatic organism.

COLORADO RIVER BASIN		USES				CRITERIA						
SEGMENT NUMBER	SEGMENT NAME	RECREATION	AQUATIC LIFE	DOMESTIC WATER SUPPLY	OTHER	CHLORIDE (mg/L) Annual average not to exceed	SULFATE (mg/L) Annual average not to exceed	TOTAL DISSOLVED SOLIDS (mg/L) Annual average not to exceed	DISSOLVED OXYGEN (mg/L) Not less than	pH RANGE	FECAL COLIFORM (#/100 mL) Thirty-day geometric mean not to exceed	TEMPERATURE (°F) Not to exceed
1421	Concho River	CR	H	PS		600	500	2,000	5.0	6.5-9.0	200	90
1422	Lake Nasworthy	CR	H	PS		450	400	1,500	5.0	6.5-9.0	200	93
1423	Twin Buttes Reservoir	CR	H	PS		150	150	700	5.0	6.5-9.0	200	90
1424	Middle Concho/South Concho River	CR	H	PS		150	150	700	5.0	6.5-9.0	200	90
1425	O. C. Fisher Lake	CR	H	PS		150	150	700	5.0	6.5-9.0	200	90
1426	Colorado River Below E. V. Spence Reservoir	CR	H	PS		425	750	1,400	5.0	6.5-9.0	200	91
1427	Onion Creek	CR	H	PS		50	50	300	5.0	6.5-9.0	200	90
1428	Colorado River Below Town Lake	CR	H	PS		105	55	425	5.0	6.5-9.0	200	95
1429	Town Lake	CR*	H	PS		70	50	410	5.0	6.5-9.0	200	90
1430	Barton Creek	CR	H			40	40	500	5.0	6.5-9.0	200	90
1431	Mid Pecan Bayou	NCR				410	120	1100	2.0	6.5-9.0	2000	90
1432	Upper Pecan Bayou	CR	H	PS		190	140	760	5.0	6.5-9.0	200	90

* While Segment 1429 may exhibit quality characteristics which would make it suitable for contact recreation, the use is prohibited by loca regulation for reasons unrelated to water quality.

REFERENCE 1

REFERENCE 2

31593

No. 484,398

STATE OF TEXAS,	§	IN THE DISTRICT COURT OF
	§	
Plaintiff,	§	
	§	
VS.	§	TRAVIS COUNTY, TEXAS
	§	
CAPITOL METAL FINISHING, INC., and CARL BOOTH,	§	
	§	
	§	
Defendants.	§	167 JUDICIAL DISTRICT

STATE OF TEXAS'S ORIGINAL PETITION AND APPLICATION FOR INJUNCTION

TO THE HONORABLE JUDGE OF SAID COURT:

COMES NOW the State of Texas, plaintiff, by and through its Attorney General, Jim Mattox, on behalf of the people of Texas and the Texas Water Commission, an agency of the State, having statewide jurisdiction, and hereby files this suit against Defendant Capitol Metal Finishing, Inc., and Defendant Carl Booth, and for cause of action would respectfully show the Court as follows:

I.

Plaintiff, the State of Texas, is authorized to bring this suit through its Attorney General at the request of the Texas Water Commission (hereinafter known as the "TWC" or the "Commission"), pursuant to the Texas Solid Waste Disposal Act, TEX.HEALTH & SAFETY CODE ANN. §361.001, et seq., (Vernon 1989) (hereinafter known as "the Act"). No filing fee or other security for costs is required of the State of Texas. TEX.CIV.PRAC. & REM. CODE §6.001 (Vernon 1986).

FILED

MAY 15 12 23 PM '90

John Dickson

II.

DEFENDANTS

2.1. Defendant, Capitol Metal Finishing, Inc., is a corporation duly formed and existing under the laws of the State of Texas and may be served by serving its agent, Carl E. Booth, at 800 North Georgetown Road, Round Rock, Texas 78680. Defendant Carl E. Booth is an individual residing in Williamson County, Texas. Defendant Booth can be served with process at 800 North Georgetown Road, Round Rock, Texas 78680.

III.

VENUE

3.1. All violations or threats of violations of the Act and any orders submitted by the Commission occurred or are occurring in Travis County, Texas and venue is proper in Travis County pursuant to the Act.

IV.

BACKGROUND

4.1. This case involves an electroplating business operated under the name Capitol Metal Finishing, Inc., located on Block A, Lots 7 and 8 in the Twin Oaks Industrial Subdivision at 3909 Warehouse Row, Austin, Travis County, Texas. The plating shop has been in operation at this location since approximately 1980. The Defendant, Capitol Metal Finishing, Inc., conducted aluminum anodizing, zinc, cadmium, and nickel plating, and various other types of specialty metal plating at the site. The company generated

and received hazardous material and hazardous waste during the conduct of its business. There is at this time and has been in the past an actual release of solid waste at the site that presents an imminent and substantial endangerment to the public health and safety or the environment.

Capitol Metal Finishing, Inc. was issued Registration No. 31593 from the Texas Water Commission. The Company was supposed to operate its business involving waste by pretreatment prior to discharge to the City of Austin's wastewater treatment facility, and as a 90-day storage facility, pursuant to 31 TEX.ADMIN. CODE §335.69. The following wastes were generated at the Company's facility:

EPA hazardous waste Nos. F001, F006, F007, F008, F009, and F019, which are listed hazardous waste in 40 C.F.R. §261.30, and EPA waste Nos. D002, D003, D006, and D007, which are characteristically hazardous waste as defined in 40 C.F.R. §§26.122, 261.23, and 261.24.

The Company was supposed to store 1, 1, 1-trichloroethane, EPA hazardous waste No. F001, in drums prior to shipment off-site for disposal. Waste No. F001 was generated during a degreasing process. The electroplating process generates EPA Waste Nos. F007, F008, F009, and D002, which were supposed to be treated in an on-site batch wastewater pretreatment system prior to discharge to the City of Austin's wastewater treatment plant. EPA Waste Nos. F006 and F019 are sludges generated as a result of the pretreatment process. Due to spills, the Company has generated EPA Wastes Nos. D006 and D007, which are EP toxic because of cadmium and chromium content,

and EPA Waste No. D003, which is reactive due to cyanide content; all three wastes are characteristically hazardous.

Surface water runoff from the Company's facility flows into Blunn Creek, then into Town Lake in Austin, Texas. Town Lake has designated uses of contact recreation, high quality aquatic habitat, and public water supply under the Texas Water Commission Surface Water Quality Standards (December, 1986). The Edwards Aquifer underlies the Company's facility. The aquifer occurs approximately 75 feet below the surface in this area.

On numerous occasions since January 1, 1985, field representatives of the Texas Water Commission have documented releases of hazardous wastes, both on site and running off the company's property, all in violation of the Texas Solid Waste Disposal Act. On numerous occasions since January 1, 1985, the field representatives of the Texas Water Commission have documented the company's failure to label hazardous waste containers, storage times greater than 90 days, and inadequate management of hazardous waste, and inadequate management of and use of hazardous waste containers and tanks in a manner so as to violate the Act.

On March 9, 1988, the Texas Water Commission issued an order entitled, "An Agreed Order, Determining Violations by Capitol Metal Finishing, Inc. under the Texas Solid Waste Disposal Act, TEX.REV.CIV.STAT.ANN. art. 4477-7 (Vernon Supp. 1987), and the Texas Water Code, TEX.WATER CODE ANN. (Vernon Supp. 1987); Assessing Administrative Penalties; and Requiring Certain Actions of Capitol

Metal Finishing, Inc.". A true and correct copy of the Order is attached hereto as Exhibit A and incorporated herein by reference. It is referred to herein as "the Order." The Order is in all respects proper and valid and it remains in force.

The Order makes findings of fact and conclusions of law and finds as a matter of law, that Capitol Metal Finishing, Inc., violated the Act and the Rules of the Texas Water Commission promulgated thereunder by its conduct at the site at 3909 Warehouse Road, Austin, Travis County, Texas (the site) where it conducted the metal plating business.

The decretory section of the Order had two separate aspects:

In the first part of the decretory section, the Defendant is ordered to pay an administrative penalty of $28,000 to the State of Texas to the credit of the General Revenue Fund, to be paid as follows:

$10,000 is to be paid as follows:

$1,000 is to be paid within 30 days of the date that the Order was signed, and $4,000 was to be paid six months from the date the Order was signed, and $5,000 was to be paid within one year of the date the Order was signed. The remaining $18,000 of the penalty was to be deferred pending a finding by the Commission that there had been a successful completion of decretory provisions Nos. 4 - 8 contained in the Order. Defendant Capitol Metal Finishing, Inc. failed to complete the decretory provisions referenced above, and to date has not paid any of the civil penalty assessed in the Order.

In the second part of the decretory section, Defendant Capitol Metal Finishing, Inc. was ordered to undertake certain specific actions to cease violations of the law, to clean up the site in accordance with an approved closure plan, to develop an inspection plan and schedule to properly label all hazardous waste containers on site, and to submit a remedial action plan to address the removal of all soil contaminated as a result of discharges of industrial solid waste by the company. Reference is made to Exhibit A for a complete description of the actions ordered by the Texas Water Commission.

Defendant Capitol Metal Finishing, Inc. has not completed nor accomplished the actions required by the second part of the decretory portion of the order.

V.

CLAIM TO REDUCE ADMINISTRATIVE PENALTY TO JUDGMENT

Plaintiff is entitled to a money judgment against Defendant Capitol Metal Finishing, Inc., in the sum of $28,000, the amount assessed by the Commission in its Order of March 9, 1988. Since this amount is a liquidated sum, Plaintiff is entitled to interest on the $28,000 at the legal rate allowed by law, from the date of the issuance of the Order, or as set forth in the Order for the various sums as they became due.

VI.

VIOLATIONS OF THE ADMINISTRATIVE ORDER

By failing to carry out the actions required by order, Defendant, Capitol Metal Finishing, Inc. has violated an order of the Texas Water Commission. Any person who violates an order of the

Texas Water Commission is liable for a civil penalty of not less than $100 nor more than $25,000 for each day of violation. TEX.HEALTH & SAFETY CODE ANN. §361.223(b) (Vernon 1989). Plaintiff is entitled to recover civil penalties against Defendant within the range allowed by law for each day from March 9, 1988, the day the Order was final, through the date of trial, plus interest at the legal rate from the date of judgment until paid, for violations of the Order by Defendant Capitol Metal Finishing,Inc.

VII.

CLAIM FOR INJUNCTIVE RELIEF

Defendant Capitol Metal Finishing, Inc. should be ordered to carry out every action required in the Texas Water Commission Order of March 9, 1988, pursuant to §361.224(a) of the Act. No bond is required of the State of Texas prior to the granting of an injunction, pursuant to §361.228(b) of the Act.

VIII.

VIOLATIONS OF THE ACT BY CARL BOOTH
AND CAPITOL METAL FINISHING, INC.

From January 1, 1986 to November, 1986, and from June, 1987 to the present, Defendant Carl Booth, was a manager, operator and/or owner of the Capitol Metal Finishing, Inc. electroplating business at 3909 Warehouse Road site.

Section 361.223(a) of the Texas Health & Safety Code states:

> A person may not cause, suffer, allow, or permit the collection, storage, handling, transportation, processing, or disposal of solid waste or the use or operation of a solid waste facility to store, process, or dispose of solid waste, or to extract materials under §361.092 in violation of this chapter or a rule, permit, license, or other order of the department or commission, . . .

> (b) any person who violates any provision of this chapter or any rule, permit, license, or order of the department or commission . . . is subject to a civil penalty of not less than $100 or more than $25,000 for each act of violation and for each day of violation, as the court may deem proper, to be recovered in the manner provided by this section."

As the manager and owner of the Capitol Metal site and business, and as a corporation which is a separate legal entity, Capitol Metal Finishing, Inc. and Defendant Carl Booth are persons who caused, suffered, allowed, or permitted violations of the Act to occur and are liable for civil penalties of not less than $100 nor more than $25,000 for each violation, and for each day of violation. TEX.HEALTH & SAFETY CODE ANN. §361.223(b) (Vernon, 1989). Plaintiff is entitled to recover civil penalties against Defendant Carl Booth and Defendant Capitol Metal Finishing, Inc. within the range allowed by law for each day that a violation occurred. The liability of the corporation and of Carl Booth is not joint and several. Each should be held separately liable for a civil penalty for the violations.

A.

UNAUTHORIZED DISCHARGES

31 TEX.ADMIN. CODE §335.4 states:

> GENERAL PROHIBITIONS. In addition to the requirements of §335.2 of this title (relating to Permit Required), no person may cause, suffer, allow or permit the collection, handling, storage, or processing, or disposal of industrial solid waste in such a manner so as to cause:

(1) The discharge or imminent threat of discharge of industrial solid waste or municipal hazardous waste into or adjacent to the waters in the state without specific authorization for such a discharge from the Texas Water Commission;

(2) The creation and maintenance of a nuisance; or

(3) The endangerment of the public health and welfare.

Authorized representatives of the Texas Water Commission inspected the Capitol Metal Plating site at 3909 Warehouse Road in Austin, Texas and observed that the named Defendants caused, suffered, allowed, or permitted the discharge of waste from the site to waters in the State without obtaining specific authorization for such discharges on the following dates: September 9, 1986, October 22, 1986, April 28, 1987, February 5, 1988, February 16, 1989, and June 15, 1989.

Each day that Defendants permitted, caused and/or allowed the unpermitted discharges into the waters of the State constitutes a separate violation of the Act.

B.

SPECULATIVE ACCUMULATION

31 TEX.ADMIN. CODE §335.69(a) states:

> Except as provided in subsections (f)-(h) of this section, a generator may accumulate hazardous waste on-site without a permit for interim status for 90 days or less, provided that:
>
> 1. The waste is placed in containers and the generator complies with the provisions adopted by reference in §335.112(a)(8) of this title (relating to Standards), or the waste is placed in tanks, and the generator complies with the requirements adopted by reference in §335.112(9) of this title (relating to Standards), except 40 Code of Federal Regulations §265.197(c) and §265.200. . . .

> 2. The date upon which each period of accumulation begins is clearly marked and visible for inspection on each container; and
>
> 3. While being accumulated on site, each container and tank is labeled or marked clearly with the words, "Hazardous Waste" and
>
> 4 The generator complies with the requirements for owners or operators contained in 40 C.F.R. Part 265, subparts C and D as incorporated by reference in §335.112 of this title, (relating to Standards), 40 Code of Federal Regulations §265.16, and 335.113 of this title . . .

An authorized representative of the Texas Water Commission inspected the metal plating site on June 20, 1986, July 17, 1986, September 9, 1986, October 22, 1986, March 11, 1987, and on February 5, 1988, and observed that the named Defendants had accumulated hazardous waste on site without a permit for a period of more than 90 days, the containers were not properly labled and the Defendants did not store this material according to the provisions of the Act, all in violation of the Act.

Each day that the Defendants caused, permitted or allowed the storage of the above-said waste beyond the allowed period; failed to properly label the containers; and each day of storage in an unauthorized manner constitutes a separate violation of the Act.

C.

IMPROPER STORAGE

31 TEX. ADMIN. CODE §335.112 (a)(8) and (9) adopt by reference 40 CFR 265 Subparts I and J respectively. These provisions set forth the requirements for storage containers and tanks used to store hazardous waste. An authorized representative of the

department inspected the Capitol Metal Plating site on January 4, 1986, June 20, 1986, July 17, 1986, September 9, 1986, October 22, 1986, March 11, 1987, April 28, 1987, September 8, 1987, November 9, 1987, December 28, 1987, February 5, 1988, February 16, 1989, and February 28, 1989 and observed on those dates that the named Defendants caused, suffered, permitted and/or allowed the storage of hazardous waste in violation of the following provisions:

40 CFR 265.171: Hazardous waste was stored in containers which were leaking, and the contents were not transferred to containers which were in good condition.

40 CFR 265.172: Containers were used to store hazardous waste which caused the containers to corrode and leak.

40 CFR 265.192(b): Tanks used to store hazardous waste were utilized in a manner that caused the tank to corrode and leak.

Each day that the Defendants failed to store the waste in proper containers and each instance in which they failed to store it in proper containers constitutes a seperate violation of the Act.

D.

FAILURE TO NOTIFY OF CHANGE IN HANDLING WASTE

31 TEX.ADMIN. CODE §335.6(b) states:

> Any person who stores, processes, or disposes of municipal hazardous waste or industrial solid waste shall have the continuing obligation to immediately provide written notice to the executive director of any changes or additional information concerning waste composition, waste management methods, facility engineering plans and specifications, and the geology where the facility is located to that reported in subsection (a) of this section, authorized in any permit, or stated in any application filed with the commission . Any information provided under this subsection shall be submitted to the executive director in duplicate form.

An authorized representative of the Commission inspected the Capitol Metal Plating site on February 16, 1989, and observed that Defendants Carl Booth and Capitol Metal Finishing, Inc. were utilizing a "boil down tank" to treat and store electroplating waste solutions that had not been used or noted by the inspectors during past inspections of the site. Defendants had not previously notified the Executive Director of the Commission of the use of this tank, nor did the Defendants notify the executive director at the time of this inspection of its use, all of which violated the Act.

IX.

ADDITIONAL CLAIM FOR INJUNCTIVE RELIEF

9.1 Texas Health and Safety Code §361.272 provides for injunctive relief against individuals and companies who are responsible for a release of solid waste that presents an imminent and substantial endangerment to the public health and safety or the environment pursuant to Texas Health and Safety Code §361.271.

9.2 Defendant Capitol Metal Finishing, Inc. and Defendant Carl Booth are contemplated by the Code as being responsible for the release of solid waste that presents an imminent and substantial endangerment to the public health and safety or the environment pursuant to Texas Health and Safety Code §361.271.

9.3 Accordingly, Defendants Capitol Metal Plating, Inc. and Defendant Carl Booth should be ordered to carry out each and every action required by the Texas Water Commission, pursuant to §361.273 of the Code. No bond is required of the State of Texas prior to the granting of an injunction, pursuant to §361.228(b) of the Act.

9.4 The conditions set forth above also constitute an ongoing violation of 31 TEX.ADMIN. CODE §335.4(1) which will continue until the threat of discharge is alleviated or any past or continuing discharges are remedied. Defendant Capitol Metal Finishing, Inc. and Defendant Carl Booth should be required to take whatever steps are necessary to prevent any additional discharges of waste into waters in the state, and to clean up any and all past spills. An injunction ordering Defendants to do these things is specifically authorized by the Texas Solid Waste Disposal Act.

9.5 The injunction against the Defendants should include but not be limited to requirements that defendants submit and carry out detailed engineering plans for chemical testing of the groundwater and the soil to determine if any chemicals and/or hazardous waste and/or material above background levels are detected, that the rate and extent of contamination be determined; and that a program of groundwater recovery and recovery of all contaminated soil immediately be instituted and continuously carried out until no contamination above background level is detectable for a period of 30 continuous years at the site..

9.6 Defendant Carl Booth as well as Defendant Capitol Metal Finishing, Inc. should also be required to comply with the decreatory language of the Order issued by the Texas Water

Commission on March 9, 1980, and take the steps set forth in the Order to assure that no future releases of solid waste occur, and that any and all releases that have occurred shall be properly cleaned, disposed of and eliminated.

X.

CLAIM FOR ATTORNEYS FEES AND INVESTIGATIVE COSTS

This suit is instituted by the Attorney General under subchapter G for injunctive relief and for recovery of a civil penalty. The Attorney General is entitled to recover and collect reasonable attorney's fees, court costs, and reasonable investigative costs incurred in relation to the proceeding, not to exceed $250,000. In the event of an appeal to the Court of Appeals or to the Supreme Court, the Attorney General will be entitled to recover additional reasonable attorney's fees and court costs on behalf of the State. Acts, 1989, 71st Leg., Ch. 639, §2, p. 220 (Vernon Sess.L.Serv. 1989).

PRAYER

WHEREFORE, PREMISES CONSIDERED, Plaintiff prays:

1. That Defendants be cited to appear and answer herein;

2. That upon final trial of this cause, a permanent injunction be granted ordering Defendants to carry out each action required in the Texas Water Commission Order of March 9, 1988, and as set forth above.

3. That upon final trial of this cause, the State have a money judgment against Defendant Capitol Metal Finishing, Inc., in the amount of $28,000 plus prejudgment and postjudgment interest at the legal rate from the date of the Texas Water Commission Order was final until paid;

4. That upon final trial of this cause, the State have an additional money judgment against Defendant Capitol Metal Finishing, Inc. for violation of the Texas Water Commission Order of March 9, 1988, plus interest at the legal rate from the date of judgment until paid.

5. That upon final trial of this cause, the State have an additional money judgment against Defendant Capitol Metal Finishing, Inc., and Defendant Carl Booth for civil penalties for violations of the Act, and the Rules and Regulations promulgated by the Texas Water Commission pursuant thereto, plus interest at the legal rate from the date of judgment until paid;

6. That Plaintiff receive from Defendants reasonable attorney's fees, reasonable investigative costs, and all of its court costs in this action; and

7. That Plaintiff be granted all other relief, general and special, in law and in equity, to which it may show itself to be justly entitled.

Respectfully submitted,

JIM MATTOX
Attorney General of Texas

MARY F. KELLER
First Assistant Attorney General

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TEXAS WATER COMMISSION

AN AGREED ORDER

Determining Violations by Capitol Metal Finishing, Inc. under the Texas Solid Waste Disposal Act, TEX. REV. CIV. STAT. ANN. art. 4477-7 (Vernon Supp. 1987), and the Texas Water Code TEX. WATER CODE ANN. (Vernon Supp. 1987); Assessing Administrative Penalties; and Requiring Certain Actions of Capitol Metal Finishing, Inc.

On this 24th day of February, 1988, came on to be considered the petition and report of the Executive Director, alleging violations of the Texas Solid Waste Disposal Act, TEX. REV. CIV. STAT. ANN. art. 4477-7 (Vernon Supp. 1987) (the "Act"), and the Texas Water Code, TEX. WATER CODE ANN. (Vernon Supp. 1987) ("the Code"), and the Texas Water Commission ("Commission") rules pertaining to industrial solid waste management and requesting appropriate relief, including administrative penalties. The facility made the subject of the Executive Director's petition is Capitol Metal Finishing, Inc., located on Block A, Lots 7 and 8 in the Twin Oaks Industrial Subdivision at 3909 Warehouse Row in Austin, Travis County, Texas.

This Agreed Order is entered solely for the purpose of resolving the matters raised in the Executive Director's Petition and Preliminary Report and is entered upon the recommendation and consent of the Executive Director and Capitol Metal Finishing, Inc., and without any admission by Capitol Metal Finishing, Inc. of the allegations contained in the Findings of Fact and Conclusions of Law or any other factual or legal matter. For this reason this Agreed Order, or any provision hereof, is not to be construed, and will not be construed, to any extent or for any purposes, however and whenever arising, as an admission of liability or violation, directly or indirectly, on the part of Capitol Metal Finishing, Inc., its successors or assigns; nor shall the Agreed Order be admitted into evidence or used in any way, directly or indirectly, in any judicial or administrative proceeding against any party or in any other manner against any party for any purpose other than in further proceedings by the parties hereto to enforce the terms of this Agreed Order.

After proper notice to Capitol Metal Finishing, Inc. ("the Company"), and after hearing the evidence and argument of the parties, the Texas Water Commission makes the following findings of fact and conclusions of law:

"EXHIBIT A"

Findings of Fact

(1) Capitol Metal Finishing, Inc., located on Block A, Lots 7 and 8 in the Twin Oaks Industrial Subdivision at 3909 Warehouse Row in Austin, Travis County, Texas, is an electroplating operation.

(2) The following wastes are generated at the Company's facility: EPA hazardous waste Nos. F001, F006, F007, F008, F009, and F019, which are listed hazardous wastes in 40 CFR §261.30; and EPA Waste Nos. D002, D003, D006, and D007, which are characteristically hazardous wastes as defined in 40 CFR §§26.122, 261.23 and 261.24.

(3) The Company manages waste by pretreatment prior to discharge to the City of Austin's wastewater treatment facility and as a 90-day storage facility, pursuant to 31 TAC §335.69.

(4) On numerous occasions since January 14, 1986, Commission District Field Representatives have documented releases of hazardous waste both on-site and running off the Company's property.

(5) On numerous occasions since January 14, 1986, Commission District Field Representatives have documented the Company's failure to label hazardous waste containers, storage times greater than 90 days, and inadequate management of hazardous waste containers and tanks.

Conclusions of Law

(1) The Commission has jurisdiction to assess administrative penalties for violations of Commission rules, the Texas Water Code, and the Solid Waste Disposal Act pursuant to §8b of the Act and §26.136 of the Code, and to require certain actions of the Company pursuant to §8c of the Act and §26.019 of the Code.

(2) The events described in Finding of Fact No. 4 above constitute a violation of 31 Texas Administrative Code ("TAC") §355.4 and §26.121 of the Code.

(3) The events described in Finding of Fact No. 5 above constitute a violation of 31 TAC §335.69.

(4) Certain actions must be taken by the Company to bring the Company's facility into compliance with applicable laws and to ensure future compliance.

(5) An administrative penalty of Twenty-Eight Thousand Dollars ($28,000) is justified by the facts recited herein, considered in light of the factors stipulated in §8b of the Act.

REFERENCE 3

SAMPLING AND ANALYSIS PLAN
CAPITOL METAL FINISHING, INC.

Prepared for:

Capitol Metal Finishing, Inc.
Austin, Texas

Prepared by:

Environmental Consulting Associates
Austin, Texas

July, 1990

ECA Environmental Consulting Associates

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1.0 Introduction

Capitol Metal Finishing, Inc. (CMF) retained Environmental Consulting Associates, Inc. (ECA) to prepare a plan for investigation studies of the CMF site. This plan is to be submitted to the Texas Water Commission for approval prior to commencement of field activities.

This plan is referred to as the Sampling and Analysis Plan for the Capitol Metal Finishing Site.

1.1 Background Information

Capitol Metal Finishing is located on Block A, Lots 7 and 8 in Twin Oaks Industrial Subdivision at 3909 Warehouse Row, Travis County, Austin, Texas. Property use in the area is primarily commercial and residential.

Operations at CMF are ceased. In 1983, the zinc and nickel plating operation at Austin Painting and Plating (APP) merged with CMF. Many of the same wastes were transferred from APP to CMF. CMF operated an electroplating facility which did aluminum anodizing and zinc, chromium, nickel, and various types of specialty plating. Hazardous wastes generated from this operation included listed wastes (EPA hazardous waste nos. F001, F006, F007, F008, F009, and F019) which are toxic due to solvent, heavy metal, and cyanide content, and reactive due to cyanide content. Other wastes generated were hazardous by the characteristics of: corrosivity (EPA hazardous waste no. D002), due to a pH of less than 2 or greater than 12.5; reactivity (EPA hazardous waste no. D003), due to cyanide content; and EP toxicity (EPA hazardous waste nos. D006 and D007) due to cadmium and chromium content.

Hazardous waste 1,1,1-trichloroethane (EPA hazardous waste no. F001) was generated in a degreasing process. The spent solvent was placed

2.0 Geology and Hydrogeology

2.1 Regional Geology and Hydrogeology

The topography of Travis County is divided into the physiographic regions of the Edwards Plateau, Blackland Prairie, and Grand Prairie. The west and southwest portions of Travis County are characterized by the Edwards Plateau which is also referred to as the Hill Country. To the east of the Edwards Plateau is the gently rolling Blackland Prairie. The Balcones fault zone divides the Edwards Plateau from the Blackland Prairie. The northwestern portion of the county is characterized by the Grand Prairie which is also locally referred to as the Lampasas Cut Plain. The outcrops and geologic units strike in a northeast to southwest direction and dip in a southeasterly direction.

Travis County is located in the Colorado River drainage basin. The Colorado River flows from the northwest to southeast through the center of the county. The Colorado River is fed by several tributaries. The Pedernales River, Barton Creek and Onion Creek enter the river from the south. Cow and Sandy Creeks and Gilleland Creek enter the river from the north.

Travis County is underlain by several geologic and hydrogeologic units which yield fresh to moderately saline ground water. In order of their importance as aquifers are: the Edwards and Associated limestones, the Trinity Group, the alluvium and terrace deposits, the Austin Chalk, the Navarro and Taylor Groups, igneous rocks around Pilot's Knob, and the Midway Group.

The Edwards Aquifer is the primary aquifer in Travis County. It is composed of the Cretaceous-age Edwards Limestone, the underlying Commanche Peak Limestone and the overlying Georgetown Limestone. The aquifer is wider in Williamson, Hays and Bell Counties than in Travis County. This narrowing of the aquifer is attributed to the

intense faulting and topographic variations of the Balcones fault zone. Recharge to the aquifer is from outcrops of the Edwards and associated limestones. However, the aquifer is recharged by areas slightly east of the outcrop where streamflow and rainfall on younger formations may percolate downwards into the aquifer, especially if these younger formations are faulted.

Weathering of the limestone and marl that comprise the aquifer have yielded soils on the outcrop which are typically dark brown, grayish brown, and reddish brown, silty to clayey loams. The soils range in thickness from less than 5 inches to as much as 5 feet.

To the east of the Edwards Aquifer, the Cretaceous rocks are younger than the Edwards and include, from oldest to youngest, the Del Rio Clay, Buda Limestone, Eagle Ford Shale, Austin Chalk, Taylor Marl and Navarro Group. These geologic formations comprise minor aquifers which yield small amounts of water in Travis County. The water quality in these aquifers ranges from fresh to moderately saline and is generally high in sulfates, chlorides, and nitrates.

The western half of Travis County is dominated by the Trinity Group aquifer. The Trinity Group is subdivided into the lower, middle, and upper Trinity.

The lower Trinity Aquifer is comprised of the Hosston and Sligo Members of the Travis Peak Formation. The water quality is usually slightly saline in northwestern Travis County and is used primarily for municipal purposes. The water quality in north-central Travis County is moderately saline.

The Hensell Sand and Cow Creek Limestone Members of the Travis Peak Formation and the lower member of the Glen Rose Formation comprise the middle Trinity Aquifer. Water quality is slightly saline and contains high sulfate which is derived from gypsum beds. The

aquifer yields small quantities of water but is sufficient for domestic and livestock purposes.

The upper Trinity Aquifer is comprised of the upper member of the Glen Rose Formation and the Paluxy Formation. Well yields in this aquifer are small due to low permeabilities but the water is fresh. Well yields are sufficient for domestic and livestock use.

2.2 Local Geology and Hydrogeology

Locally, it appears that the CMF site is located on an Austin Chalk outcrop of Cretaceous age. The Austin Chalk is characterized as a light gray chalk, limy marl, and chalky limestone with some bentonite, glauconite and pyrite modules. In the vicinity of Pilot's Knob (east of Austin) the Austin Chalk has been partially metamorphosed into recrystallized limestone. The Austin Chalk ranges in thickness from 300 to 500 feet except in the outcrops where the thickness is considerably less. The site is located on the upthrown side of a fault located approximately 0.25 mile east of the site. Fluvial terrace deposits of Pleistocene age are to the west and south of the site. Blunn Creek, which flows northward to Town Lake, is located approximately 0.08 mile from the site. Runoff from the site flows toward Blunn Creek.

The site is located in an area of Travis County which has been classified as unfavorable for potential ground-water development (Brune and Duffin, 1983). The Austin Chalk yields small to very small amounts of water and is generally confined to the outcrop areas.

In the vicinity of the site, the Edwards Aquifer dips to the northeast. The Edwards in this area is past its downgradient limit of fresh to slightly saline water. The site is not located in the Edwards aquifer recharge zone or transition zone as illustrated on

the Oak Hill, Texas, Edwards Aquifer Recharge Zone Map produced in accordance Title 331 Texas Administrative Code Section 313.

Boring investigations to be performed at the site will further characterize the soil beneath the site.

3.0 Investigative Approach

3.1 Concrete Coring Investigation

In order to determine the depth of penetration of substances into the concrete slab resulting from operations at Capitol Metal, a series of concrete cores will be taken at the general location shown in Figure 3-1. Specific points will be field located by the Engineer.

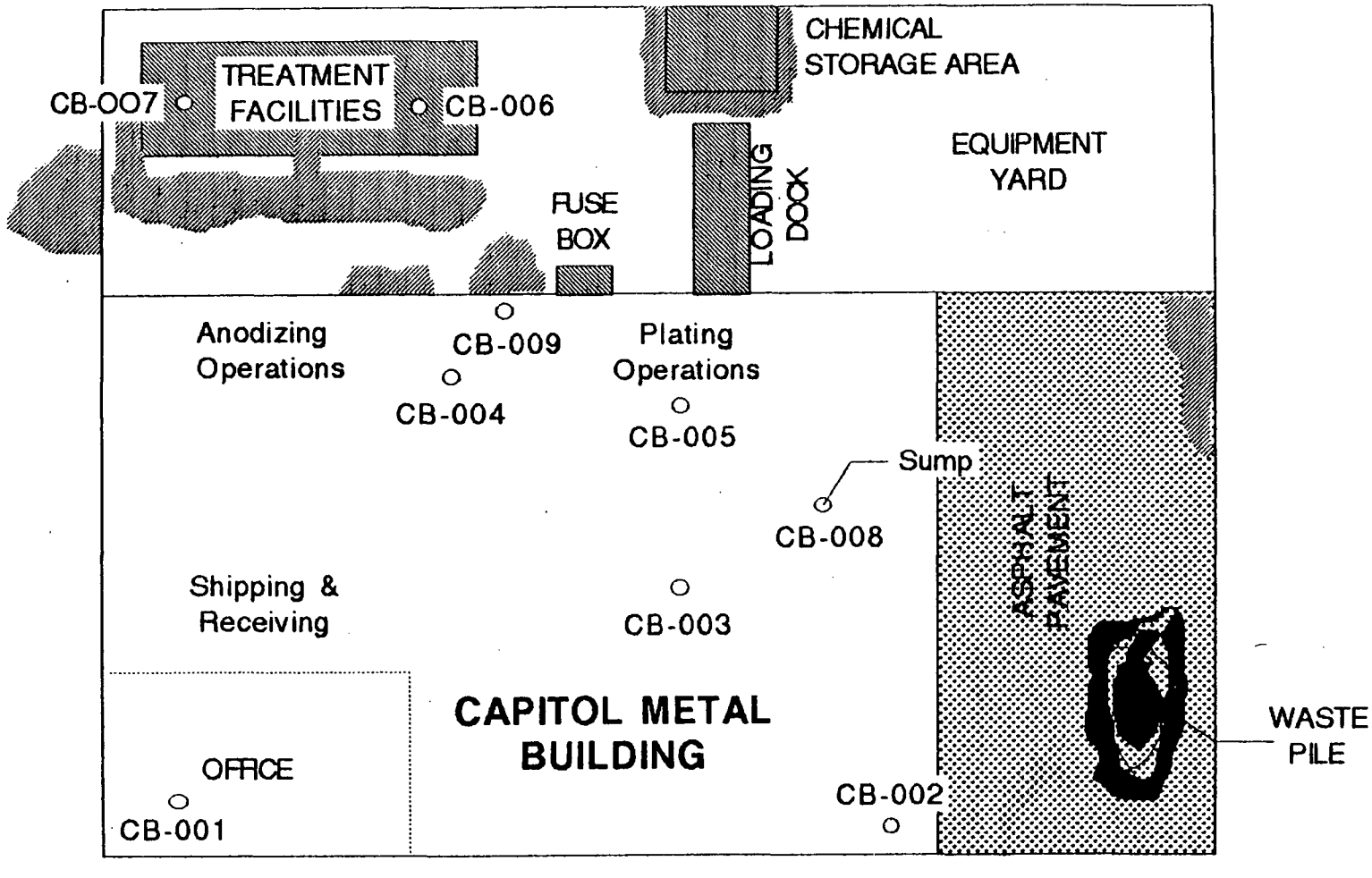
The intent of this sampling program is to determine if contamination at CMF has penetrated the concrete slab of the building and the underlying fill soil. Areas to core were selected to determine the penetration in each of the former process areas at locations where visible erosion was the most severe.

All concrete cores will be collected using a 1 H.P. hand-held auger equipped with a coring barrel capable of retrieving cores up to 2' in length. This is a low R.P.M. cutting device which should provide a uniform core at each sampling point.

The cutting barrel of the auger will be decontaminated using a non-phosphate detergent wash, followed by a deionized water rinse. Rinsate liquid from the decontamination process will be containerized. This process will be repeated between all samples locations. At the completion of coring activities, all core locations will be filled with concrete.

Sample Locations 002, 003, 004, 005, 006, 007 and 008

Coring will be performed by placing the auger over the location selected by the Engineer and advancing the cutting barrel until it cuts through the bottom of the slab. The auger will then be lifted to retrieve the core sample. The core will be extracted from the core barrel and inspected visually for signs of staining. The



N

Waste Removal Area

Proposed Concrete Boring Location

ECA

Environmental Consulting Associates
9111 Jollyville Rd. Austin, Texas

Figure No. 3-1
Concrete Coring Locations

Drawn By:	Date:	Project No.:
Chk'd By:	Revised:	Dwg. No.:

REFERENCE 4

ENFORCEMENT REPORT

Capitol Metal Finishing, Inc.
TWC Registration: 31593
Lot 7 & 8, Block A, Twin Oaks Industrial Subdivision
3909 Warehouse Row, Austin, Travis County, Texas
Tim Chaney - Enforcement Coordinator
Investigated by Susan Adams
March 16, 1989

On February 16 and 28, 1989, I inspected the hazardous and solid waste management program at Capitol Metal Finishing, Inc. (CMF) located at 3909 Warehouse Row in Austin. This was a Compliance Schedule Evaluation pursuant to a 3-9-88 Administrative Order. On 2-16-89 I was accompanied by Tim Chaney, TWC Enforcement Coordinator assigned to the case, and on 2-28-89 I was accompanied by Robert Camacho and Antonio Canales, City of Austin (COA) Industrial Waste Specialists, who have CMF under enforcemen for violations of the Clean Water Act as stipulated in the COA Industria Waste Ordinance. CMF was represented by Dwight Troue and Al Hayes on 16-89 and by Mr. Troue on 2-28-89. See attached Inspection Checklist details of the inspection.

Inspection Background

Capitol Metal Finishing, Inc. received its first Notice of Violation letter on 1-21-86 after the first TWC inspection on 1-14-86. Since that time, they have not been in compliance with RCRA regulations. They have been working under an Agreed Order (see Attachment I) since 3-9-88, but recent inspection showed that CMF has not met the conditions of the orde and the inspection also revealed numerous other solid waste violations, most of which have been cited during other inspections.

Past inspections at Capitol Metal Finishing, an industry that does aluminum anodizing and electroplating using cyanide, zinc, cadmium, nickel, and chromium, are summarized in an Inspection Report dated 2-5-88, and in an Enforcement Report dated 7-8-87. Neither report is attached.

CMF was incorporated 3-29-83 by William B. (Dusty) Rhodes. He is the president and registered agent; his mailing address is 1502 FM 1460, Round Rock, TX 78680. Although the electroplating business has had several owners, the property and improvements are owned by Twin Oaks Association (a.k.a. Odas Jung), P.O. Box 668, Austin, 78767. The day-to day management of the business is done by Carl Booth.

Owners of CMF have acquired a site in Round Rock and during the past six months have been developing that site and moving operations from Austin to Round Rock. The assets of Capitol Metal Finishing have been moved to the new Round Rock business, named Consolidated Metal Finishing, Inc. CMF is working under the Commission Agreed Order (A.O.) and under a Clo-

sure Plan (see Attachment II) submitted to the COA Industrial Waste Section. According to Carl Booth, CMF plant manager and part owner of Consolidated Metal Finishing, the Austin facility will be cleaned of contamination and abandoned to the property owner, Mr. Odas Jung.

CMF Clean-up To Date

The clean-up of the outside of the CMF site is being monitored through the TWC A.O. Clean-up plans, sampling results, and any descriptions of soil removal have been submitted to TWC piecemeal and are difficult to follow (see Attachment III).

However, findings include 1.) Heavy metal and cyanide contamination was found in all five surface samples taken 6-20-88 and the background sampl showed no contamination; 2.) Sixteen (16) foot soil borings were drille (see photo # 15) in each of the five locations, samples were taken at 2' 4', 6', and 16'(but not all have been analyzed); although only cadmium analyses were run at the 16 ft level, it appears that contamination may not have spread deeper than about 6 feet in most areas; 3.) one round soil removal took place in August 1988; 4.) no additional work has been done to verify that this was sufficient or to further remediate the site

There has been considerable disagreement as to which background samples are appropriate to use and which of the background samples taken may have been affected by spills or previous waste management. Although cadmium is the only parameter listed below, chromium, lead, nickel, zinc, and cyanide analyses were also run and should be used to determine clean-up adequacy. Clean-up levels for all six parameters have not been established to date. The following sample locations have been submitted by CMF for use:

Location	Cadmium	Use as Background
a. Grassy Roadside	<0.05 ppm	Yes
b. 25 feet east of CMF	1.40 ppm	Yes
c. Rick Hull Supply	14.20 ppm	No
d. 10 feet west of Hull	0.31 ppm	Yes
e. 6 feet north of north wall at CMF	5.90 ppm	No
f. Creek bank - upstream	0.41 ppm	Yes
g. Composite of two samples south yard at CMF	5.00 ppm	No

CMF believes that samples b, d, e, f, and g best represent background levels in the area. However, in my opinion, there is no place on CMF property, including sample areas "e" and "g" (see photos 17-22) which ca be assured of being unaffected by spills. In fact, the south yard, sample "g", had dozens of tanks filled with plating solutions and sludge which were there for at least a year, uncovered and unlabeled. Sample "e" is taken within 20 feet of where five samples have been taken which

show contamination from spills of listed waste F006. See photos #1, 3, 5, 6, 15, & 16 and slides # 9 & 11 from Enforcement Report 7-8-87 (not attached).

CMF has agreed that sample "c", the highest sample, has been affected by spills and should be eliminated. Then, CMF argues that both the highest and lowest score should be eliminated also. Thus, sample "a" would be eliminated. There is no empirical basis for this type procedure. They obviously would benefit from it, however, since it would seriously bias the results in their favor.

Contrary to the CMF argument, samples a, b, d, and f represent background samples for the area and should be used, exclusively, to determine appropriate clean-up levels. In summary, there is good evidence that samples c, e, and g have been affected by spills and should not be used to determine

Review of CMF Closure Plan submitted to the City of Austin

On December 13, 1988, CMF submitted a plan (see Attachment II) for closing the electroplating operation and removing all hazardous wastes. Among other things, the plan calls for triple rinsing equipment and contaminated items "prior to disposal in municipal landfill." No hazardous waste determination has been made for these items.

Plating solution rinse waters will be treated and discharged to city sewer. Sludges from the treatment will be put in 55 gallon drums with portland cement to solidify the mixture and "disposed of in a TWC Class facility."

Chronology of Events since February 1988

6-20-88 Sampling Inspection for Site Assessment and Clean-up.
Surface samples were taken to determine extent of contamination at the site. Present during the inspection were Al Hayes, Bif Jones, and I. Samples taken were split with TWC. See Attachment IV - COC tags SW 1209 - SW 1214.

7-13-88 Sampling Inspection for Site Assessment and Clean-up.
Present during the inspection were Al Hayes, Bif Jones, and I. Samples taken were split, but TWC samples were not analyzed. Five soil borings were drilled to 16 feet and sampled for heavy metals and cyanide. No groundwater was encountered.

8-31-88 Follow-up Inspection.
First round of soil removal had been completed. Backfill was brought in where soil had been removed. Standing water from recent rains showed

that CMF still was not controlling run-off from the site (see photo #16) Carl Booth and Bif Jones represented CMF. Notice of Registration for Consolidated in Round Rock had been completed and pretreatment equipment from Modern Metal Finishing on Todd Lane in Austin had been moved to Round Rock facility.

10-4-88 Call to District Office.
Bif Jones, CMF contractor, called me to notify that additional backgroun sampling would be taking place Thursday or Friday of that week. No spec ific time was given. I told him to call back with the specific time. There is no record of him calling back, so I stopped by CMF that Friday after lunch.

10-7-88 Follow-up inspection.
Stopped by CMF to check on sampling. Mr. Troue didn't know anything about it; no one had been there to take samples. Boiler blowdown water was flowing across previously identified contamination along the edge of the concrete pretreatment containment area and off the site north of the gate. Told Mr. Troue that the discharge must cease.

Later in the day. Sampling by CMF contractor, no TWC personnel present. Additional sampling was done in an effort to get the background limits adjusted upwards. Location for sampling was questionable, since most of the samples were not taken from sites unaffected by spills and previous waste management (see photos 17-22).

10-12-88 Follow-up inspection.
Stopped by to check disposition of boiler blowdown. The discharge was being collected in 55 gallon drums and then pumped to sanitary sewer.

10-17-88 Meeting at TWC to discuss clean-up plan.
Tim Chaney, enforcement coordinator, Al Hayes and Bif Jones, CMF contrac tors, and I were present for the meeting.

11-16-88 Meeting at TWC.
Meeting was held to discuss clean-up levels and further actions to be taken by CMF. Present were Al Hayes, Bif Jones, Carl Booth and Dusty Rhodes with CMF. Tim Chaney and I represented TWC. During the meeting, several samples (identified on page 2 as "a", "b", "d", and "f") were selected from all the background samples taken by CMF to be used in determining clean-up levels. This was reiterated in a telephone conversation between Mr. Chaney and Mr. Hayes on 11-19-88 and again, in principle, it was corroborated between attorneys Michelle McFaddin and Pam Giblin that week.

12-2-88 Sampling Inspection.
Samples were taken on south side of building to determine if there was contamination under the asphalt. Samples were taken by Al Hayes and Bif Jones and split with TWC (but were not analyzed by TWC). No additional clean-up or soil removal had taken place since 8-31-88 inspection.

2-16-89 and 2-28-89 Follow-up Inspection.
The inspection revealed tanks and drums which were not labeled properly (see photos # 1, 6, 7, 9, 10, 11, and 13). No manifests or any other solid waste records were available for review during the inspection. Bead blaster dust which was piled on a concrete slab outside (as it has been for many years) was sampled to determine if it is E P toxic for cadmium or chrome (see photo # 14). Samples (see Attachment IV) were taken from tanks of waste plating solutions which were labeled during the inspection and the function of the "boil down tank" was explained.

The "boil down tank" (see photo # 4) is used to process hazardous waste by boiling off the liquid and leaving the sludge which is then mixed with cement, drummed, and shipped as F006 waste to an authorized facility. CMF has not notified, nor applied for a permit for this activity.

The Remedial Action Plan as stipulated in the Agreed Order called for completion of the CMF clean-up by 2-15-89. The work was far from complete. In fact, no progress has been made since August 31, 1988. Samples (see Attachment IV) were taken to verify that the clean-up is not complete.

3-3-89 Waste Information Submitted.
Mr. Booth submitted copies of shipping documents (see attachment) for plating solutions sold and disposed of during February while closing down the plant. Product shipments included 66 drums of used zinc cyanide plating solutions sold for $1.00 and shipped to TER Plating in Dallas on 2-17-89.

The manifest shows that an unknown amount of corrosive waste (D002) was shipped to Disposal Systems, Inc. (WDW-169) on February 25, 1989. On the February 16 inspection (see photos # 1, 5, 6) wastes which according to Dwight Troue, CMF hazardous waste handler, were shipped on the 25th, were identified as rinse waters containing nickel and chromium. On the February 28 inspection, over 3,000 gallons of nickel and chromium rinse waters and the entire tank line which had held them were gone (see photo #2), indicating they were included in the shipment to DSI. If this is the case, then a waste code denoting the presence of heavy metals, D007, should have been used, in stead of D002. The manifest should have been completed properly, including the volume of waste shipped [31 TAC 335.10(b)(20)].

General Facility and Waste Process Information

CMF has a batch treatment system for handling their electroplating wastewater solutions (See Enforcement Report 7-8-87 for details.) It consists of three 1,500 gallon concrete poly-lined below grade treatment tanks and two 2,200 gallon stainless steel clarifiers plumbed in series

with a gravity feed to a second clarifier for final pH adjustment and discharge to city sewer. Since the City has had so many problems with their discharge, they are not allowed to discharge without prior approva from the city. Each treatment batch is analyzed by the city to verify that the heavy metal and cyanide discharge limits have been met. Then the treated wastewater is discharged to sanitary sewer.

Sludges are dewatered in filter pans with a volume of about 15 cubic feet which are placed over the three concrete tanks. Sludges have been stored in these pans for over three months, well past the time needed to dewater. Sludges are also stored in the batch treatment tanks for long periods of time.

There is a "boil down tank" which is used to process electroplating wast water solutions which contain cyanide and heavy metals. According to Mr Troue, hazardous waste handler for CMF, any non-acidic wastes that can not be treated through the pretreatment system, which currently operates under a wastewater treatment unit exemption, are put in the boil down tank where the liquids are boiled off and the resultant solids are mixed with cement in drums and disposed of as F006 listed waste.

Surrounding Land Use

There is no vegetation in the immediate drainage area. Blunn Creek, about 300 yards north, receives run-off from this industrial site. The creek then flows north about 3 miles through Stacey Park which has a natural all weather swimming pool, and ultimately, flows into the Colorado River.

Since electroplating chemicals have been found on the ground at the site on numerous occasions, there is a potential for groundwater contamination.

Summary of Alleged Violations

Violation	Data Source	Regulation
Unauthorized Discharge. Failure to Remediate.	Inspection Report 2-5-88 Enforcement Report 7-8-87 Follow-up Insp. 2-16-89 Chain of Custody Tags: SW 1341, 1342, 1343.	31 TAC 335.4 Agreed Order #8
Accumulating Hazardous Waste in Unmarked Containers and the 90 day storage limit.	Same as above. Photographs.	31 TAC 335.69 Agreed Order # 5
Failure to Notify New Waste Management Methods.	Follow-up Inspection: 2-16-89.	31 TAC 335.6
Permit Required to Process Hazardous Waste.	Follow-up Inspection: 2-16-89.	31 TAC 335.2 and .43
No Records Available On-site for Review.	Follow-up Inspection: 2-16-89 & 2-28-89.	31 TAC 335.9, and .70 Agreed Order #6 & #
Failure to Complete Manifest before Shipment.	Information submitted 3-3-89.	31 TAC 335.10
No Records for Inspecting Tanks and Containers.	Follow-up Inspection: 2-16-89.	Agreed Order # 4
No Waste Determination.	Follow-up Inspection: 2-16-89. COC Tags: 1340, 1344, 1345, 1346. Photographs.	31 TAC 335.62 Agreed Order # 1

Technical Recommendations

1. Because of the flagrant and repeated disregard for environmental regulations demonstrated by CMF during the past three years and particularly since the Agreed Order was issued on March 9, 1988, the stipulated penalty should be immediately forfeited.

2. Terms of the Agreed Order or any subsequent order should also cover Consolidated Metal Finishing (SW Reg. No. 38570) in Round Rock, since it is owned and operated by the same parties.

3. If reasonable clean-up standards for cyanide, cadmium, chromium, lead, nickel, and zinc cannot be agreed on, TWC staff should take four background samples within 1/2 mile radius of the site. The samples will be analyzed for total cyanide and total metals as listed above. The results for each analyte will be averaged and that will be the clean-up level.

4. Written records regarding waste determination should be made available for all waste streams, particularly those wastes associated with the plant closure, such as the floor sweepings and other debris seen in photos #2 and #3.

5. Written records regarding the inspection of containers and tanks frc April 1988 to the present should be made available for review.

6. Legal clarification should be made regarding SQG status and that hazardous wastes associated with an exempt wastewater treatment unit are counted in the volume determination. It is the unit, only, that is exempt from RCRA. The contents are not exempt, if those contents are hazardous due to listing or characteristic. But, at what point does t 90-day accumulation period begin?

7. The unauthorized processing of hazardous waste, use of the boil down tank, should cease immediately. The only legitimate processing of hazardous waste at CMF is through the pretreatment system which has been permitted by the City of Austin and may meet the definition of a wastewater treatment unit.

8. Capitol Metal Finishing's permit to discharge industrial wastewater to sanitary sewer expires 3-15-89. If it is not renewed by the City of Austin, all waste generated by CMF should become subject to RCRA. In other words, CMF would lose their wastewater treatment exemption.

ATTACHMENTS

I. Agreed Order 3-9-88
   Actions to be Undertaken

II. Closure Plan Submitted to City of Austin

III. CMF Description of Clean-up Activities

IV. Chain-of Custody Tags

V. Manifests & Shipping Documents

ATTACHMENT I.

Agreed Order 3-9-88 * Actions to be Undertaken

NOW, THEREFORE, BE IT ORDERED BY THE TEXAS WATER COMMISSION that Capitol Metal Finishing, Inc. shall be assessed an administrative penalty of Twenty-Eight Thousand Dollars, ($28,000) for violations of the Texas Solid Waste Disposal Act, the Texas Water Code and the rules of the Texas Water Commission. Ten Thousand Dollars ($10,000) of this penalty shall be paid as follows: One Thousand Dollars ($1,000) shall be paid within thirty (30) days from the date this Order is signed, and Four Thousand Dollars ($4,000) shall be paid six months from the date this Order is signed, and Five Thousand Dollars ($5,000) shall be paid one year from the date this Order is signed. The remaining Eighteen Thousand Dollars ($18,000) of the penalty shall be deferred pending a finding by the Commission that there has been successful completion of decretal provisions No. 4 through 8 below, and continuous compliance with these provisions for a period of one year following the completion of decretal provisions No. 4 through 8, and substantial continued compliance with decretal provisions No. 1 through 3 for the duration of this Order. If the Commission finds that the decretal provisions have not been complied with during that time, the Commission shall issue an order, after notice and opportunity for hearing, and the deferred penalty amount of $18000 shall become due. The disposition of this administrative fine resolves only those matters raised by the Executive Director's Preliminary Report, and the Commission shall not be constrained in any manner from considering any administrative fines for violations of the Texas Solid Waste Disposal Act, the Texas Water Code or the regulations or orders of the Texas Water Commission occurring after the date this Order is signed or which are not raised in the Executive Director's Preliminary Report. All checks rendered to pay penalties imposed by this Order shall be made out to "The State of Texas - General Revenue Fund." This penalty shall be paid within thirty (30) days of the date of this Order, and mailed to the Chief Fiscal Officer, Texas Water Commission, P. O. Box 13087, Capitol Station, Austin, Texas 78711-3087, with the notation, "Re: Capitol Metal Finishing, Inc., Enforcement Order".

IT IS FURTHER ORDERED BY THE TEXAS WATER COMMISSION that Capitol Metal Finishing, Inc. shall undertake certain actions as follows:

(1) Beginning immediately from the date this Order is signed, the Company shall continue to conduct hazardous waste determinations on all wastes generated at the facility for which a hazardous waste determination has not been completed as required by 31 TAC §335.62.

(2) Beginning immediately from the date this Order is signed, the Company shall continue to ship all hazardous wastes which are currently in storage and have been in storage for more than 90 days, off-site to an authorized facility for disposal. All shipments of Class I industrial solid wastes must be accompanied by a Uniform Hazardous Waste Manifest and must comply with all applicable Department of Transportation ("DOT") shipping requirements.

(3) Beginning immediately from the date this Order is signed, the Company shall continue to transfer the contents of all leaking containers and tanks to containers that are closed, in nonleaking condition, and compatible with the material to be stored.

(4) Within thirty (30) days from the date this Order is signed, the Company shall develop an inspection plan and schedule, and immediately upon development of the plan, begin inspecting containers and tanks as required by 40 CFR §§265.174 and 265.194(a)(3) and (4).

(5) Within ten (10) days from the date this Order is signed, all containers and tanks used for storage of hazardous waste must be labeled with the words "Hazardous Waste", and all containers used for storage of hazardous waste must be dated with the date upon which accumulation began.

(6) Within thirty (30) days from the date this Order is signed, the Company shall prepare and submit for review and approval a contingency plan addressing actions and procedures for handling hazardous waste emergencies.

(7) Within forty-five (45) days from the date this Order is signed, a personnel training program which meets the requirements of 40 CFR §265.16 shall be developed.

(8) Within forty-five (45) days from the date this Order is signed, the Company must submit a remedial action plan for approval by the Executive Director which will address removal of all soil contaminated as a result of discharges of industrial solid waste by the Company. More specifically the plan should address:

a. An estimate of the volume of soil to be removed and a hazardous waste determination and classification of the resultant waste.

b. Procedures for excavation and packaging of the waste for shipment off-site to an authorized disposal facility. Packaging must comply with applicable DOT requirements and all Class I industrial solid waste must be accompanied by a uniform hazardous waste shipping manifest.

c. A verification sampling plan to confirm the affected area has been restored to background levels for cyanide, cadmium, chromium, nickel, lead, and zinc. The plan must include a description of the sampling methods by which background levels will be established.

d. A description of actions which will be taken to restore the excavated area to its original grade.

e. Assurance by the Company that the work will be carried out under the supervision of a Texas-registered professional engineer and upon completion of the work the facility owner and the professional engineer will submit certification that the work has been carried out in conformance with the plan.

f. The schedule by which each step of the plan will be implemented.

Upon the Executive Director's approval and/or modification of the plan, the Company must initiate the actions required by the plan in accordance with the approved schedule, as may be modified by the Executive Director.

(9) Beginning immediately from the date this Order is signed, the Company shall report all spills to the Executive Director of the Commission and the District 14 Office orally within 24 hours of the spill and in writing within five (5) days of the date the spill occurs.

Failure to comply with any obligation or deadline imposed by this Order shall not constitute a violation of this Order to the extent failure to comply was caused by an event beyond the Company's control. The Company shall notify the Executive Director in writing within seven (7) days of becoming aware of any event which may cause noncompliance with this Order. The Executive Director shall respond in writing within thirty (30) days from receipt of the notification with his decision that the event is or is not beyond the Company's control. The burden of proving that an event was beyond the Company's control shall remain with the Company.

The Chief Clerk shall provide a copy of this Order to each of the parties.

Signed this the 9th day of March, 1988.

TEXAS WATER COMMISSION

Paul Hopkins

Paul Hopkins, Chairman

ATTEST:

Karen A. Phillips

Karen A. Phillips, Chief Clerk

ATTACHMENT II.

TEXAS
INDUSTRIAL WASTE CONTROL
INC.

CLOSURE PLAN

for

CAPITOL METAL FINISHING, INC
3909 WAREHOUSE ROW
AUSTIN, TEXAS

Prepared by

BENJAMIN F JONES

December 13, 1988

RECEIVED
DEC 27 88
OPERATIONS
DISTRICT 14

176 Logan Road • Georgetown, Texas 78628 • (512) 255-9924 • (512)422-3784

1.0 SUMMARY

Capitol Metal Finishing, Inc. (CMF) is closing its metal finishing operations on Warehouse Row and selling its assets to Consolidated Metal Finishing, Inc. of Round Rock, Texas. The move will be accomplished during the month of January, 1989. Cleanup of the facility will begin in January and be completed during February. CMF is asking for an extension of their Industrial Wastewater Permit from the City of Austin until March 1, 1988.

The closure operations will consist of the following steps.

* Shutdown cadmium, chrome, copper, nickel and tin lines by January 8, 1989. The night shift of the zinc plating will be stopped thus reducing the zinc in the waste water by 50%. The nickel and tin lines with their tanks, solutions & pipes will be moved to Round Rock. What happen to Cd, Cr, & Cu lines

* Shutdown of zinc, black oxide, and anodizing lines & all other baths by January 31, 1988. The anodizing lines will be moved to Round Rock; the black oxide and cadmium and zinc cyanide lines have been sold to other plating companies. The tanks and pipes from these lines will be triple rinsed and disposed/scraped. — what happen to rinse H2O

* All rinsewaters containing little or no controlled metals will be put into sewer after automatic pH adjustment.

* All cyanide & metal containing dead rinses will be pretreated prior to testing and subsequent discharge to sewer. Call IW before discharge.

* All other equipment and contaminated items will be triple rinsed prior to disposal in municipal landfill.

* The floor would be acid rinsed, neutralized & water rinsed twice. Rinse waters would be treated prior to testing and subsequent discharge.

* Chromium plating lines will be discontinued. These bath solutions and untreatable rinse solutions will be deepwelled at a TWC permitted site. — manifest showing vol. — vol. today?

* Cleanup of all contaminated soils outside of facility as part of an existing compliance order.

How catch H2O how?

How do you know Who test & how? Samples of discharges & the comp.

Segregate all waste now from future waste.

76 Logan Road • Georgetown, Texas 78628 • (512) 255-9924 • (512)422-3784

need drawing showing how these procedures will happen

2.0 PRETREATMENT OF GENERAL RINSES

Continuous flow rinses will continue to be treated with sodium hydroxide prior to discharge into the city sewer using CMF's existing online pH adjustment system. Continuous readout tapes will be made of the effluent pH. The system will be calibrated and serviced weekly. The system will be checked daily. Robert Camacho with the City of Austin will be notified the same day if the pH exceeded the limits of 6 to 11 for more than 15 minutes. The cause will be identified and immediately corrected. If the cause is from a spill of heavy metals rinses, water to the rinses will be shutoff until the affected water can be pumped into holding tanks for pretreatment.

3.0 Pretreatment of Cyanide & Metal Containing Dead Rinses

Cyanide containing rinses will be treated with sodium hypochlorite at ph 12 to 12.5. The ph will then be dropped to 10 to 10.5 for precipitation of the metal as hydroxides. Chromium containing rinsewaters will be treated with sodium bisulfite at ph 2.5 to 3.0. The pH will then be raised to 7.0 to 8.0 to preciptate the Chromium III hydroxide. These solutions will be sent to clarifiers where the solids will be allowed to precipitate and settle. Clear water will be put down the sewer. Samples will be taken and analyzed if required by the City of Austin. The settled solids/ wastewater treatment sludge will be put in 55 gallon drums approximately 2/3rd's full. Portland cement will be added to this. The solidified mixture will be disposed of in a TWC Class 1 facility.

4.0 TRIPLE RINSING

All discarded tanks, lines, and other contaminated equipment will be rinsed three times with clean water. This water will be pretreated with the rinses in Section 3.0 above. The floor will be swept; these sweepings will be placed with the wastes going to the Class 1 disposal facility. The floor will then treated with a mild acid- pH 2 to 2.5. This acid will be neutralized with an alkaline solution- ph 11 to a neutral ph. This will be squeegeed up and treated as in section 3.0. The floor will be rinsed twice with clean water. This water will be handled as in Section 3.0.

5.0 Operational Response -pH Excursions

The following actions will be taken to ensure that the pH of the discharge stays within the limits of 6 to 11.

* Ph system will be inspected every shift and logged.

* Ph system will be serviced and calibrated weekly.

* No dumping of concentrated solutions will be allowed for any reason.

* No testing of system will be done without notifying Robert Camacho first.

* ~~The~~ an alarm system will be activated ~~if functional.~~

* The water to the rinses will be manually shutoff immediately until the problem can be corrected.

6.0 Operational Response to Zinc Discharges

The problem with zinc was brought to my attention on March 13, by the City of Austin. Based on their data and communication with CMF, the following corrective actions are proposed and are expected to correct the problem. Sampling and testing will be performed during December to verify this and provide a reasonable confidence factor that discharges will be within the allowable limits.

* Two more dead rinses will be installed in the zinc line immediately. This alone should reduce the effluent by an order of magnitude and solve the problem.

* The dead rinses will be dumped for treatment twice as often and will be treated in a new batch treatment system. The night shift will be discontinued by January 8, 1989. These two actions should result in a 4 fold decrease in the average zinc discharge.

The zinc line in Round Rock will be expedited so that zinc plating in Austin will be shutdown as soon as practically feasible.

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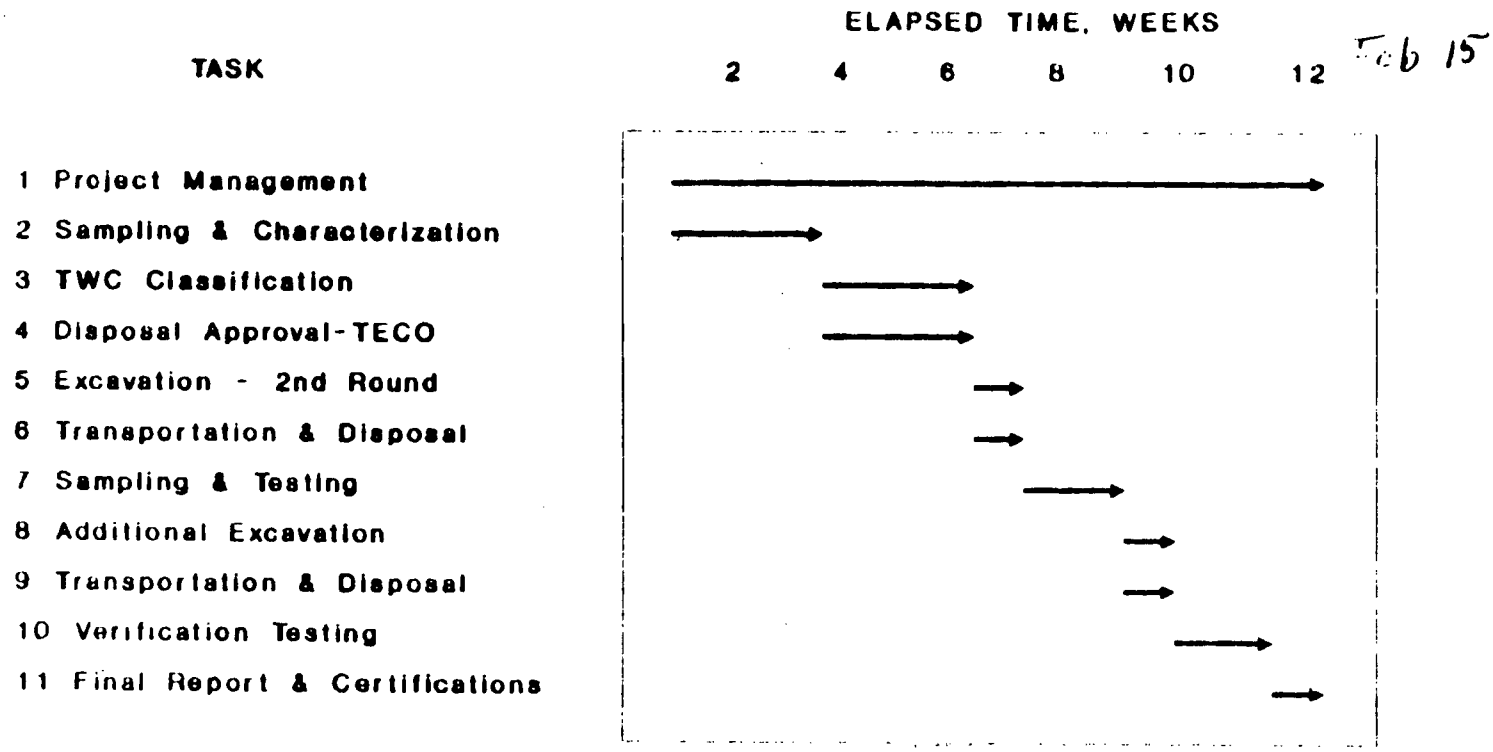
ATTACHMENT III.

PROJECT SCHEDULE
CAPITOL METAL CLEANUP



November 15, 1988

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TEXAS
INDUSTRIAL WASTE CONTROL
INC.

TABLE 2

RESULTS of ANALYSES for CONTAMINANTS
in SOILS at CAPITOL METAL FINISHING, AUSTIN TEXAS
Sampled 6-20-88 Composited 4-8 inches

	Equipment Yard	Chemical Dock	Fuse Box	Treatment Dike	Outside N Fence	Background Site	Background U.S.
Cadmium	14.5	260	80.5	175	234	<0.05	.01-.70
Chromium	35.5	1590	118	48	70	10.5	1-1000
Copper	67.5	444	25.5	91.5	54	13	2-100
Lead	160	1010	2	<0.05	79	11	2-100
Nickel	285	3350	120	390	275	18	5-500
Silver	0.7	2.6	3.5	3.15	2.7	1.25	
Zinc	157	1850	300	285	190	26	10-300
Cyanide	0.7	0.86	2.3	4.4	0.14	<0.05	

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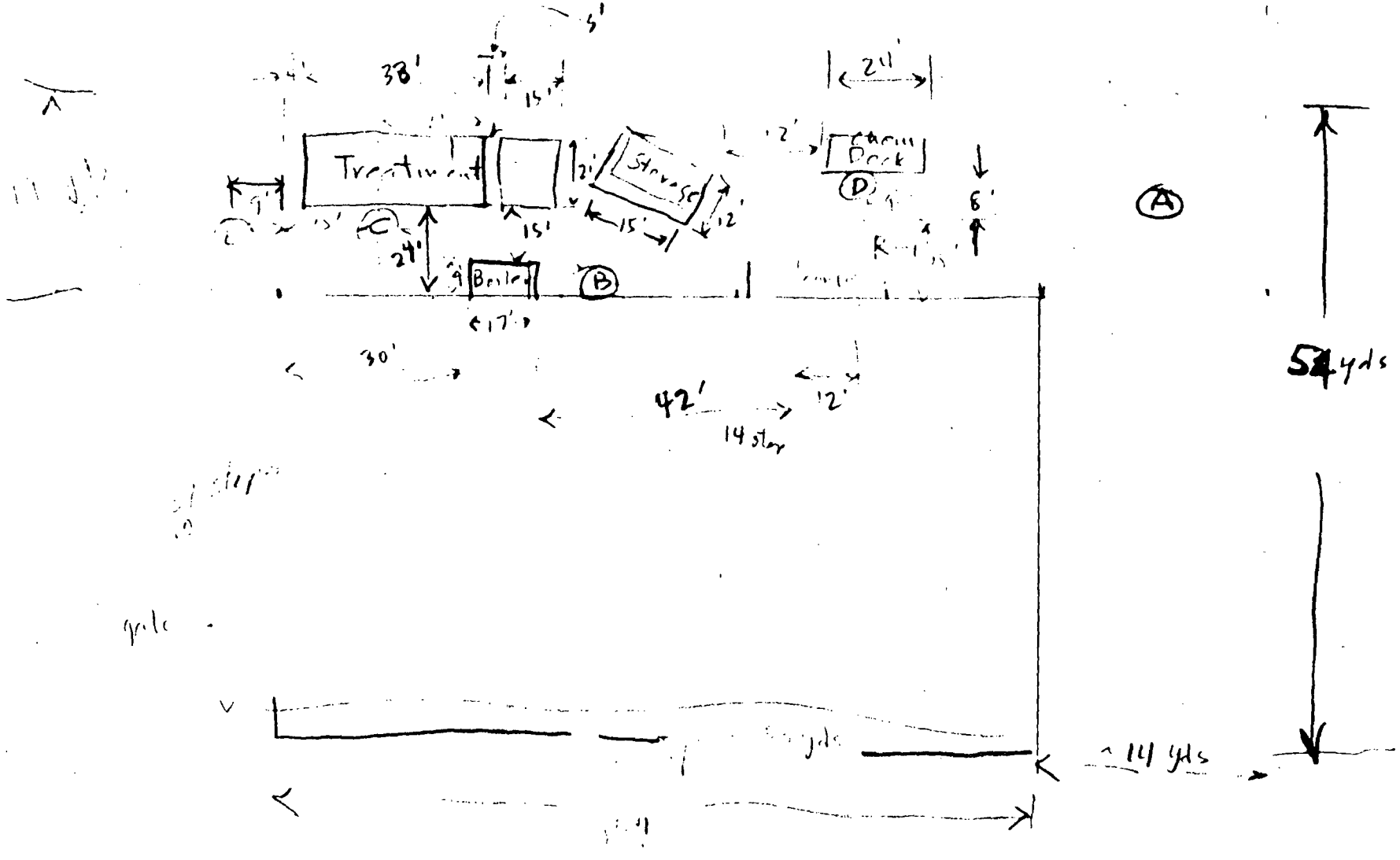
E → C 7 steps or yds
C → B 15
B → D 15
D → A 24



EXTENT OF CONTAMINATION
CHEMICAL STORAGE AREA (D)
Capital Metal Finishing

CONCENTRATION, mg/liter

DEPTH feet	CADMIUM	CHROMIUM	LEAD	NICKEL	ZINC	CYANIDE
Surface	260	1590	1010	3350	1850	0.86
2	4.5					
4	0.05	42.5	7	49.5	11	
6	0.05					
16	0.05					
Background	0.05	10.5	11	18	26	0.05

44

Percent (%) above background

DEPTH feet	CADMIUM	CHROMIUM	LEAD	NICKEL	ZINC	CYANIDE
Surface	519900%	15043%	9082%	18511%	7015%	1620%
2	8900%					
4	0%	305%	-36%	175%	-58%	
6	0%					
16	0%					

EXTENT OF CONTAMINATION
EQUIPMENT STORAGE YARD (A)
Capital Metal Finishing

CONCENTRATION, mg/liter

DEPTH feet	CADMIUM	CHROMIUM	LEAD	NICKEL	ZINC	CYANIDE
Surface	14.5	35.5	160	285	157	0.7
2	0.05					
4	0.05	7	13.5	37	18.4	
6	0.05					
16	0.05					
Background	0.05	10.5	11	18	26	0.05

Percent (%) above background

DEPTH feet	CADMIUM	CHROMIUM	LEAD	NICKEL	ZINC	CYANIDE
Surface	28900%	238%	1355%	1483%	504%	1300%
2	0%					
4	0%	-33%	23%	106%	-29%	
6	0%					
16	0%					

EXTENT OF CONTAMINATION
TREATMENT AREA (C)
Capital Metal Finishing
Sampled 7/13/85

CONCENTRATION, mg/liter

DEPTH feet	CADMIUM	CHROMIUM	LEAD	NICKEL	ZINC	CYANIDE
Surface	175	48	<0.05	390	285	4.4
2	53.7					
6	2.05	14	4	26.5	14	
16	<0.05					
Background	<0.05	10.5	11	18	26	<0.05

78 79

Percent (%) above background

DEPTH feet	CADMIUM	CHROMIUM	LEAD	NICKEL	ZINC	CYANIDE
Surface	349900%	357%	-100%	2067%	996%	8700%
2	107300%					
6	4000%	33%	-64%	47%	-46%	
16	0%					

EXTENT OF CONTAMINATION
FUSE BOX (B)
Capital Metal Finishing

CONCENTRATION, mg/liter

DEPTH feet	CADMIUM	CHROMIUM	LEAD	NICKEL	ZINC	CYANIDE
Surface	80.5	118	2	120	300	2.3
1	248	329	4.5	60	293	4.3
2	16					
4	<0.05	128	7.5	45	14	
6	<0.05					
16	<0.05					
Background	0.05	10.5	11	18	26	<0.05
	<.5	9.5	13	11	30	10

63 77

Percent (%) above background

DEPTH feet	CADMIUM	CHROMIUM	LEAD	NICKEL	ZINC	CYANIDE
Surface	160900%	1024%	-100%	567%	1054%	4500%
1	495900%	3033%	-59%	233%	1027%	8500%
2	31900%					
4	0%	1219%	68%	250%	54%	
6	0%					
16	0%					

EXTENT OF CONTAMINATION
NORTH of FENCE (E)
Capital Metal Finishing

CONCENTRATION, mg/liter

DEPTH feet	CADMIUM	CHROMIUM	LEAD	NICKEL	ZINC	CYANIDE
Surface	234	70	79	275	190	0.14
2	108					
4	4.5	11.5	6	27	25.5	
6	0.25					
16	0.05					
Background	0.05	10.5	11	18	26	0.05

Percent (%) above background

DEPTH feet	CADMIUM	CHROMIUM	LEAD	NICKEL	ZINC	CYANIDE
Surface	467900%	567%	618%	1428%	631%	180%
2	215900%					
4	8900%	10%	-45%	50%	-2%	
6	400%					
16	0%					

HAYS
ENVIRONMENTAL
ENGINEERING, INC.

February 15, 1989

Mr. Tim Chaney, Hydrologist
Hazardous & Solid Waste Enforcement Section
TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

RECEIVED
FEB 16 1989
ENFORCEMENT SECTION

RE: Capitol Metal Finishing, Inc. Remediation Project, Austin, Texas

Dear Mr. Chaney:

At our last meeting with you and Ms. Susan Adams, there was a lack of agreement as to what was the appropriate or "correct" definition of how to determine background levels for heavy metals for sites like CMF's. We felt that background should be determined by including sites where ordinary industrial activity had influenced levels of various pollutants. Also, you gave us until February 15 to complete the remediation. This deadline has now been passed, obviously.

As you know, there has been discussions among the Attorneys involved in this Compliance Order as to what actually constitutes "background" and how it should be determined in the field. These discussions have not been completed yet. Also, it is my understanding that there has been a change in Legal Staff within the TWC, which could have further contributed to the delay.

At the request of Mr. Biff Jones, and as an independent Engineering Consultant to help certify the site's ultimate remediation, I would like to report that Capitol Metal Finishing, Inc. agrees that final remediation of the site will be accomplished as soon as the legal definition of "background" levels of heavy metals has been determined by the WATER COMMISSION's legal staff, in conjunction with CMF Attorneys. It is hoped that you will recognize this as a justifiable delay in progress. How can remediation be done correctly otherwise?

Please find enclosed below for your files lab analysis results of a composite soil sample taken with Ms. Adams at two locations on the asphalt parking lot of CMF. Mr. Chaney, thank you for your continued interest and help in working out the concerns of this project.

Very sincerely,
HAYS ENVIRONMENTAL ENGINEERING, INC.

Al Hays

Al Hays, P.E., Ph.D.
President

Sample results: (ppm)				
	Cyanide	0.353	Cadmium	5.00
	Chromium	7.00	Lead	<1.00
	Nickel	16.00	Zinc	7.20

3908 Holt Drive
Austin, Texas 78749
512 · 282 · 2075

HAYS
ENVIRONMENTAL
ENGINEERING, INC.

March 6, 1989

MAR 1 0 89
FIELD OPERATIONS
DISTRICT 14

Mr. Tim Chaney, Hydrologist
Hazardous & Solid Waste Enforcement Section
TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

RE: Capitol Metal Finishing, Inc. Remediation Project

Dear Mr. Chaney:

At the request of Mr. Benjamin Jones, the Project Director for this work, I would like to submit several comments for your consideration at the meeting on March 8 in the TWC Offices. First, let me again say that I am acting in the capacity of an Engineering Consultant, whose job it is to simply certify as to clean up and sampling and to help communicate with the TWC. In this capacity, let me recount the following steps of progress made thus far on this project:

1. A Site Assessment was conducted by taking surface soil samples at seven locations on the property to identify areas of highest levels of heavy metals.

2. A second soils sampling program was conducted at five locations on the site in the vertical plane, with samples as deep as 16 feet. Samples were analyzed for selected parameters.

3. On the basis of these sampling results, approximately 24 cubic yards of the soils containing the highest levels of metals were classified, removed, transported, and disposed of at TECO in Robstown, Texas.

4. Next, a composite soils sample was collected with TWC Personnel from several roadside locations near the plant site on Warehouse Row; these samples were to be used to determine a "background" or baseline level for various metals. Afterwards, several other background samples were collected at sites around the plant site, including the plant site itself, by the author and Mr. Jones.

5. Our crucial meeting with you back in November 1988 indicated that there was some disagreement concerning how to best determine a true background sampling strategy. We petitioned the Company's Attorney to work with TWC Attorneys to resolve the question we had of how to best determine background levels.

It was my understanding that a legal staff agreement had been reached where background was best determined by simply collecting samples on the plant site and on other industrial sites in the area, where it was fairly well certain that other spills of hazardous wastes had never occurred. The idea was to include sites where industrial uses had influenced pollutant levels, so that we could compare "apples with apples".

3908 Holt Drive
Austin, Texas 78749
512 • 282 • 2075

Mr. Chaney, as far as I can now tell from all discussions so far, the proper means to determine background is to simply not sample spots where spills have occurred. If this is the case, then I recommend that we determine background by using the following samples:

	Location	Cadmium	Keep ?	
a.	Grassy Roadside	<0.05 ppm	No	x
b.	25' east of site	1.40 "	Yes	
c.	Rick Hull Supply	14.20 "	No	x
d.	10' west of Hull	0.31 "	Yes	
e.	6' N. of N. wall Company Yard	5.90 "	Yes	
f.	Creek Bank - Agric.	0.41 "	Yes	
g.	Composite of 2 samples under asphalt on Company site	5.00 "	Yes	

(This amounts to throwing out the low and the high values.)

The use of the above samples gives a mean of 2.60 ppm Cd and standard deviation of 2.65 ppm Cd. This data correlates fairly well with a similar TWC legal settlement for Astro Plating Co. of San Antonio, where 3.00 ppm Cd could be left in the ground, as long as the sample's EP Toxicity was less than 0.5 ppm Cd and it's TWC Leachate Test results gave less than 0.1 ppm Cd. (There are some additional restrictions that applied there, but the primary metal, in our case, is cadmium.)

6. Lastly, we took a composite soils sample from beneath the asphalt on the south side of the plant site with Ms. Susan Adams; the results of this sample's analysis have already been reported to you.

Mr. Chaney, this represents the situation for this project to the best of my knowledge. It is hoped that you and other members of the TWC Staff will accept the above recommendation as to background levels; the plant Owner is ready to complete the remediation work as soon as the background levels can be mutually agreed upon. Please contact me should you have any questions; thank you.

Very sincerely,
HAYS ENVIRONMENTAL ENGINEERING, INC.

Al Hays

Al Hays, P.E., Ph.D.
President

NO. SW 01340

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row
Austin

County Travis Basin Colorado

Method of Collection teflon scoop into mason jar w teflon liner.
split with Al Hays

Point of Collection Bead Blaster dust #1

Type facility: [ ] Drum, [ ] Tank, [ ] Impoundment, [ ] Landfill
[X] Waste pile, [ ] Landfarm, [ ] Other

Time Collected 3:00 pm Date Shipped 2-17-89

Add COC #

ODOR: [ ] Yes, [ ] No, Describe

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	Date Mo. (23–24)	Day (25–26)	Yr. (27–28)
31593	[redacted]		02	16	89

Susan Adams
(Collector's Signature)
Tim Chaney

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC 0849 (Rev 05 23 86)

NO. SW 01340

District 14 Org. No. 334 Work No. 532 A Lab TDH

Material Sampled: [X] Solid waste (W), [ ] Liquid waste (L); [ ] Soil (E), [ ] Well (M);
[ ] Stream (S), [ ] Other (O)

Comments
EP Tox metals: Cd, Cr, Pb
Total metals: Cd, Cr, Pb, Ni, Zn (continued on back)

Lab Only	Date	rec'd:	(Lab No.)
		cmplt:	
		Analyst sign:	

Preservation: [ ] None, [ ] Ice, [ ] H_2SO_4, [ ] HNO_3
Other
Auxiliary Tags
LEACHATE: [X] EP Toxicity Series, [ ] TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
[redacted]					
00403					
[redacted]					
00340					
[redacted]					
00680					
[redacted]					

TWC

DISTRICT 14

NO. SW 01340

TEXAS WATER COMMISSION TWC 0849 (Rev. 05-23-86)

NO. SW 01341

District 14 Org. No. 334 Work No. 532A Lab TDH

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row Austin

County Travis Basin Colorado

Method of Collection teflon scoop into mason jar @ teflon liner

Split Al Harp

Point of Collection SW of Chem. Stor. Bldg + SE of chem dock area. #2

Type facility: Drum, Tank, Impoundment, Landfill, Waste pile, Landfarm, X Other soil

Time Collected 3:10 (pm) Date Shipped 2-17-89

Add. COC #s

ODOR Yes No Describe

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	Date Mo. (23–24)	Day (25–26)	Yr. (27–28)	Collector's Signature
31593			02	16	89	Susan Adams + Tim Chaney

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC 0849 (Rev. 05-23-86)

NO. SW 01341

District 14 Org. No. 334 Work No. 532A Lab TDH

Material Sampled: [ ] Solid waste (W), [ ] Liquid waste (L), X Soil (L), [ ] Well (M); [ ] Stream (S), [ ] Other (O)

Comments Cyanide, Tot metal: Cd, Cr, Ni, Pb, Zn

EP tox metals: Cd, Cr, Pb (continued on back)

Lab Only | Date | Analyst

Preservation: None, Ice, H_2SO_4, HNO_3, Other

Auxiliary Tag: LEACHATE X EP Toxicity Series [ ] TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
[redacted]					
00403					
[redacted]					
00340					
[redacted]					
00680					
[redacted]					

TWC 084

DISTRICT 14

NO. SW 01341

NO. SW 01342 Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row Austin

County Travis Basin Colorado

Method of Collection teflon scoop into Mason jar @ teflon liner.

Split @ Al Hays.

District 14 Org. No. 334 Work No. 532A Lab TDH

Point of Collection just North of above ground piping. #3

Type facility [ ] Drum [ ] Tank [ ] Impoundment [ ] Landfill [ ] Waste pile [ ] Landfarm [X] Other soil

Time Collected 320 (pm) Date Shipped 2-17-89

Add. COC #

ODOR [ ] Yes [ ] No Describe

S.W. Registration	Permit Number	Page No.	Date Mo.	Day	Yr.
31593			02	16	89

Susan Adams
Collector's Signature

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC 0849 (Rev. 05 23 80)

NO. SW 01342

District 14 Org. No. 334 Work No. 532 A Lab TDH

Material Sampled: [ ] Solid waste (W), [ ] Liquid waste (L), [X] Soil (E), [ ] Well (M); [ ] Stream (S), [ ] Other (O)

Comments Total Cyanide Tot metals: Cd, Cr, Ni, Pb, Zn

EP Tox metals: Cd, Cr, Pb.

(continued on back)

Lab Only | Date | Analysis

Preservation: Other H_2SO_4 HNO_3

Auxiliary Test

LEACHATE [X] EP Toxicity Series [ ] TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
[redacted]					
00403					
[redacted]					
00340					
[redacted]					
00680					
[redacted]S					

TWC 08

DISTRICT 17

NO. SW 01342

District 14 Org. No. 334 Work No. 532A Lab TDH

NO. SW 01343

Site Name Capitol Metal Finishing

Site Location 3969 Warehouse Row Austin

County Travis Basin Colorado

Method of Collection teflon scoop into Mason jar w/ teflon liner

Split w/ Al Hays

Point of Collection just north of north fenceline, east of gate #4

Type facility: [ ] Drum, [ ] Tank, [ ] Impoundment, [ ] Landfill, [ ] Waste pile, [ ] Landfarm, [x] Other soil

Time Collected 326 [ ] am/pm Date Shipped 2-17-89

Add. COC #:

ODOR: [ ] Yes [ ] No Describe:

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	(22)	Date Mo. (23–24)	Day (25–26)	Yr. (27–28)	(29)
3 1 5 9 3				0 2	1 6	8 9	

Susan Adams
(Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC 0849 (Rev. 05 23 86)

TWC 084

NO. SW 01343

District 14 Org. No. 334 Work No. 532 A Lab TDH

Lab Only: Date

Matrix: Sampled: [ ] Solid waste (W), [ ] Liquid waste (L), [x] Soil (E), [ ] Well (W), [ ] Stream (S), [ ] Other (O)

Comments: Total Cyanide Total metals: Cd, Cr, Ni, Pb, Zn

EP Tox Metals: Cd, Cr, Pb

(continued on back)

Preservative: None, Ice, H_2SO_4, HNO_3, Other

Auxiliary Tests

LEACHATE [x] EP Toxicity Series, [ ] TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
[redacted]					
0 0 4 0 3					
[redacted]					
0 0 3 4 0					
[redacted]					
0 0 6 8 0					
[redacted]					

DISTRICT 14

NO. SW 01343

TEXAS WATER COMMISSION TWC 0849 (Rev. 05-2-86)

District 14 Org. No. (532A Work No. 334) Lab TDH

NO. SW 01344

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row Austin

County Travis Basin Colorado

Method of Collection [redacted] mason jar w/ teflon liner dipped into tank

Split w/ Al Hays

Point of Collection Discontinued Cd plating line, Dead rinse awaiting treatment #6

Type facility: [ ] Drum, [X] Tank, [ ] Impoundment, [ ] Landfill, [ ] Waste pile, [ ] Landfarm, [ ] Other

Time Collected 3:30 pm Date Shipped 2-17-89

Add COC #

ODOR: [ ] Yes [ ] No Describe

S.W. Registration	Permit Number	Page No.	Date Mo.	Date Day	Date Yr.
1–9	10–18	19–21	23–24	25–26	27–28
31593			02	16	89

Susan Adams (Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC 0849 (Rev. 05-23-86)

NO. SW 01344

District 14 Org. No. 334 Work No. 532A Lab TDH

Material Sampled: [ ] Solid waste (W), [ ] Liquid waste (L), [ ] Soil (E), [ ] Well (M); [ ] Stream (S), [ ] Other (O)

Comments Total Cyanide * Maybe HIGH *
Total metals: Cd, Cr, Ni, Pb, Zn

(continued on back)

Lab Only	Date	rec'd / cmplt	(Lab No.)
		Analyst Cond.	

Preservation: [ ] None, [ ] Ice, [ ] H_2SO_4; [ ] HNO_3, Other

Auxiliary Tags

LEACHATE [ ] EP Toxicity Series, [ ] TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
pH					
00403					
[redacted]					
00340					
[redacted]					
00680					
[redacted]					

TWC 0

DISTRICT 14

NO. SW 01344

TEXAS WATER COMMISSION TWC 0849 (Rev 05 23 86)

District 14 Org. No. 334 Work No. 532A Lab TDH

NO. SW 01345

Site Name Capitol Metal Finishing

Site Location 2909 Warehouse ROW Austin

County Travis Basin Colorado

Method of Collection * Mason jar dipped into tank.

Split @ Al Hays

Point of Collection "Trash tank" in discontinued Cd plating line. #7

Type facility [ ] Drum [X] Tank [ ] Impoundment [ ] Landfill [ ] Waste pile [ ] Landfarm [ ] Other

Time Collected 3 35 (am, pm) Date Shipped 2-17-89

Add COC #s

ODOR Yes No Describe

S.W. Registration	Permit Number	Page No.	Date Mo.	Date Day	Date Yr.
1 9	10 18	19 21	23 24	25 26	27 28
31593			02	16	89

Susan Adams (Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC 0849 (Rev 05 23 86)

NO. SW 01345

District 14 Org. No. 334 Work No. 532A Lab TDA

Material Sampled: [ ] Solid waste (W), [X] Liquid waste (L), [ ] Soil (E), [ ] Well (M); [ ] Stream (S), [ ] Other (O)

Comments Cyanide * Maybe HIGH *

Total Metals: Cd, Cr, Ni, Pb, Zn (continued on back)

Lab Only | Date | Rec'd | Rpt | (Lab No.) | Analyst Sign

Preservation None [ ] Ice [ ] H_2SO_4 [ ] HNO_3 Other

Auxiliary Tags

[ ] EACHATE [ ] EP Toxicity Series [ ] TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
pH					
00403					
COD					
00340					
TOC					
00680					
GC/MS					

TWC 0849

DISTRICT 14

NO. SW 01345

NO. SW 01346

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row Austin

County TRAVIS Basin Colorado

Method of Collection mason jar dipped into barrell.

Point of Collection barrel inside small tank in discontinued Cd plating line # 8

Type facility: Drum X Tank Impoundment Landfill Waste pile Landfarm Other

Time Collected 340 pm Date Shipped 2-17-89

Add COC #

ODOR Yes No Describe

S.W. Registration	Permit Number	Page No.	Date Mo	Day	Yr
31593			02	16	89

Susan Adams
Collector's Signature

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value

TEXAS WATER COMMISSION TWC 0849 (Rev. 07-73-86)

NO. SW 01346

District 14 Org No. 334 Work No. 532A Lab TDH

Material Sampled: Solid waste (W) X Liquid waste (L) Soil (E) Water (M) Stream (S) Other (O)

Comments Cyanide * may be HIGH *

Total metals: Cd, Cr, Ni, Pb, Zn

Lab Only Date

LEACHATE EP Toxicity Series TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value
pH					
00403					
~~[illegible]~~					
00340					
~~[illegible]~~					
00680					
~~[illegible]~~					

TWC 0849

DISTRICT 14

NO. SW 01346

District 14 Org. No. 334 Work No. 4001 Lab TDH

NO. SW 01209

Site Name Capitol Metal Finishing (CMF)

Point of Collection South of CMF, North of Wendys — East & West side of Street. Soil

Site Location 3909 Warehouse Row Austin

County TRAVIS Basin

Type facility: ☐ Drum; ☐ Tank; ☐ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☐ Other

Method of Collection Soil composite (2 sites) 2"-4" deep. Background sample Split with contractor. Collected by Bif Jones. (Bif 4001)

Time Collected 3 30 (am/pm) Date Shipped 6.23.88

Add. COC #s

ODOR; ☐ Yes; ☐ No; Describe

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	Date Mo. (23–24)	Date Day (25–26)	Date Yr. (27–28)
3 1 5 9 3			0 6	2 0	8 8

Susan Adams (Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86) JUL 20 1988

NO. SW 01209

District 14 Org. No. 334 Work No. 4001 Lab TDH

Material Sampled: ☐ Solid waste (W); ☐ Liquid waste (L); ☒ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments Total Metals: Cd, Cr, Cu, Pb, Ni, Ag, Zn Total Cyanides.

(continued on back)

Lab Only — Date rec'd: cmplt: EH8 1212 Analyst sign.:

Preservation: ☒ None; ☐ Ice; ☐ H_2SO_4; ☐ HNO_3 Other

Auxiliary Tags

LEACHATE: ☐ EP Toxicity Series; ☐ TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
[redacted]	CN mg/Kg	Cadmium	mg/kg	Silver	mg/kg
0 0 4 0 3			<0.5		<0.5
[redacted]		Chromium		Zinc	
0 0 3 4 0			9.5		30
[redacted]		Copper			
0 0 6 8 0			8.2		
[redacted]		Lead			
			13		
		Nickel			
			11		

DISTRICT 14

NO. SW 01211 District 14 Org. No. 334 Work No. 4001 Lab TDH

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row
Austin

County Travis Basin

Method of Collection Sand 4"-8" deep
total Cr & Ni
total cyanide
(Bif 4002)

Point of Collection Southeast portion of CMF LOT.

Type facility: ☐ Drum; ☐ Tank; ☐ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☐ Other

Time Collected 3 45 (am, pm) Date Shipped 6-23-88

Add. COC #s

ODOR: ☐ Yes; ☐ No; Describe

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	Date Mo. (23–24)	Date Day (25–26)	Date Yr. (27–28)	Sign (29)
31593			06	20	88	

Susan Adams
(Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86)

JUL 20 1988

NO. SW 01211

District 14 Org. No. 334 Work No. 4001 Lab TDH

Material Sampled: ☐ Solid waste (W); ☐ Liquid waste (L); ☒ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments total Cr & Ni
total Cyanide
(continued on back)

1st soil

Lab Only | Date | rec'd: JUN 23 '88 | cmplt: | EH8 1209

Analyst sign.: M.

Preservation: ☐ None; ☐ Ice; ☐ H_2SO_4; ☐ HNO_3
Other

Auxiliary Tags

LEACHATE: ☐ EP Toxicity Series; ☐ TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
pH		Chromium	mg/kg		
00403			50		
COD		Nickel			
00340			301		
TOC		CN	mg/Kg		
00680			3,66		
GC/MS					

RECEIVED JUL 22 '88 FIELD OPERATIONS DISTRICT 14

District 14 Org. No. 334 Work No. 4001 Lab

NO. SW 01212

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row
Austin TX

County Travis Basin

Method of Collection fill dist 2"-8" deep

Split with Contractor (Bif 4003)

Point of Collection In Back of Plating area next to fuse Box

Type facility: ☐ Drum; ☐ Tank; ☐ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☐ Other

Time Collected 4:00 pm) Date Shipped 6-23-88

Add. COC #s

ODOR; ☐ Yes; ☐ No; Describe

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	Code Type (22)	Date Mo. (23–24)	Date Day (25–26)	Date Yr. (27–28)	Mon. Sam. (29)
31593				06	20	88	

Susan Adams
(Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86)

JUL 20 1988

NO. SW 01212

District 14 Org. No. 334 Work No. 4001 Lab

Material Sampled: ☐ Solid waste (W); ☐ Liquid waste (L); ☒ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments Total Cyanide
Tot metals: Cd, Cr, Ni, Pb

(continued on back)

Lab Only | Date | rec'd: 6-23-88 | cmplt: | Analyst sign.:

EH8 1211

Preservation: ☒ None; ☐ Ice; ☐ H_2SO_4; ☐ HNO_3
Other
Auxiliary Tags
LEACHATE: ☐ EP Toxicity Series; ☐ TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value mg/kg	58 Code	63 Parameter Value
pH	CN mg/Kg	Cadmium			
00403	62.9		87		
COD		Chromium			
00340			150		
TOC		Nickel			
00680			79		
GC/MS		Lead			
			5.2		

RECEIVED
JUL 22 88
FIELD OPERATIONS
DISTRICT 14

District 14 Org. No. 334 Work No. 4001 Lab TDH

NO. SW 01213

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row Austin

County Travis Basin

Method of Collection Soil 2"-8" deep

Split with contractor (Bif 4004)

Point of Collection Next to pretreatment concrete vault.

JUN 27 1988

Type facility: ☐ Drum; ☐ Tank; ☐ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☐ Other

Time Collected 4:10 (pm) Date Shipped 6-23-88

Add. COC #s

ODOR; ☐ Yes; ☐ No; Describe

S.W. Registration	Permit Number	Page No.	Date Mo.	Day	Yr.
1 9	10 18	19 21	23 24	25 26	27 28
31593			06	20	88

Susan Adams (Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86)

NO. SW 01213

JUL 20 1988

District 14 Org. No. 334 Work No. 4001 Lab TDH

Material Sampled: ☐ Solid waste (W); ☐ Liquid waste (L); ☒ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments total cyanide total Cr + Ni

1gt. soil

(continued on back)

Lab Only | Date | rec'd: 11-23-88 | cmplt: | EH8 1210 | Analyst sign.: [illegible]

Preservation: ☐ None; ☐ Ice; ☐ H_2SO_4; ☐ HNO_3 Other

Auxiliary Tags

LEACHATE: ☐ EP Toxicity Series; ☐ TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value
pH		Chromium	mg/kg		
00403			56		
COD		Nickel			
00340			299		
TOC		CN	mg/kg		
00680			78.75		
GC/MS					

RECEIVED JUL 22 88 FIELD OPERATIONS DISTRICT 14

District 14 Org. No. 334 Work No. 4001 Lab TDA

NO. SW 01214

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row
Austin

County Travis Basin

Method of Collection
Soil 2"-8" deep on west side of Chemical Storage building. (Bif 4005)

Point of Collection

JUN 27 1988

Type facility: ☐ Drum; ☐ Tank; ☐ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☐ Other

Time Collected 4:20 (pm) Date Shipped 6-23-88

Add. COC #s

ODOR; ☐ Yes; ☐ No; Describe

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	Date Mo. (23–24)	Day (25–26)	Yr. (27–28)	
31593			06	20	88	

Susan Adams
(Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86) JUL 20 1988

NO. SW 01214

District 14 Org. No. 334 Work No. 4001 Lab TDA

Material Sampled: ☐ Solid waste (W); ☐ Liquid waste (L); ☒ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments Total cyanide
Tot metal: Cd, Cr, Cu, Ni, Pb, Ag, Zn
(continued on back)

Lab Only | Date | rec'd: JUL 23 88 | cmplt: | Analyst sign.:

EH8 1213

Preservation: ☒ None; ☐ Ice; ☐ H_2SO_4; ☐ HNO_3
Other
Auxiliary Tags
LEACHATE: ☐ EP Toxicity Series; ☐ TWC

1gt soil

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
[redacted] CN	mg/Kg	Cadmium	mg/Kg	Silver	mg/Kg
00403	44.4		330		1.1
[redacted]		Chromium		Zinc	
00340			1890		2200
[redacted]		Copper			
00680			440		
[redacted]		Nickel			
			3820		
		Lead			
			1070		

JUL 22 88

FIELD OPERATIONS
DISTRICT 14

NO. SW 01210 District 17 Org. No. 337 Work No. 4001 Lab TDH

Site Name Capitol Metal Finishing

Site Location 3909 Warehouse Row
Austin

County Travis Basin

Method of Collection Soil below fill dirt (12"-18" deep) IN Back of Plating area next fuse box. Split with contractor (Bif 4006).

Point of Collection

Type facility: ☐ Drum; ☐ Tank; ☐ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☒ Other Soil

Time Collected 4:30 (pm) Date Shipped

Add. COC #s

ODOR; ☐ Yes; ☐ No; Describe

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	Card Type (22)	Date Mo. (23–24)	Date Day (25–26)	Date Yr. (27–28)	Sub Code (29)
31593				06	20	88	

Susan Adams
(Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86) JUL 20 1988

NO. SW 01210 District 14 Org. No. 334 Work No. 4001 Lab TDH

Material Sampled: ☐ Solid waste (W); ☐ Liquid waste (L); ☒ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments Tot Metals: Cd, Ca, Cu, Ni, Pb, Zn, Ag Total Cyanide.

(continued on back)

Lab Only | Date | rec'd: JUL 23 88 | cmplt: | EH8 1214 | Analyst sign.:

Preservation: ☒ None; ☐ Ice; ☐ H_2SO_4; ☐ HNO_3
Other
Auxiliary Tags
LEACHATE: ☐ EP Toxicity Series; ☐ TWC

14-Soil

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
[redacted]	CN mg/kg	Cadmium	mg/kg	Zinc	mg/kg
00403	77		300		410
[redacted]		Chromium		Silver	
00340			542		<0.5
~~TOC~~		Copper			
00680			9.9		
~~CO/MS~~		Nickel			
			29		
		Lead			
			5.2		

RECEIVED JUL 22 88 FIELD OPERATIONS

EXAS WATER COMMISSION
O. Box 13087, Capitol Station
Austin, Texas 78711-3087

ease print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form approved. OMB No. 2050-0039, expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No.

2. Page 1 of | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Capitol Metal Finishing, Inc.
2900 Warehouse Row, Austin, Tex. 78704

4. Generator's Phone (512) 444-6516

A. State Manifest Document Number: NO 00515025

B. State Generator's ID: 31593

5. Transporter 1 Company Name | 6. US EPA ID Number

C. State Transporter's ID: 41286

D. Transporter's Phone: 713-930-2540

7. Transporter 2 Company Name | 8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
[illegible]

10. US EPA ID Number

G. State Facility's ID: WDW-169

H. Facility's Phone: 713-930-2525

11A HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Corrosive Liquid, [illegible] D002 Corrosive Material [illegible] 1760	[illegible]	[illegible]		[illegible]	D002 902520
	b.					
	c.					
	d.					

J. Additional Descriptions for Materials Listed Above
[illegible] .05
[illegible] Wastestream number 89-01066

K. Handling Codes for Wastes Listed Above
D-80

15. Special Handling Instructions and Additional Information

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name | Signature | Month Day Year

17. Transporter 1 Acknowledgement of Receipt of Materials | Date

Printed/Typed Name | Signature | Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials | Date

Printed/Typed Name | Signature | Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19

Printed/Typed Name | Signature | Date Month Day Year

311 (Rev 11-06-86)

White - original Pink-TSD Facility Yellow-Transporter Green-Generator's first copy

FOR HELP IN CHEMICAL EMERGENCIES INVOLVING SPILL, LEAK, FIRE OR EXPOSURE CALL TOLL-FREE 1-800-424-9300 DAY OR NIGHT

THIS MEMORANDUM

is an acknowledgment that a bill of lading has been issued and is not the Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

Shipper's No. _____

Carrier's No. _____

CARRIER: SCAC Date 2-20-89

TO:
Consignee Austex Metal Finishing
Street St. Elmo St.
Destination Austin, tx Zip 78745

FROM:
Shipper CMF
Street 3409 Warehouse Row
Origin Austin, tx Zip 78704

Route:

Vehicle Number

No. Shipping Units	HM	Kind of Packages, Description of Articles (IF HAZARDOUS MATERIALS - PROPER SHIPPING NAME)	HAZARD CLASS	I.D. Number	WEIGHT (subject to correction)	RATE	LABELS REQUIRED (or exemption)
1	X	Cadmium Cyanide Solution	Poison - B	UN1689	450#		Poison
2		Cadmium Anodes			100#		
10		Anode Bskts	NA		50#		NA

Remit C.O.D. to:
Address:
City State: Zip:

COD Amt: $

C.O.D. FEE:
Prepaid ☐
Collect ☐ $

NOTE - Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

FREIGHT CHARGES
☐ PREPAID ☐ COLLECT

RECEIVED subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.
Shipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per

PLACARDS REQUIRED yes

PLACARDS SUPPLIED ☐ YES ☒ NO — FURNISHED BY CARRIER
DRIVER SIGNATURE

SHIPPER: CMF
PER: C Bost
DATE: 2-20-89

CARRIER: [signature] AMF
PER:
DATE: 2-20-89

FOR HELP IN CHEMICAL EMERGENCIES INVOLVING SPILL, LEAK, FIRE OR EXPOSURE CALL TOLL-FREE 1-800-424-9300 DAY OR NIGHT

9-BLS-A4
(Rev. 6/87)

FOR HELP IN CHEMICAL EMERGENCIES INVOLVING SPILL, LEAK, FIRE OR EXPOSURE CALL TOLL-FREE 1-800-424-9300 DAY OR NIGHT

THIS MEMORANDUM

is an acknowledgment that a bill of lading has been issued and is not the Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

Shipper's No. 247

Carrier's No. 501

CARRIER: Preferred SCAC Date 2-17-89

TO: Consignee Teck Plating
Street Wyche Street
Destination Dallas, TX Zip

FROM: Shipper CMR
Street 3409 Warehouse Row
Origin Austin, TX Zip 78704

Route: I-35

Vehicle Number 501

No. Shipping Units	HM	Kind of Packages, Description of Articles (If Hazardous Materials - Proper Shipping Name)	Hazard Class	I.D. Number	Weight (Subject to correction)	Rate	Labels Required (or exemption)
66		Zinc Cyanide - RQ	Poison - B	UN1713	33000#		Poison
1		Zinc Cyanide - RQ	Poison - B	UN1713	110#		Poison
8		Zinc Purifier -	NA		400#		
2		CP-250 Zinc Brightener	NA		80#		

Remit C.O.D. to:
Address
City State: Zip:

COD Amt: $

C.O.D. FEE: Prepaid ☐ Collect ☐ $

NOTE — Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

FREIGHT CHARGES ☐ PREPAID ☐ COLLECT

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

PLACARDS REQUIRED yes

PLACARDS SUPPLIED ☒ YES ☐ NO — FURNISHED BY CARRIER

DRIVER SIGNATURE:

SHIPPER: CMR
PER:
DATE: 2-17-89

CARRIER: Preferred Inc
PER:
DATE: 2-17-89

FOR HELP IN CHEMICAL EMERGENCIES INVOLVING SPILL, LEAK, FIRE OR EXPOSURE CALL TOLL-FREE 1-800-424-9300 DAY OR NIGHT

9-BLS-A4 (Rev. 6/87)

Texas Water Commission

INTEROFFICE MEMORANDUM

TO : Sam Pole, Chief, Enforcement Section, Hazardous and Solid Waste Division **DATE**: March 16, 1989

THRU : Ernie Heyer, Chief, Program Services Unit, Field Operations Division

FROM : Susan Adams, Assistant District Manager, District 14 Office

SUBJECT: Capitol Metal Finishing, Inc. (SW 31593), Agreed Order 3-09-88. Follow-up Inspection, February 16, 1989 Tim Chaney - Enforcement Coordinator

On February 16 and 28, 1989, I conducted a Compliance Schedule Evaluation to determine compliance status regarding an Agreed Order dated 3-9-88 with Capitol Metal Finishing, Inc. (CMF) located at 3909 Warehouse Row in Austin.

Resolved violations: None.

Unresolved violations:
1. 31 TAC 335.4 and Agreed Order #8 - Unauthorized discharge. Failure to remediate past spills at the site.
2. 31 TAC 335.69 and Agreed Order # 5 and # 2 - Accumulating hazardous waste in unmarked containers and exceeding the 90 day storage limit.
3. 31 TAC 335.6 - Failure to notify new waste management methods.
4. 31 TAC 335.62 and Agreed Order # 1 - No waste determination.
5. Agreed Order # 6 and # 7 - Although a contingency plan and personnel training plan were prepared, they were not available at the site for review during the inspection.

New violations:
1. 31 TAC 335.2 and .43 - Permit required to process hazardous waste.
2. 31 TAC 335.9 and and .70 - No records available for review.
3. 31 TAC 335.10 - Failure to complete manifest before shipment.
4. Agreed Order # 4 - No Records for inspecting tanks and containers.

See the Technical Recommendations in the Enforcement Report for other important issues. Attached is the CMEL Form coded as a CSE, the Enforcement Report, and the Inspection Checklist with attachments. If you have any questions, please call me at 3-7803.

Susan Adams
Susan Adams

Approval: John Young
Wm. John Young

RECEIVED
MAR 21 1989
FIELD OPERATIONS

REFERENCE 5

1509 Main Street, Suite 900
Dallas, Texas
75201-4809

214/744-1641

ICF TECHNOLOGY INCORPORATED

TO: File

FROM: Warren P. Mitchell

DATE: December, 4, 1990

SUBJ: Off-Site Reconnaissance Inspection of Capitol Metal Finishing

The FIT conducted an off site reconnaissance inspection of the Capitol Metal Finishing (CMF) facility in Austin, Texas, on November 16, 1990.

The site is located North of Ben White Blvd. (Highway 71). There are several warehouse buildings in the area, within 50 feet of the facility. The front of the building is accessible to the public, while the sides and rear are surrounded by a chain-linked fence. The gate to the side of the building is locked with posted warning signs. There is an excavated area and two wastepiles along the south side of the site. A surface impoundment and three small buildings are at the rear of the building.

The site is located in an commercial and light industrial area. The site is inactive and appears to be abandoned.

There are no on-site residents.

REFERENCE 6

RECORD OF COMMUNICATION

TXD987989340

TYPE: Phone Call DATE: November 14, 1990 TIME: 3:56pm

TO: Leanne Pacappe
Austin City Hall
(512)499-6423

FROM: Trudy K. Tannen TKT
FIT Chemical Engineer
ICF Technology, Inc.
(214)744-1641

SUBJECT: Population of Austin

SUMMARY OF COMMUNICATION

The City of Austin covers approximately 224.61 square miles and has a population of approximately 461,046 residents.

REFERENCE 7

U.S. DEPARTMENT OF COMMERCE
Luther H. Hodges, Secretary

WEATHER BUREAU
F. W. Reichelderfer, Chief

TECHNICAL PAPER NO. 40

RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years

Prepared by
DAVID M. HERSHFIELD
Cooperative Studies Section, Hydrologic Services Division
for
Engineering Division, Soil Conservation Service
U.S. Department of Agriculture

NOTICE

Rainfall-frequency information for durations of 1 hour and less for the Central and Eastern States has been superseded by NOAA Technical Memorandum NWS HYDRO-35 Five to Sixty-Minute Precipitation Frequency for the Eastern and Central United States. This publication (Accession No. PB 272-112/AS) is obtainable from:

National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

WASHINGTON, D.C.
May 1961

THIS ATLAS IS OBSOLETE FOR THE FOLLOWING 11 WESTERN STATES: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

NOAA ATLAS 2: PRECIPITATION-FREQUENCY ATLAS OF THE WESTERN UNITED STATES (GPO: 11 Vols., 1973) supersedes the Technical Paper 40 data for these states.

All but 3 of the 11 state volumes are out of print, and no reprint is presently planned.

Institutions in the eleven western states likely to have copies of these volumes for their state for public inspection are:

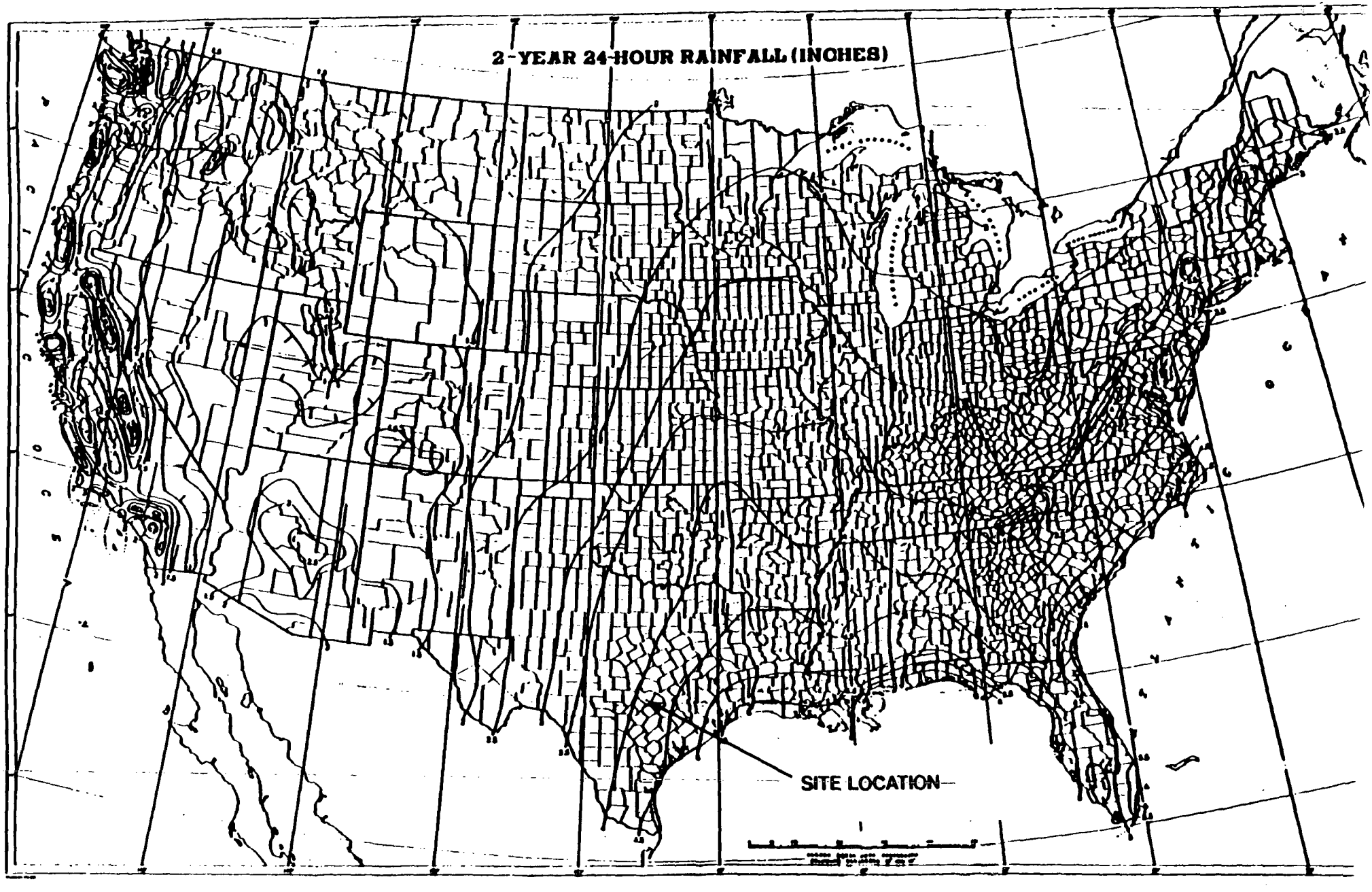
US Department of Agriculture Soil Conservation Service Offices
US Army Corps of Engineers Offices
Selected University Libraries
National Weather Service Offices (may also have volumes for adjacent states).
National Weather Service Forecast Offices (may have all eleven volumes)

Elsewhere, libraries of universities where hydrology and meteorology degree programs are offered may shelve some of the eleven volumes.

The three volumes in print as of 1 Jan 1983 at the GPO are:

Vol	State	GPO Stock Number	Price
IV	New Mexico	003-017-00150-0	$10.00
VI	Utah	003-017-00160-1	12.00
VII	Nevada	003-017-00161-0	9.50

[illegible] for VIII and MASTERCARD orders which


2-YEAR 24-HOUR RAINFALL (INCHES)
SITE LOCATION

REFERENCE 8

TEXAS WATER COMMISSION

B. J. Wynne, III, Chairman
John E. Birdwell, Commissioner
Cliff Johnson, Commissioner

John J. Vay, General Counsel
Michael E. Field, Chief Hearings Examiner
Brenda W. Foster, Chief Clerk

Allen Beinke, Executive Director

November 14, 1990

Mr. Warren Mitchell
I C F
1509 Main ST, STE 900
Dallas, TX 75201-4809

Re: Water Rights Downstream of the Confluence of Blunn Creek and the Colorado River
Colorado River Basin
Travis County

Dear Mr. Mitchell:

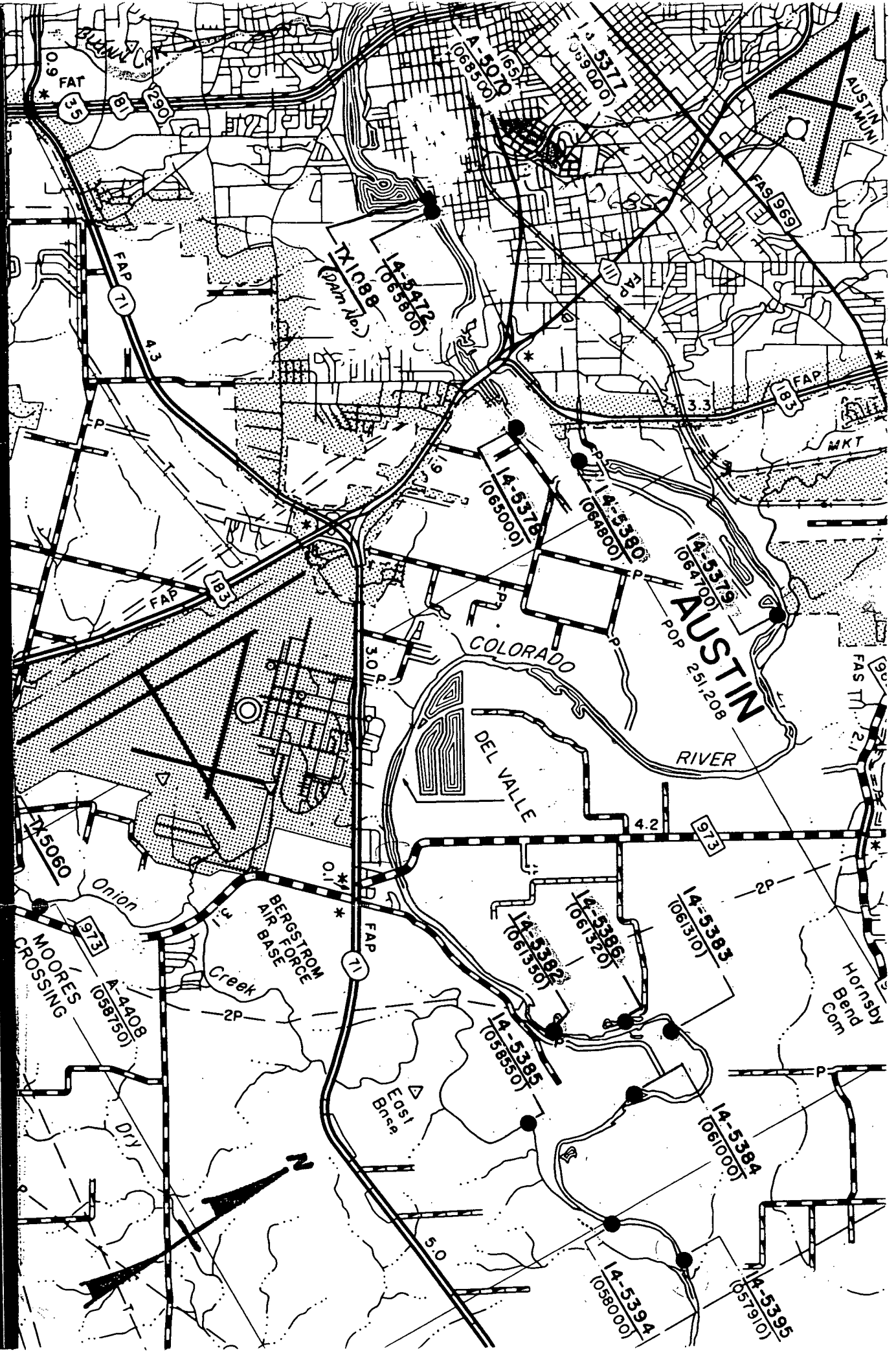
Enclosed please find a map showing water rights (8) for 15 miles downstream of the confluence of Blunn Creek and the Colorado River as per our conversation today. Please note that Certificate of Adjudication No. 14-5394 is shown on the Colorado River but is listed on Onion Creek.

If you have any other questions concerning this matter, please call me at 512/371-6389.

Sincerely,

Mark Evans
Applications Unit
Surface Water Section

JME
Enclosure



FAT
35
81
290
0.9
A-5070
(068500)
165
14-5377
(069000)
AUSTIN MUNI
FAS 969
FAP 71
4.3
TX1088
(Dam No.)
14-5472
(065800)
FAP 111
FAP 183
3.3
MKT
14-5378
(065000)
14-5380
(064800)
14-5379
(064700)
AUSTIN
POP 251,208
COLORADO
RIVER
DEL VALLE
3.0
FAS
2.1
4.2
973
TX5060
Onion
Creek
BERGSTROM AIR FORCE BASE
MOORES CROSSING
A-4408
(058750)
0.1
3.1
2P
14-5382
(061350)
14-5386
(061320)
14-5383
(061310)
Hornsby Bend Com
14-5385
(058550)
East Base
Dry
14-5384
(061000)
N
5.0
14-5394
(058000)
14-5395
(057910)

REFERENCE 9

Report 276

OCCURRENCE, AVAILABILITY, AND QUALITY OF GROUND WATER IN TRAVIS COUNTY, TEXAS

GB
1025.T4T7
B7

TEXAS DEPARTMENT OF WATER RESOURCES

June 1983

TEXAS DEPARTMENT OF WATER RESOURCES

REPORT 276

OCCURRENCE, AVAILABILITY, AND QUALITY OF GROUND WATER IN TRAVIS COUNTY, TEXAS

By

Gunnar Brune
and
Gail L. Duffin
Geologists

June 1983

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altered to serpentine. The uplift continued and the Cretaceous seas retreated to the south and east marking the end of the Cretaceous period in central Texas.

In Tertiary time, only the extreme eastern portion of Travis County was transgressed by the sea. At this time, the Eocene Midway Group was deposited.

During the Cenozoic era, in Miocene and Pliocene times, much readjustment of the previously deposited sediments took place, resulting in the extensive faulting in the Balcones fault zone. During Pleistocene time, the many river terraces and high gravel deposits were laid down upon the older sediments.

Stratigraphy

Stratigraphic units underlying Travis County range in age from the Ordovician Ellenburger Group to Recent alluvium. Of these, the most important water-bearing units are of Cretaceous age. The Smithwick Shale, Strawn Group, Hammett Shale, Walnut Formation, Del Rio Clay, and Eagle Ford Group carry no significant amounts of fresh water.

The stratigraphic units underlying the county are composed largely of limestone, chalk, shale, sand, and clay. Smaller amounts of gravel, silt, dolomite, gypsum, anhydrite, conglomerate, siltstone, and sandstone are also present. In some localities, igneous basalt and pyroclastics and metamorphic phyllites and quartzites also occur. Table 1 summarizes the approximate maximum thickness, lithologic characteristics, and water-bearing properties of these units.

Pre-Cretaceous stratigraphic units, including the Ellenburger Group and those above it, have a maximum thickness of about 3,200 feet (975 m). Normally the thickness is considerably less, however, because of erosion of the upper formations. According to Table 1, Cretaceous and younger formations have a maximum thickness of approximately 5,980 feet (1,822.7 m).

The Cretaceous System is divided in two series, Comanche and Gulf. The oldest is the Comanche Series which is composed of three groups: Trinity, Fredericksburg, and Washita. The Gulf Series is divided into four groups: Eagle Ford, Austin, Taylor, and Navarro. Lithologically, the Eagle Ford, Austin, Taylor, and Navarro Groups consist predominantly of marl, shale, limestone, and igneous rocks. With the exception of the Eagle Ford, they all yield very small quantities of ground water.

The Trinity, Fredericksburg, and Washita Groups are the most important water-bearing units in Travis County. Each group is divided into separate stratigraphic units (Table 1).

Listed in order from the oldest to youngest, the Trinity Group is divided into the Travis Peak, Glen Rose, and Paluxy Formations.

The Travis Peak Formation is composed of the Hosston, Sligo, Hammett Shale, Cow Creek Limestone, and Hensell Sand Members. The Hosston, Sligo, Cow Creek Limestone, and Hensell Sand Members of the Travis Peak Formation consist of limestone, sand, and shale, which are capable of yielding small to moderate quantities of water. The Hammett Shale is composed of shale and is not known to yield usable water in Travis County.

Table 1.—Geologic Units and Their Water-Bearing Properties

System	Series	Group	Stratigraphic unit	Hydrologic unit	Approximate maximum thickness (feet)	Character of rocks	Water-bearing properties
Quaternary	Recent		Alluvium	Alluvium and terrace deposits	60	Water-stratified deposits of unconsolidated calcareous gravel, sand, silt, and clay, with coarser materials usually concentrated in the lower section.	Yields small to very large quantities of fresh to slightly saline water, chiefly along the Colorado River in eastern Travis County.
	Pleistocene		Terrace deposits		60	Water-stratified deposits of unconsolidated calcareous gravel, sand, silt, and clay, with the coarser materials at the base.	Yields very small to moderate quantities of fresh to moderately saline water.
			Onion Creek Marl		50	Water-stratified deposits of calcareous gravel, sand, silt, and clay, often cemented with calcium carbonate.	
			High gravel		20	Gravel and sand, sometimes mixed with clay from underlying formations.	
Tertiary	Eocene	Midway		Midway	300	Clay, silt, glauconitic sand, and thin beds of limestone and sandstone with gypsum, phosphatic nodules, and calcareous concretions.	Yields very small quantities of fresh to moderately saline water.
Cretaceous	Gulf	Navarro		Navarro and Taylor Groups	1,200	Massive beds of shale and marl with clayey chalk, clay, sand, and some nodular and phosphatic zones.	Yields very small quantities of fresh to moderately saline water.
		Taylor					
		Austin	Igneous rocks	Igneous rocks	700	Altered pyroclastics, limburgite, basalt intrusions and flows, and nontronite.	Yields very small quantities of fresh water.
				Austin Chalk	500	Massive beds of chalk and marl with bentonitic seams, glauconite, and pyrite nodules.	Yields small to very small quantities of fresh water.
		Eagle Ford			45	Massive calcareous shale with thin interbeds of silty and sandy, flaggy limestone.	Not known to yield water in Travis County.
		Washita	Buda Limestone		50	Massive, fine-grained, burrowed, shell-fragment limestone. The upper portion is harder and bluff-forming.	Not known to yield water in Travis County.
			Del Rio Clay		75	Clay and marl with gypsum, pyrite, and a few thin siltstone and sandstone beds.	Not known to yield water in Travis County.
			Georgetown Formation		100	Thin interbeds of richly fossiliferous, nodular, massive fine-grained limestone and marl.	Yields small to very large quantities of fresh water, especially from cavernous zones in the Edwards Limestone.
		Fredericksburg	Kiamichi Formation	Edwards and associated limestones	10	Marl, thin limestone seams, clay, and shell aggregates. Not present at the surface in Travis County.	Not known to yield water in Travis County.
			Edwards Limestone		360	Massive, brittle, vugular limestone and dolomite with nodular chert, gypsum, anhydrite, and solution-collapse features.	Yields small to very large quantities of fresh water, especially from cavernous zones.
			Comanche Peak Limestone		60	Fine-grained, fairly hard, nodular, fossiliferous, marly, extensively burrowed limestone.	Yields little or no water in Travis County.
	Comanche		Walnut Formation		120	Hard and soft limestones, marls, clays, and shell beds.	Yields little or no water in Travis County.
		Trinity	Paluxy Formation	Upper Trinity	10	Fine-grained quartz sand, in part indurated by calcium carbonate cement. Locally contains thin beds of limestone and marl.	Yields very small to moderate quantities of fresh, and occasionally slightly saline water.
			Glen Rose Formation: Upper Member		600	Alternating beds of limestone, dolomite, shale, and marl with some anhydrite and gypsum.	
			Glen Rose Formation: Lower member	Middle Trinity	330	Massive, fossiliferous limestone and dolomite in the basal part grading upward into thin beds of limestone, shale, marl, and gypsum. Corbula martinae bed at top.	Yields very small to moderate quantities of fresh to moderately saline water. The moderately saline water appears to be confined to north-central Travis County. Many small and medium springs issue from the base of the Hensell Sand in Travis County.
			Hensell Sand Member		70	Sand, gravel, conglomerate, sandstone, siltstone, and shale in western Travis County. Grades into sandy limestone and dolomite in eastern Travis County.	
			Travis Peak Formation: Cow Creek Limestone Member		100	Massive, often sandy, dolomitic limestone, frequently forming cliffs and waterfalls. Contains gypsum and anhydrite beds.	
			Travis Peak Formation: Hammett Shale Member		60	Shale and clay with some sand, dolomitic limestone, and conglomerate.	Not known to yield water in Travis County.
			Travis Peak Formation: Sligo Member	Lower Trinity	300	Limestone, dolomite, occasionally sandy, and shale. Thins to the west and is not present in northwest Travis County.	Yields small to moderate, and with acidizing, large quantities of fresh to moderately saline water.
			Travis Peak Formation: Hosston Member (Sycamore Sand in outcrop)		800	Basal conglomerate grading upward into a mixture of sand, siltstone, and shale, with some limestone beds.	
Pennsylvanian	Lower Pennsylvanian	Strawn			800	Alternating beds of sandstone and shale, with some conglomerates.	Not known to yield water in Travis County.
		Bend	Smithwick Shale		500	Shale with sandstone and siltstone in the upper portion. Metamorphosed to phyllites and quartzites in the Ouachita Fold Belt.	Not known to yield water in Travis County.
			Marble Falls Limestone		400	Cavernous, massive, siliceous, fossiliferous limestone.	Not known to yield water in Travis County, but may yield small to moderate quantities of slightly to moderately saline water.
Ordovician	Lower Ordovician	Ellenburger			1,500	Cavernous, crystalline, fossiliferous limestone and dolomite.	Not known to yield water in Travis County.

The Glen Rose Formation is predominantly a limestone and yields small to moderate quantities of water. In this report, the Glen Rose is divided into an upper and a lower member.

The Paluxy Formation consists of a fine-grained sand which crops out only in a very small area in the northwest corner of the county. It is capable of yielding small quantities of water. The Trinity Group will be discussed in detail in the section covering the stratigraphy of water-bearing units.

Four formations make up the Fredericksburg Group. These are the Walnut Formation, Comanche Peak Limestone, Edwards Limestone, and Kiamichi Formation. The Walnut and Comanche Peak consist of shale and limestone and yield little or no water. The Edwards is a massive vugular limestone and in some areas yields large amounts of good quality water. The Kiamichi is a shale and is not known to yield water.

The Washita Group is divided into the Georgetown Formation, Del Rio Clay, and Buda Limestone. The Georgetown is a fine-grained limestone and yields small amounts of usable quality water. The Georgetown Formation and the Edwards Limestone are in hydraulic continuity and are discussed in this report as the Edwards and associated limestones. The Del Rio Clay and Buda Limestone consist of shale and limestone and neither are known to yield water in Travis County.

Those formations or stratigraphic units, which are exposed at the surface, are shown on the geologic map (Figure 4). The geologic units generally crop out in northeast-southwest trending bands. However, in western Travis County, where topographic relief is prominent, the outcrops of the various units are controlled principally by surface elevation.

Principal faults and fault zones in the area are also shown on the geologic map. Faults with little displacement are not shown. Pre-Cretaceous stratigraphic units or formations (the Strawn Group and older rocks) do not now crop out on the surface in the county. Barnes (1948) mapped some small areas of Smithwick Shale in western Travis County along the Colorado River, but these are now covered by Lake Travis.

Geologic sections (Figures 26 through 30) show the stratigraphic relationship and structural attitude of each unit. Three of the sections (Figures 26, 28, and 29) are oriented in a downdip direction and two (Figures 27 and 30) lie along the strike of the formations.

Structure

Geologic structures affecting ground water within Travis County are the regional dip and the uneven pre-Cretaceous erosional surface, the Balcones fault zone, the Llano uplift, the San Marcos arch, and the Luling-Mexia-Talco fault zone. These regional structures are shown in Figure 5.

Upper Member of the Glen Rose Formation

The upper member of the Glen Rose Formation consists of shale and marl alternating with thin beds of impure limestone and dolomite. Beds of gypsum and anhydrite may occur, but often these have been dissolved, leaving solution channels. Gypsum and anhydrite are not known to occur in surface outcrops and usually not above the water table, since they have been removed by solution (Stricklin, Smith, and Lozo, 1971). A stair-step topography, formed by the alternating beds of limestone and shale or marl, typifies the upper member of the Glen Rose. As shown in Figure 4, the upper member outcrops in the northwestern two-thirds of Travis County. Its downdip thickness ranges from 220 feet (67 m) in the northwestern part of the county, to about 600 feet (183 m) in the southeast. The upper 100 feet (30 m) contains much weathered, soft, porous dolomite and burrowed limestone (Rodda, Garner, and Dawe, 1970). Hence, it forms relatively gentle slopes and has many springs.

Paluxy Formation

The Paluxy Formation is present only in a very small area in the north-northwest corner of Travis County (Figure 4). It consists of fine- to very fine-grained, compact, white quartz sand, partially indurated with calcium carbonate, interbedded with silty and calcareous clay and shale. Some lenses and thin beds of limestone and marl occur locally. To the southeast, there is a facies change from sand to limestone. On electric logs this facies is indistinguishable from the upper member of the Glen Rose and is included with it. The Paluxy is approximately 10 feet (3 m) thick.

Edwards and Associated Limestones

Table 1 summarizes the water-bearing properties of the Edwards and associated limestones aquifer. The Edwards and associated limestones represent the upper portion of the Fredericksburg Group and the lower portion of the Washita Group of the Cretaceous System. They lie above the Walnut Formation and below the Del Rio Clay. Collectively, these limestones are considered the principal aquifer in Travis County and include, in ascending order, the Comanche Peak Limestone, Edwards Limestone, Kiamichi Formation, and Georgetown Formation.

The Comanche Peak Limestone consists of marly, grayish-white limestone containing nodules and fossils. It has considerable flaking and jointing which gives it a fractured appearance. In the northwest part of the county, the Comanche Peak is approximately 20 feet (6 m) thick. The Comanche Peak reaches 60 feet (18 m) in the subsurface, and it pinches out to the east and south (Garner and Young, 1976). Because it is believed to be hydrologically connected with the Edwards Limestone, the two formations are not separated on the geologic sections (Figures 26 through 30). The Comanche Peak does not appear to be present south of the Colorado River. This formation yields little or no ground water.

The Edwards Limestone outcrops extensively within the Balcones fault zone east of the Mount Bonnell fault and caps the high topography in the west as shown in Figure 4. This outcrop is part of the water-table portion of the aquifer which extends from Travis County west through the Edwards Plateau to west Texas. The formation also outcrops northward into Williamson and Bell Counties. In the subsurface, the Edwards consists of 200 to 360 feet (61 to 107 m) of brittle,

thick-bedded to massive limestone, commonly dolomitic, containing minor beds of shale, clay, and siliceous limestone. Beds of chert and flint are common. "Honeycomb" limestone beds are also common and represent voids, many interconnected, from which shell material has been dissolved. Dolomitic beds commonly have a sugary texture and often are designated as "sandstone" or "sandy limestone" by many drillers.

There are several solution-collapse zones in the Edwards Limestone which represent former beds of gypsum (originally anhydrite) that have been removed by solution (Rodda, Garner, and Dawe, 1970). About 60 to 80 feet (18 to 24 m) from the base is a 5- to 10-foot (2- to 3-m) thick solution-collapse zone. One-third to one-half of the distance from the top of the formation is a 20-foot (6-m) thick, iron-stained, cavernous, solution-collapse zone containing brecciated limestone, dolomite, chert, crystalline calcite, and residual red clay. This widespread zone in central Texas represents the former extent of a thick gypsum and anydrite unit called the Kirschberg Evaporite. Where the gypsum and anhydrite have largely been removed, it is called the Kirschberg solution zone. It can be readily recognized on geophysical logs about 50 to 75 feet (15 to 23 m) below the Kiamichi Formation. Near the top of the Edwards Limestone is another thin solution zone. These solution-collapse zones, especially the Kirschberg solution zone, are the main water-bearing horizons in the Edwards and associated limestones aquifer. Well yields vary from small (10 to 30 gallons per minute or 0.63 to 1.9 liters per second) to very large (over 300 gallons per minute or over 19 liters per second) and the quality of the ground water is fresh.

About 10 feet (3 m) of marl, clay, thin limestone seams, and shell aggregates make up the Kiamichi Formation. It is recognizable only in the subsurface in Travis County where it can readily be picked on geophysical logs. It is equivalent to the "Regional Dense Bed" (Rose, 1972). In northern Travis County, it separates the Edwards Limestone and the Georgetown Formation, and in the southern part of the county, it occurs within the Edwards Limestone. Because the Kiamichi is not known to contain water in Travis County, it is included in the Edwards Limestone and is not shown on the geologic sections (Figures 26 through 30).

The Georgetown Formation is a nodular limestone, usually gray to tan, massive, and interbedded with layers of marl or marly shale. It is fossiliferous, commonly contains burrows filled with fossil fragments, and also contains some minor solution zones. Downdip thicknesses of the formation range from 40 to 100 feet (12 to 30 m). The Georgetown and Edwards are hydrologically connected throughout Travis County and are seldom differentiated by drillers in the area.

Total thickness of the Edwards and associated limestones aquifer, where fresh to slightly saline water occurs, ranges from 250 to 450 feet (76 to 137 m).

Regionally, the dip of the Edwards and associated limestones aquifer is to the east-southeast at a rate of 50 to 100 feet per mile (9 to 19 m/km). The direction and rate of dip at the top of the aquifer is shown on Figure 10.

Austin Chalk

The Austin Chalk consists of a light gray chalk, limy marl, and chalky limestone. Some bentonite, glauconite, and pyrite nodules are also present in the unit. Near igneous intrusions and

Alluvium and Terrace Deposits

Source and Occurrence

Recent alluvium and terrace deposits which occur in the east-southeast portion of Travis County are treated as one undifferentiated hydrologic unit because of their similar hydrologic and lithologic characteristics. The Recent alluviums have the largest outcrop area and the thickest deposits which consist of unconsolidated material, chiefly gravel, sand, and silt. They are located along the Colorado River in eastern Travis County.

Primary sources of ground water to the alluvium and terrace deposits are rainfall, lakes, and streams which cross their outcrops. Water occurs primarily in the void spaces between particles of gravel and sand. It is usually under water-table conditions, and the aquifer may not be completely saturated.

Recharge, Movement, and Discharge

Recharge to the alluvium and terrace deposits is mainly from rainfall which falls on the outcrops and from the tributaries of the Colorado River which cross the outcrops. A small amount of recharge probably originates as underflow from Town Lake. Additionally, small amounts may be contributed by the Colorado River during periods of flooding. In the area along the Colorado River between Town Lake and the east county line, much recharge is undoubtedly rejected, as the aquifer is in constant contact with the river. The configuration of the water table also confirms this movement (Figure 22).

The average annual recharge to the alluvium and terrace deposits probably ranges from 5 to 8 percent of the mean annual rainfall. Using 5 percent of the mean annual rainfall or 1.68 inches over the outcrop area, the amount of effective recharge available would be about 6,000 acre-feet per year (7.40 hm^3/yr).

Ground water in the alluvium and terrace deposits moves slowly downdip to the east and south parallel to the recharging streams and rivers. Water-level measurements indicate that the hydraulic gradient of the potentiometric surface is about 16 to 44 feet per mile (3 to 8 m/km).

Pumpage from wells accounts for nearly all the discharge from the Recent alluviums. A small amount is believed to return to stream channels in the form of seepage during periods of low streamflow. Springs at the base of the terrace deposits account for most of their discharge. These springs are especially numerous in an area southeast of Manor, where they issue from the base of high gravel deposits which overlie clay and shale of the Navarro, Taylor, and Midway Groups.

Hydraulic Characteristics

Results of pumping tests performed on wells developed in the Recent alluvium in Travis County are shown in Table 3. Permeability coefficients range from 8,200 to 14,600 $(gal/d)/ft^2$ or 334,100 to 594,800 $(l/d)/m^2$. Because of the great range in permeability and in the thickness of

water-saturated materials, transmissibility coefficients of 0 to 400,000 (gal/d)/ft or 0 to 4,967,200 (l/d)/m may be expected. It should be pointed out that the tested wells penetrated a large amount of coarse gravel. In most cases, the alluvium contains a large percentage of fine materials; consequently, the permeability and transmissibility will usually be much lower than the values obtained in these tests. As shown in Table 3, the coefficient of storage varies from 0.08 to 0.15.

Changes in Water Levels

The approximate altitude of water levels in selected wells completed in the alluvium and terrace deposits in 1978 is shown in Figure 22. Table 6 presents water levels for these aquifers in selected observation wells. The hydraulic gradient is generally to the south and east parallel to the river. The fluctuation of water levels in well 58-50-802, completed in the terrace deposits, indicates no definite trend in water levels (Figure 19). The fluctuations are caused chiefly by changes in the stage of nearby streams.

Chemical Quality

Ground water in the alluvium and terrace deposits is generally a calcium carbonate water, very hard, usually fresh, and is normally neutral. Sulfate, chloride, and dissolved-solids content in water from selected wells in the alluvium and terrace deposits are shown in Figure 13. Records of chemical analyses from selected wells completed in the alluvium and terrace deposits are given in Table 7.

The source, significance, and range in concentrations of chemical constituents of ground water collected from the alluvium and terrace deposits are given in Table 2. Iron content in the alluvium and terrace deposits ranged from 0 to 0.02 mg/l in four samples. Sulfate content ranged from less than 4 to 2,544 mg/l in 134 samples with only 9 percent exceeding 300 mg/l. Chloride content ranged from 6 to 2,500 mg/l in 134 samples with 5 percent of the samples containing more than the recommended 300 mg/l. Fluoride content ranged from less than 0.1 to 5.8 mg/l in 113 samples with only 3 percent of the samples collected in Travis County exceeding the upper recommended limit of 1.4 mg/l. The range in nitrate content was from less than 0.4 to 540 mg/l in 127 samples with 17 percent exceeding 45 mg/l. Dissolved-solids content ranged from 170 to 6,953 mg/l in 134 samples with only 8 percent exceeding the recommended 1,000 mg/l.

The majority of alluvium and terrace deposits waters fall in the medium (C2) to high (C3) salinity hazard class and low (S1) sodium hazard class as shown in Figure 14.

Water samples collected from the alluvium and terrace deposits had a specific conductance which ranged from 274 to 10,000 micromhos at 25°C. Fifty-three percent of the samples exceeded 750 micromhos at 25°C. Usually, ground waters with a specific conductance of less than 750 micromhos at 25°C are considered satisfactory for irrigation.

The sodium-adsorption ratio (SAR) ranged from 0.1 to 10.5 in water samples collected from the alluvium and terrace deposits. Less than 1 percent of the samples showed ratios higher than 10.

Utilization and Development

Alluvium and terrace deposits are used extensively as a source of public supply and domestic water. Although the City of Austin primarily uses surface water from the Colorado River, it is also a relatively large user of ground water. Its usage of ground water from the alluvium deposits began about 1934. At the present time, the water is used to air-condition the city auditorium and as a supply for Deep Eddy swimming pool. Many other smaller communities such as Garfield (well 58-52-304), River Timbers (well 58-52-313), Colorado River Ranchettes (wells 58-52-614 and 615), and other municipal water-supply corporations use ground water from the alluvium and terrace deposits. Many of the farms and ranches in the county, when usable supplies are available, obtain their water from the alluvium and terrace deposits.

There were approximately 177 wells and springs inventoried during this study which produced from the alluvium and terrace deposits in Travis and adjacent counties. Of this amount, 25 were used for public supply, 10 for irrigation, 1 for industrial purposes, and 98 for domestic and livestock supply. There were also approximately 43 unused wells either abandoned or destroyed.

During 1976, approximately 2,550 acre-feet (3.14 hm^3) of ground water was pumped from the alluvium and terrace deposits which was approximately 52 percent of the total ground water used in the county. Approximately 2,153 acre-feet (2.65 hm^3) of ground water was used for municipal purposes from the alluvium and terrace deposits in 1976 which was about 77 percent of the total municipal usage. About 25 acre-feet (0.31 hm^3) was used from these aquifers for irrigation in 1976.

There was only one industrial well inventoried during this study and no pumpage record was available.

The alluvium and terrace deposits supplied approximately 373 acre-feet (0.460 hm^3) of ground water for domestic and livestock purposes in 1976, which represented about 18 percent of the total domestic and livestock usage.

Availability of Ground Water for Development

Based on the previously discussed conservative estimate of effective recharge of 6,000 acre-feet per year (7.40 hm^3/yr), the amount of fresh to slightly saline ground water available for additional development from the alluvium and terrace deposits annually in Travis County would be approximately 3,150 acre-feet (3.88 hm^3). This availability is based on the following data. In 1976, approximately 2,550 acre-feet (3.14 hm^3) of ground water was used for municipal, irrigation, and domestic and livestock purposes. During the period from September 1972 through April 1973, springs were inventoried and measured which were flowing from the terrace deposits. They had an estimated total annual discharge of about 300 acre-feet (0.370 hm^3). Therefore, the total annual discharge from the alluvium and terrace deposits is about 2,850 acre-feet (3.51 hm^3). This figure subtracted from an estimated effective recharge of 6,000 acre-feet per year (7.40 hm^3/yr) leaves approximately 3,150 acre-feet per year (3.88 hm^3/yr) for future development.

Theoretically, the entire 3,150 acre-feet (3.88 hm^3) would be available for development by wells. However, it would be impractical to do this because it would require the interception of all of the natural ground-water discharge by numerous, evenly spaced, low-capacity wells.

Other Aquifers

Other hydrologic units which produce a small amount of ground water in Travis County are the Austin Chalk and the Taylor and Navarro Groups. Igneous rocks around Pilot Knob also produce small quantities of good quality water. There were only two water wells in Travis County that were completed in the igneous rocks. Additionally, the Midway Group is an unreliable source of very small quantities of fresh to moderately saline ground water.

Twenty-three wells and springs were inventoried during this study that were completed in the Austin Chalk. Out of this total, eight wells were either abandoned or not presently in use. Twenty-eight wells were inventoried in the Navarro and Taylor Groups with 16 of them either abandoned or not used. Only one well (58-45-206) was inventoried in the Midway Group, and it had a depth of 20 feet.

In the Austin Chalk and Taylor and Navarro Groups, ground water usually occurs in the upper, weathered outcrop portion of the units which is the most permeable. The Austin Chalk contains numerous fractures and joints which are now water saturated. Water can also be present in the softer marls which occur throughout the Austin Chalk. The Taylor and Navarro Groups contain montmorillonitic clays which are known for their swelling and shrinking characteristics. During dry periods, large cracks may open in the surface of the outcrop which may allow water to enter the water-bearing unit. Water also occurs in the voids in some thin sand beds. Ground water occurs primarily under water-table conditions in the Austin Chalk and Taylor and Navarro Groups. Although the Midway is not generally considered to be a significant aquifer, a small amount of water occurs in the thin sandy layers. The formations are not completely saturated, and the ground water occurs primarily under water-table conditions.

All of these water-bearing units are recharged from rainfall which falls on their outcrops, streams which cross them, and farm ponds or lakes which lose water into them. Ground water moves in various directions, largely controlled by the topography, through joints, crevices, faults, and the more permeable bedding planes. Spring flow accounts for most of the discharge from the Austin Chalk. Ground water in the Navarro, Taylor, and Midway Groups is discharged by pumping wells.

Hydraulic properties of the Austin, Taylor, Navarro, and Midway are undetermined due to a lack of sufficient data. To compensate for the low specific capacity, wells are often constructed with a large diameter so that the storage capacity in the well will offset drawdown during periods of use. These shallow wells sometimes fail during periods of prolonged drought.

Fluctuations in water levels in an Austin Chalk well are shown in Figure 19. There seems to be no definite trend to water levels. Minor fluctuations are caused chiefly by variations in rainfall and recharge. The lowest levels were reached from 1954 to 1956, near the end of the drought in this area. There was no historical water-level data for the Taylor, Navarro, and Midway Groups, but water levels fluctuate in response to rainfall.

Ground water in the Austin Chalk may be described as a calcium carbonate type. It is very hard, usually fresh, and is normally neutral. As shown in Figure 13, its quality appears to range within the same limits regardless of the location within the county. Ground water in the Navarro and Taylor Groups may be described as a calcium carbonate water which becomes a sodium chloride water downdip. The westernmost portion of the outcrop contains fresh water while in the southeast the water rapidly deteriorates to slightly saline and then moderately saline (Figure 13). A chemical analysis of the water from well 58-45-206 shows it to be a calcium carbonate water with a dissolved-solids content of 254 mg/l. The water is hard. Ranges of the chemical constituents and the source and significance of the dissolved minerals found in waters of the Austin Chalk and Taylor and Navarro Groups are presented in Table 2.

The Austin Chalk and Taylor and Navarro Groups are used mainly as a source of domestic, livestock, and irrigation water. There were three Austin Chalk springs inventoried during this study. On March 22, 1973, spring 58-35-606 had a measured yield of 250 gal/min (16 l/s). In 1976, the estimated amount of ground water used from the Austin Chalk and Taylor and Navarro Groups was approximately 150 acre-feet (0.18 hm^3), which was about 3 percent of the total amount of ground water used in Travis County.

GROUND-WATER PROBLEMS

Well Construction and Completion

Improper well construction in Travis County can be related to one or all of the following: (1) well casing, (2) well screens, (3) gravel packing, (4) cementing, and (5) well development.

Wells having insufficient casing or no casing at all may permit the bore hole to collapse at any point or sand-up at the water-producing interval. Some of the more common types of wells used in Travis County and their casing requirements are shown in Figure 23. For deep wells, the casing size is generally determined by the size of the pump to be used. New or used steel casing is ordinarily used. Polyvinyl chloride (PVC) plastic casing is coming into increasing use. It is cheaper and is not subject to corrosion. However, it is not as strong as steel and cannot be forced through resistant shale and clay beds without breaking. For shallow wells, where storage capacity is of primary concern, large-diameter concrete rings are usually employed as shown in Figure 23a. A common mistake in Travis County is to drill the well without the use of drilling mud and then attempt to place casing in the well. This mistake is usually made in drilling to the Hosston Member of the Travis Peak Formation. The Hosston is overlain by the Hammett Shale Member of the Travis Peak Formation and without the use of a heavy drilling mud, the Hosston will cave in immediately after drilling. More serious than this, however, is that the Hammett Shale begins to expand into the freshly drilled well immediately when water from the underlying Hosston saturates the shale. As a result, the casing cannot be forced past the Hammett Shale, and the shale below the casing closes the well and prevents the Hosston water from ascending the borehole. In some hard units such as the limestones of the Edwards and Glen Rose aquifers, no casing is required as shown in Figure 23c. However, casing may be required above these aquifer units when incompetent beds are encountered.

Some typical well-screen installations in Travis County are shown in Figures 23b and 23d. A well should usually be drilled deep enough to penetrate all of the water-bearing zones of an

Table 5.--Records of Wells, Test Holes, and Springs in Travis and Adjacent Counties

All wells are drilled unless otherwise noted in remarks column.

Water-bearing unit : Qal, Alluvium; Qter, Terrace deposits; Ki, Igneous rocks; Tm, Midway Group; Kgn-Kgt, Navarro and Taylor Groups; Kgac, Austin Chalk; Kce, Edwards and associated limestones; Kcgr, Glen Rose Formation undifferentiated; Kcgru, upper member of Glen Rose Formation; Kcgrl, lower member of Glen Rose Formation; Kche, Hensell Sand Member of Travis Peak Formation; Kccc, Cow Creek Limestone Member of Travis Peak Formation; Kcho, Hosston Member of Travis Peak Formation; Pnbml, Marble Falls Limestone; Ok, Ellenburger Group.

Water Levels : Reported water levels given in feet; measured water levels given to the nearest tenth or hundredth of a foot.

Method of lift and type of power: C, cylinder; Cf, centrifugal; E, electric; G, natural gas, butane, or gasoline; H, hand; J, jet; N, none; S, submersible; T, turbine; W, windmill.

Use of Water : D, domestic; Ind, industrial; Irr, irrigation; N, none; P, public supply; S, livestock.

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing: Diameter (in.)	Casing: Depth (ft)	Water bearing unit	Altitude of land surface (ft)	Water level: Below land-surface datum (ft)	Water level: Date of measurement	Method of lift	Use of water	Remarks
							Travis County						
* YD-57-32-201	J. L. Turner	--	--	--	5	--	--	1,089	263.30	Aug. 24, 1970 July 24, 1973	C, W	D, S	Well A-1 in 1957 Travis County Report. 4
* 501	do	--	--	225	4	--	Kcho	905	150	Aug. 25, 1972	C, E	D, S	--
* 601	T. H. Varner	John Heine	1910	75	6	75	Khe	850	65 50.60	July 1950 June 7, 1971	C, W	N	Abandoned. Well A-27 in 1957 Travis County report. 4 3
* 801	H. P. Hensel	S. W. Sanford	1948	125	6	40	Kcho	765	40 37.40	1949 June 8, 1971	C, E	D, S	Well A-25 in 1957 Travis County report. 4 3
* 802	do	--	--	28	36	28	Kche	770	23.35 23.50	June 2, 1966 Mar. 15, 1978	C, W	D	Well A-26 in 1957 Travis County report. 4 3
* 803	R. H. Henry	S. W. Sanford	1947	103	6	103	Kche	860	76.32 76.90	July 13, 1950 Mar. 16, 1978	J, E	D, S	Well A-21 in 1957 Travis County report. 4 3
804	H. P. Hensel	Mason-Johnston and Associates	1953	214	--	--	Kcho	870	--	--	N	N	--
* 805	G. H. Turner	--	--	Spring	--	--	Kche	790	--	--	Flows	D, S	Estimated flow 5 gal/min on Aug. 25, 1972.
* 901	H. P. Hensel	--	1944	75	6	--	Kche	720	--	--	C, E	D, S	--
* 902	do	--	--	Spring	--	--	Kche	700	--	--	Flows	--	Spring in conglomerate with several openings. Another small spring at house. Reported flow 10 gal/min on May 10, 1966. Well A-28 in 1957 Travis County report. 4
* 39-905	Larry Hollingsworth	Central Texas Drilling Company	1967	176	8	176	Kcho	925	48.80 48.95	Mar. 11, 1974 Mar. 15, 1977	S, E	D, S	Reported yield 10 gal/min on Aug. 18, 1972. Slotted from 116 to 176 feet. 3
* 40-201	J. D. Singleton	Doyle Baker	1949	159	4	159	Kcho	760	90.27	Mar. 16, 1978	S, E	D, S	Well B-9 in 1957 Travis County report. 4 3
* 202	do	Wright Drilling Company	1960	129	6	129	Kcho	725	--	--	C, E	D	Temp. 73°F on April 19, 1967. 3
* 203	do	--	--	Spring	--	--	Kcgrl	770	--	--	Flows	S	Cherry Spring. Estimated flow 5 gal/min on August 25, 1972
* 301	V. E. Grove	Sterzing Drilling Company	1965	425	7 5	99 367	Kcho	970	300 240.50	Sept. 20, 1965 May 26, 1967	S, E	D, S	Open hole completion from 367 to 425 ft. Pumping level 325 ft at 12 gal/min on Sept. 20, 1965. Temp. 73°F. 3
302	J. W. Bridgewater	Farrar Well Drilling Company	1963	180	7	179	Kcho	715	70	Dec. 12, 1963	S, E	D	Slotted 47 ft at bottom. Reported pumping level of 103 ft at 15 gal/min in Dec. 1966. Pump set at 168 ft. 3 3
303	Emmett Bone	Sterzing Drilling Company	1962	210	6	210	Kcho	695	16.20 37.11	May 16, 1968 Mar. 15, 1978	J, E	D	Perforated from 165 to 185 ft. Cemented from 2 ft to surface. 3

See footnotes at end of table.

Table 5.--Records of Wells, Test Holes, and Springs in Travis and Adjacent Counties--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing: Diameter (in.)	Casing: Depth (ft)	Water bearing unit	Altitude of land surface (ft)	Water level: Below land-surface datum (ft)	Water level: Date of measurement	Method of lift	Use of water	Remarks
							Travis County Continued						
* YD-58-33-214	Hillside Washateria	James Calhoun	1971	418	8	20	Kcgr	820	234	Aug. 11, 1971	S, E	Ind	Reported pumping level 50 ft at 50 gal/min for 4.5 hours.
* 215	Gregg Point	Powell Drilling	1969	640	8 6 5	86 500 640	Kcgrl, Kcho	820	242 256.20	Jan. 14, 1969 Mar. 17, 1978	S, E	P	Reported drawdown 233 ft after bailing 20 gal/min for 2 hours on Jan. 4, 1969. Supplies 32 homes. 3
* 216	Panoramic Hills	James Calhoun	1972	544	5	50	Kcgrl, Kcho	930	293.30	Nov. 13, 1973	S, E	P	--
* 301	John Johnson	Sterzing Drilling Company	1963	545	7 6	65 208	Kcgrl, Kcho	770	105 111.40	Feb. 23, 1963 May 30, 1966	S, E	P	Estimated yield 15 gal/min.
* 302	John Chamberlain	Powell Drilling	1963	665	--	--	Kcho	880	--	--	S, E	D	3
* 303	Weldon Horton	Sterzing Drilling Company	1965	530	5	530	Kcho	720	75	Apr. 30, 1965	--	D	Reported yield 15 gal/min. 3
* 304	Scott Broaddus	W. H. Glass and Son	1963	360	--	--	Kcgrl	740	--	--	S, E	D	3
305	Walter Schwarzer	Sterzing Drilling Company	1966	345	7	207	Kcgrl	740	183.98	Mar. 16, 1978	--	D	Pumping level 200 ft at 12 gal/min in 1966. 3
* 306	R. L. Rose	W. H. Glass and Son	1967	480	7	260	Kcgr	940	150	Sept. 10, 1968	S, E	D	Estimated yield 8 gal/min.
* 307	J. A. Shaffer	Thomas Arnold	1972	660	5 3	20 660	Kcgr	960	235.10 239.40	May 4, 1973 Mar. 17, 1978	S, E	D	--
* 308	A. R. Stone	do	1973	740	5	120	Kcho	980	285.60	Nov. 13, 1973	S, E	D	Slotted from 640 to 740 ft.
309	James Weaver	do	1976	400	5	20	Kcgru	962	210 207.70	June 8, 1976 May 23, 1978	S, E	D	3
* 401	Frank De Groot	S. W. Glass	1938	422	6	14	Kcgrl	970	342	Nov. 9, 1938	C, W	S	Reported 80 ft drawdown after bailing 5 gal/min for 40 minutes. Well C-11 in 1957 Travis County report. 4 5
* 402	Ivan Pearson	Audrey E. Sanford	1964	535	7	30	Kcgr	950	231.50	June 1, 1966	C, W	S	3
* 403	J. H. Shepler	Layne-Texas Drilling Company	1965	462	8 6	446 462	Kcho	770	136.47 165.88	Apr. 11, 1967 Mar. 8, 1978	S, E	N	Slotted from 446 to 459 ft. Pumping level 244.31 ft at 23.5 gal/min on Apr. 13, 1967. Water-level recorder installed on Mar. 22, 1974. 3 3 3
* 404	--Harris	--	1943	305	5	20	Kcgr	1,000	--	--	S, E	D	Well C-4 in 1957 Travis County report. 4
405	Chuck Van Cleave	Powell Drilling	1972	390	5	390	Kcgrl	910	220 244	Jan. 1972 Mar. 23, 1978	--	N	Estimated yield 25 gal/min. 1
* 501	John Johnson	Sterzing Drilling Company	1962	422	7	25	Kcgr	785	162.60	Apr. 12, 1967	S, E	P	Estimated yield 5 gal/min. 3
* 502	--Walters	S. W. Glass	1951	520	8	490	Kcho	715	90 39.70	Sept. 7, 1951 Nov. 21, 1966	S, E	D	Well C-89 in 1957 Travis County report. 4 5
* 503	Hershel Murray	E. W. Glass	1970	68	5	68	Kcgrl	700	35 42	Oct. 18, 1970 Mar. 21, 1978	J, E	D	Reported yield 20 gal/min
504	D & W Railroad	--	--	Spring	--	--	Kcgru	720	--	--	Flows	S	Cox Springs. No flow on June 6, 1972.
* 601	John Johnson	Sterzing Drilling Company	1962	422	7	44	Kcgr	740	140	--	S, E	P	Reported yield 10 gal/min. Cemented from 5 ft to surface. 3 3

See footnotes at end of table.

Table 5.--Records of Wells, Test Holes, and Springs in Travis and Adjacent Counties--Continued

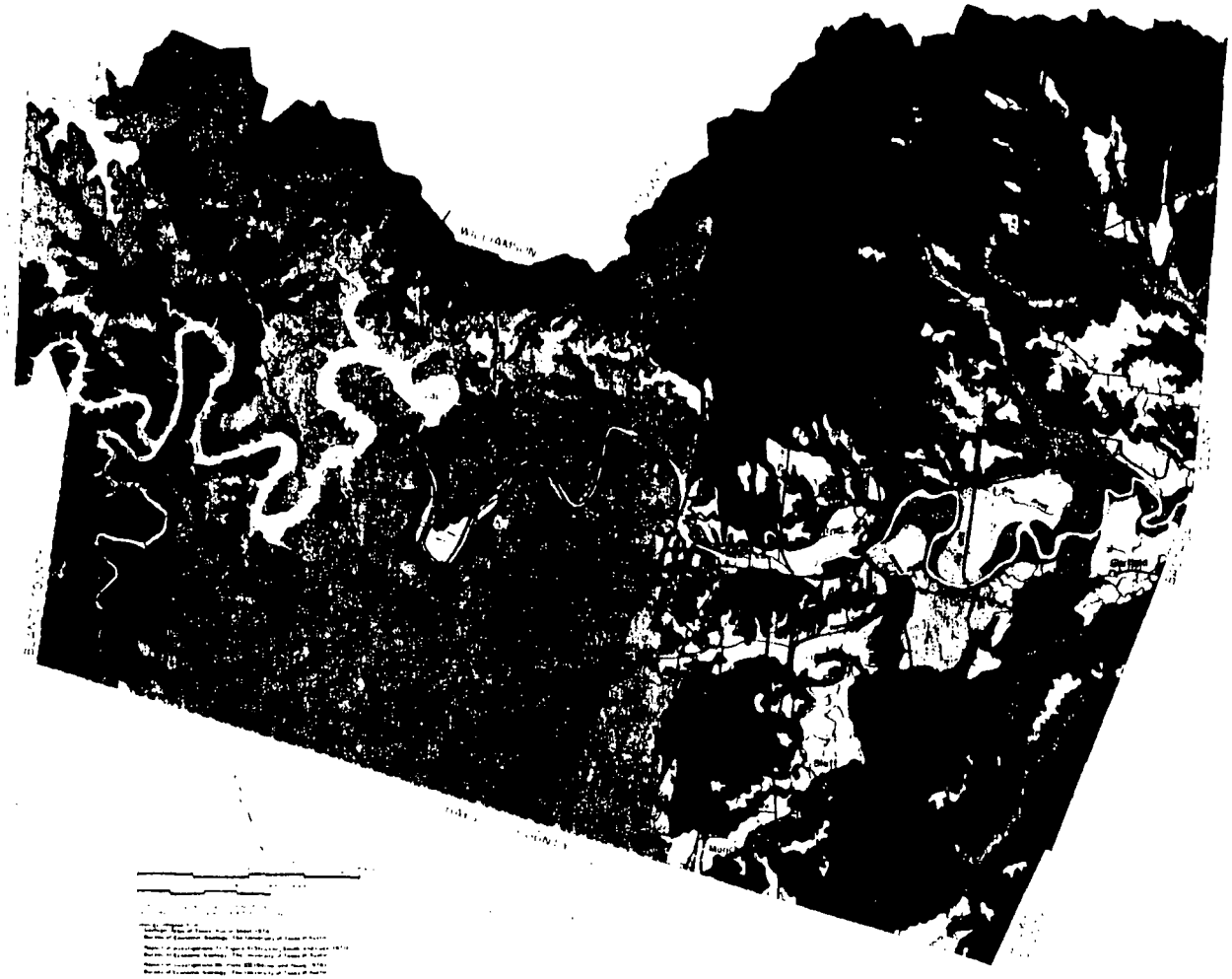
Well	Owner	Driller	Date completed	Depth of well (ft)	Casing: Diameter (in.)	Casing: Depth (ft)	Water bearing unit	Altitude of land surface (ft)	Water level: Below land-surface datum (ft)	Water level: Date of measurement	Method of lift	Use of water	Remarks
							Travis County--Continued						
* YD-58-34-713	Bobby Monroe	Delby Glass	1970	450	5	55	Kcgru	1,045	210	Sept. 21, 1970	S, E	D	--
* 714	Scuba Point Travis	Central Texas Drilling Company	1972	770	7	136	Kcgr	1,059	445	Feb. 4, 1972	S, E	Ind	Reported drawdown 100 ft after air jetting for 1 hour at 15 gal/min on Feb. 4, 1972.
* 801	W. L. Richards	A. J. Bertuge	1949	968	5	710	Kcho	740	126 157.90	Feb. 27, 1950 June 10, 1971	S, E	D	Well D-10 in 1957 Travis County report. 3 4 5
* 802	Feed Lot Restaurant	Robert Crouch	1972	950	7	820	Kcho	1,000	380	June 1972	--	N	Cemented from 0 to 820 ft. Reported pumping level 125 ft at 45 gal/min for 4 hours. Not used because of poor quality water. 4
* 803	do	do	1972	400	4	400	Kcgru	1,000	150	May 20, 1972	S, E	D	Reported drawdown 75 ft after air jetting for 3 hours at 12 gal/min on May 20, 1972.
* 901	H. O. Simons	L. Daniels	1929	150	6	--	Kcgru	613	8.15 7.22	June 14, 1940 Aug. 12, 1952	C, E	S	Well 419. 4 Well D-110. 3 5 Deepened in 1948 from 112 to 150 ft.
* 902	S. D. Williams	--	--	53	--	--	Kce	902	36.06 32.09	Nov. 15, 1939 Mar. 28, 1946	H	S	Well D-85 in 1957 Travis County report. 3 4
903	Great Hills	J. M. Wright	1971	1,222	8 6	722 1,100	Kcho	890	241.90	Oct. 31, 1972	--	P	Reported yield 100 gal/min.
904	do	do	1971	1,222	8	3	Kcgr	910	193	do	--	N	Reported yield 50 gal/min. Caved to 932 ft before Oct. 31, 1972.
* 35-104	Austin White Lime Company	W. H. Glass and Son	1948	375	6	12	Kcgr, Kce	800	--	--	C, E	N	Well D-37 in 1957 Travis County report. 4
* 201	Lorene Bolt	A. Z. Daniels	1939	270	6	90	Kce	904	225.19 227.74	Oct. 4, 1940 Mar. 15, 1977	C, W	D, S	Well D-41 in 1957 Travis County report. 3 4
* 205	L. M. Neese	--Robinson	1900	280	5	100	Kce	825	--	--	S, E	D	Well D-42 in 1957 Travis County report. 4
* 206	Joe Bailey	--Glass	1945	700	6	650	Kce	850	300 215.25	Nov. 2, 1949 Mar. 21, 1978	C, E	D	Well D-45 in 1957 Travis County report. 4
* 207	N. J. Stramler	Joe Robinson	1910	330	5	40	Kce	905	230	Oct. 4, 1940	S, E	D, S	Well D-43 in 1957 Travis County report. 4
* 208	A. F. Mc Donald	--Robertson	1920	300	5	--	Kce	820	--	--	C, W	D, S	Well D-47 in 1957 Travis County report. 4
* 209	William Bratton	--	1890	20	60	--	Kgac	860	5 8.60	June 3, 1940 Sept. 29, 1970	H	D	Dug well. Well D-48 in 1957 Travis County report. 4
* 210	do	Robertson and McBride	1894	362	5	318	Kce	860	318 269.42	1894 Mar. 2, 1978	C, W	D, S	Well D-49 in 1957 Travis County report. 4
* 211	J. A. Pearson	--Adams	1904	317	6	100	Kce	838	180	June 6, 1940	C, E	D, S	Well D-44 in 1957 Travis County report. 4
* 212	Stuckey Candy Company	Sterzing Drilling Company	1962	320	5	147	Kce	825	120	Feb. 10, 1962	S, E	P	Reported yield 10 gal/min. 3
* 301	Annie Jacobson Estate	--Adams	1903	352	5	177	Kce	810	--	--	C, W	D, S	Well F-1 in 1957 Travis County report. 4
302	Carl Wieland	Johnson, Dye, and Hughes	1933	535	--	--	Kce	820	--	--	N	N	Well F-2 in 1957 Travis County report. 4 Oil test. Destroyed.
* 303	do	--	--	552	5	373	Kce	820	--	--	C, E	N	Well F-3 in 1957 Travis County report. 4
* 304	Paul Jones	Central Texas Drilling Company	1973	360	5	189	Kce	813	158	Sept. 11, 1973	S, E	D, S	--

See footnotes at end of table.

Table 5.--Records of Wells, Test Holes, and Springs in Travis and Adjacent Counties--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing: Diameter (in.)	Casing: Depth (ft)	Water bearing unit	Altitude of land surface (ft)	Water level: Below land-surface datum (ft)	Water level: Date of measurement	Method of lift	Use of water	Remarks
							Travis County--Continued						
* YD-58-50-213	Bill Bolger	--	--	300	7	--	Kce	705	226.10 219.10	Jan. 17, 1973 Mar. 13, 1978	S, E	D	--
216	U.S. Geological Survey	Texas Department of Water Resources	1978	582	4	580	Kce	792	--	--	N	N	Test well. Slotted from 180 to 480 ft. 1/
217	do	do	1978	217	4	144	Kce	567	--	--	N	N	Test well. 1/
218	do	do	1978	214	4	136	Kce	567	126	Aug. 8, 1978	N	N	Do.
* 301	John Lovelady	Gus Sanders	1949	388	5	296	Kce	640	209.00 178.76	July 29, 1949 Mar. 24, 1978	N	N	Well H-139 in 1957 Travis County report. 1/ 3/ 4/
* 302	Merle Goodnight	--	1936	18	36	8	Qter	640	12.70 13.42	Aug. 3, 1937 May 24, 1939	J, E	D, S	Dug well. Well H-112 in 1957 Travis County report. 3/ 4/
* 303	J. D. Elliot	Earl Johnson	1938	156	6	10	Kgac	630	45.50	Sept. 29, 1938	C, W	N	Abandoned. Reported drawdown 2 ft after pumping 30 gal/min for 1 hour. Well H-140 in 1957 Travis County report. 4/
304	St. Edwards University	--	1885	1,200	--	--	Kce, Kcgrl	668	--	--	N	N	Abandoned. Reportedly deepened to 3,000 ft. Formerly supplied swimming pool, laundry, and baths at St. Edwards University.
305	Ralph Lowry	Nance and Baily	1923	780	--	--	--	640	--	--	N	N	Abandoned oil test. Well H-114 in 1957 Travis County report. 3/ 4/
* 401	Travis Howard	--Glass	1967	404	7	252	Kce	740	249.80	Mar. 14, 1978	S, E	D	3/
* 402	Edward Yturri	S. W. Glass	1967	335	7	198	Kce	750	233.10 213.90	Feb. 12, 1969 Mar. 17, 1978	S, E	D	Reported drawdown 60 ft after bailing 45 gal/min for 1 hour. 3/
* 403	William Bethea	do	1968	264	7	154	Kce	750	100	June 17, 1968	--	D	Reported drawdown 0 ft after bailing 20 gal/min for 1 hour on Mar. 17, 1968. Cemented from 154 to 134 ft.
* 404	Robert Glenn	Central Texas Drilling Company	1967	358	5	352	Kce	740	90	Dec. 1967	S, E	D	3/
* 405	John Cameron	--Fowler	--	365	5	365	Kce	850	51.20	Oct. 22, 1970	C, G	N	Well J-89 in 1957 Travis County report. 4/
* 406	George Slaughter	John Glass	1946	325	5	100	Kce	800	245 288.30	May 1946 Mar. 14, 1978	C, E	D, S	Well J-88 in 1957 Travis County report. 4/
* 407	John Wood	E. R. Owen	1970	320	7	83	Kce	775	170	Mar. 16, 1971	S, E	D	Reported drawdown 0 ft after bailing 50 gal/min.
* 408	Donald Rogers	E. W. Glass	1971	439	7	125	Kce	772	178.60	Mar. 9, 1978	S, E	D	Reported drawdown 0 ft after pumping 15 gal/min for 1 hour on Mar. 18, 1971.
* 409	Circle C Ranch	W. H. Glass	1972	340	7	180	Kce	796	178.90	Mar. 17, 1978	S, E	D	3/
* 410	do	--	1950	--	--	--	--	783	--	--	C, W	N	--
501	L. J. Garner	--	--	--	7	--	--	726	214.56 163.01	Aug. 5, 1949 July 9, 1958	--	N	Well H-156 in 1957 Travis County report. 3/ 4/
* 502	R. W. Herndon	--Glass	1937	300	5	168	Kce	752	250.00 243.30	Aug. 22, 1949 Mar. 8, 1978	C, E	D, S	Well H-159 in 1957 Travis County report. 3/ 4/
* 503	Otto Schwartz	Felix Sanders	1926	451	5	300	Kce	705	197.22 203.19	Jan. 19, 1937 Dec. 21, 1939	C, E	D, S	Measured yield 3 gal/min. Well H-169 in 1957 Travis County report. 3/ 4/

See footnotes at end of table.



EXPLANATION

Alluvium

Terrace deposits
Includes Onion Creek Marl and high terrace deposits

Midway Group

Navarro and Taylor Groups

Austin Chalk

Igneous rocks (basalt and tuff)

Eagle Ford Group and Buda Limestone

Del Rio Clay

Georgetown Formation

Fredericksburg Group, Kcfr
Includes Edwards Limestone, Kced,
Comanche Peak Limestone, Kcc,
Keys Valley Marl Member of Walnut Formation, Kckv;
Cedar Park Limestone Member of Walnut Formation, Kccp, and
Bee Cave Marl Member of Walnut Formation, Kcbc

Paluxy Formation

Glen Rose Formation
Upper member, Kgru, and lower member, Kgrl

Travis Peak Formation
Includes Hensell Sand Member, Kthe,
Cow Creek Limestone Member, Kttc,
Hammett Shale Member, Kth, and
Sycamore Sand Member, Ktsy

Contact
Dashed where concealed or approximately located

Fault
U, upthrown side, D, downthrown side
Dashed where approximately located

Figure 4
Geologic Map of Travis County

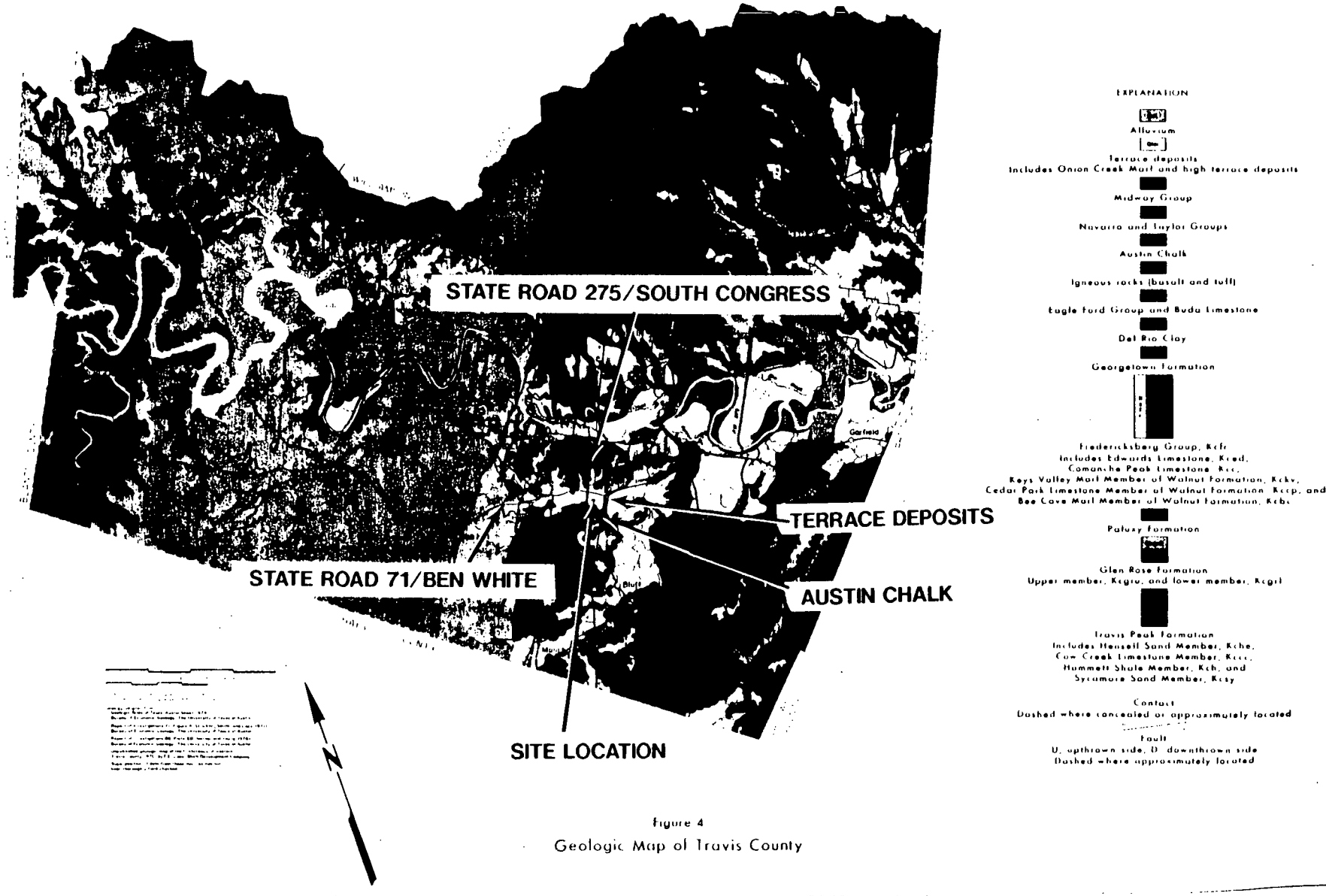


Figure 4
Geologic Map of Travis County

EXPLANATION

Well used for control
Number indicates altitude of water level in the alluvium and terrace deposits aquifer, Spring 1978, in feet above mean sea level

Line showing approximate altitude of water level in the alluvium and terrace deposits aquifer
Dashed where control is absent or limited
Interval 10 feet
Datum is mean sea level

Outcrop of the alluvium and terrace deposits

Fault
U, upthrown side; D, downthrown side
Dashed where approximately located

Figure 22
Approximate Altitude of Water Levels in Selected Wells Completed in the Alluvium and Terrace Deposits, Spring 1978

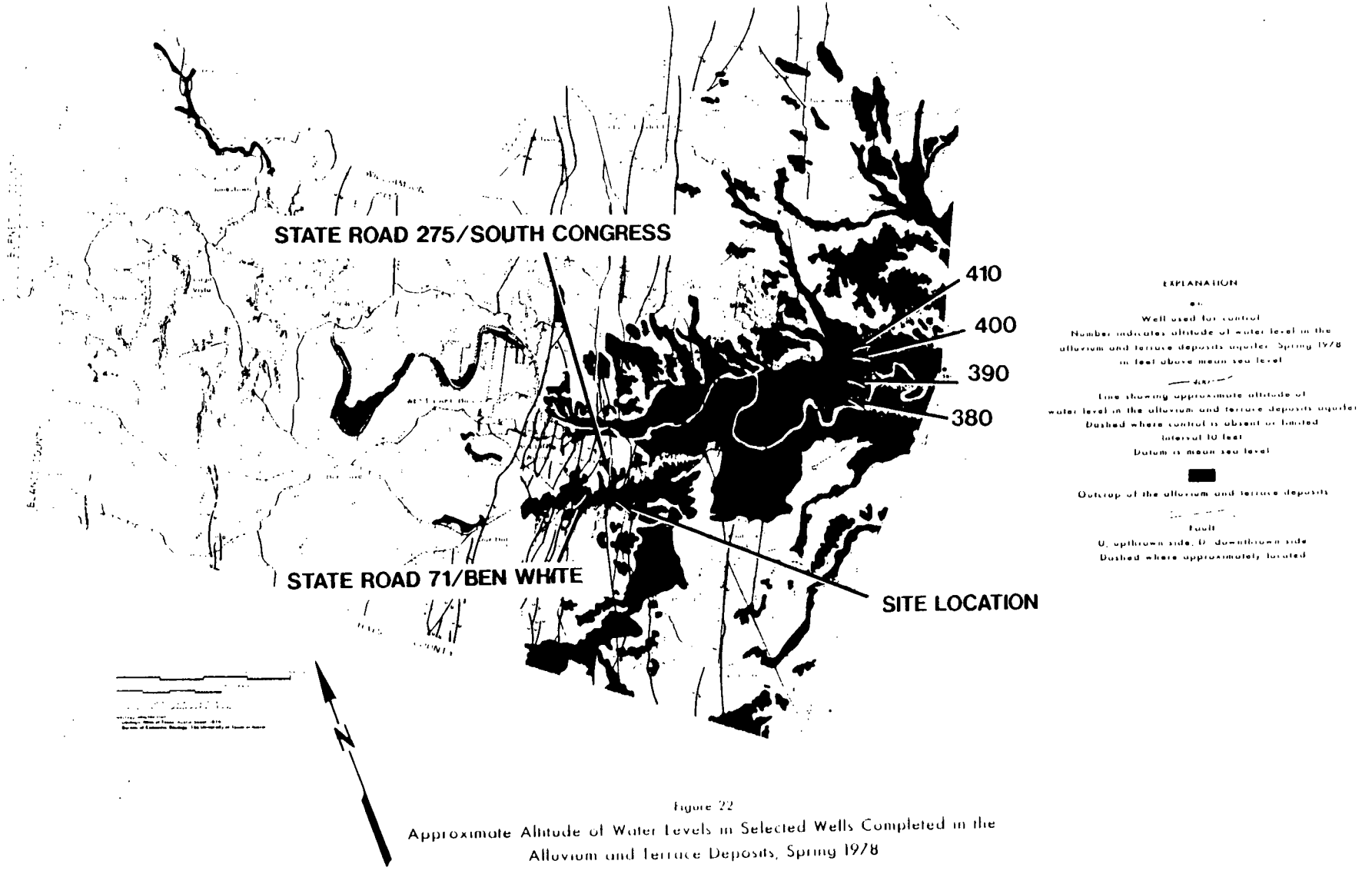


Figure 22

Approximate Altitude of Water Levels in Selected Wells Completed in the Alluvium and Terrace Deposits, Spring 1978

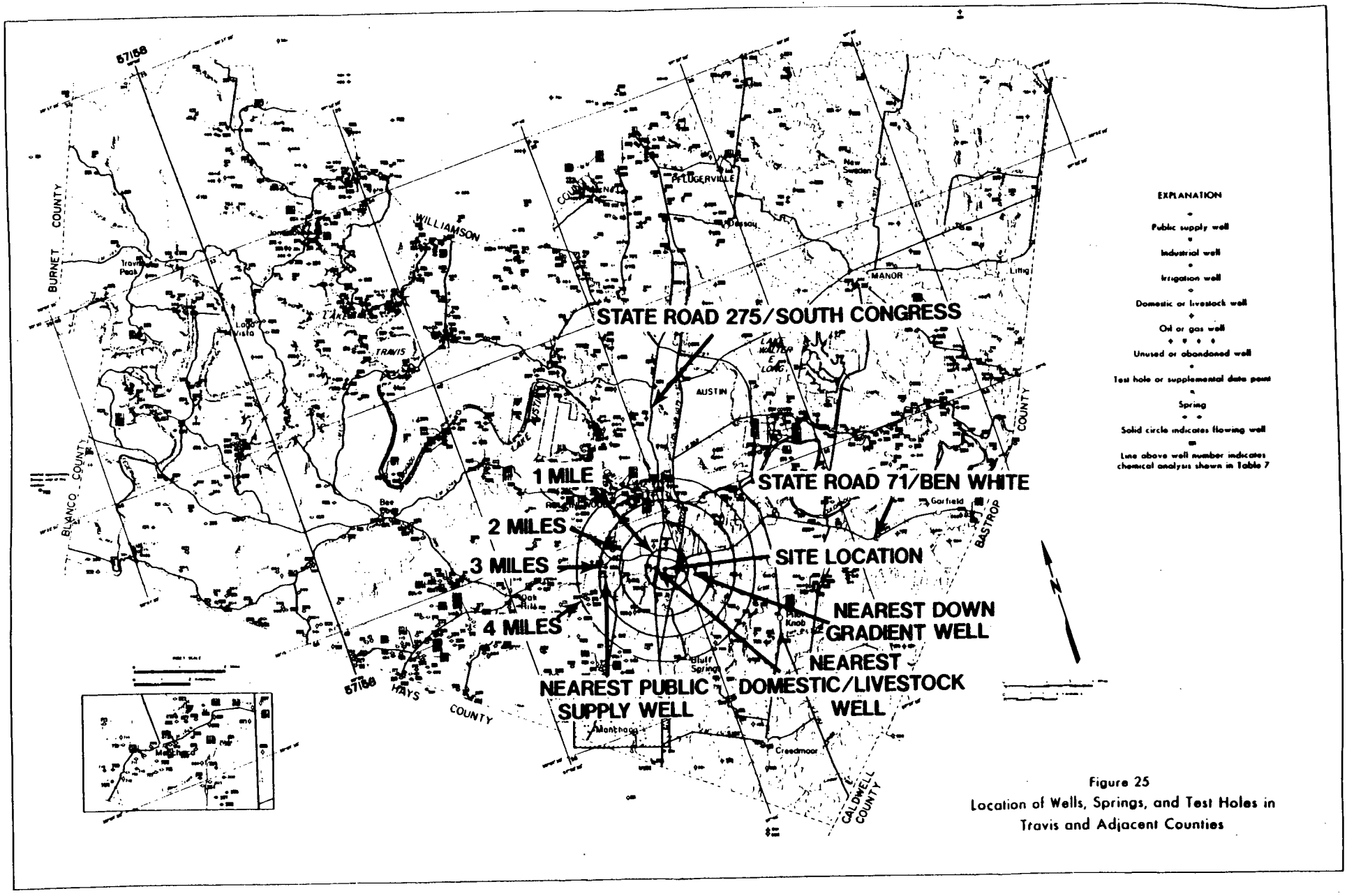


Figure 25
Location of Wells, Springs, and Test Holes in Travis and Adjacent Counties

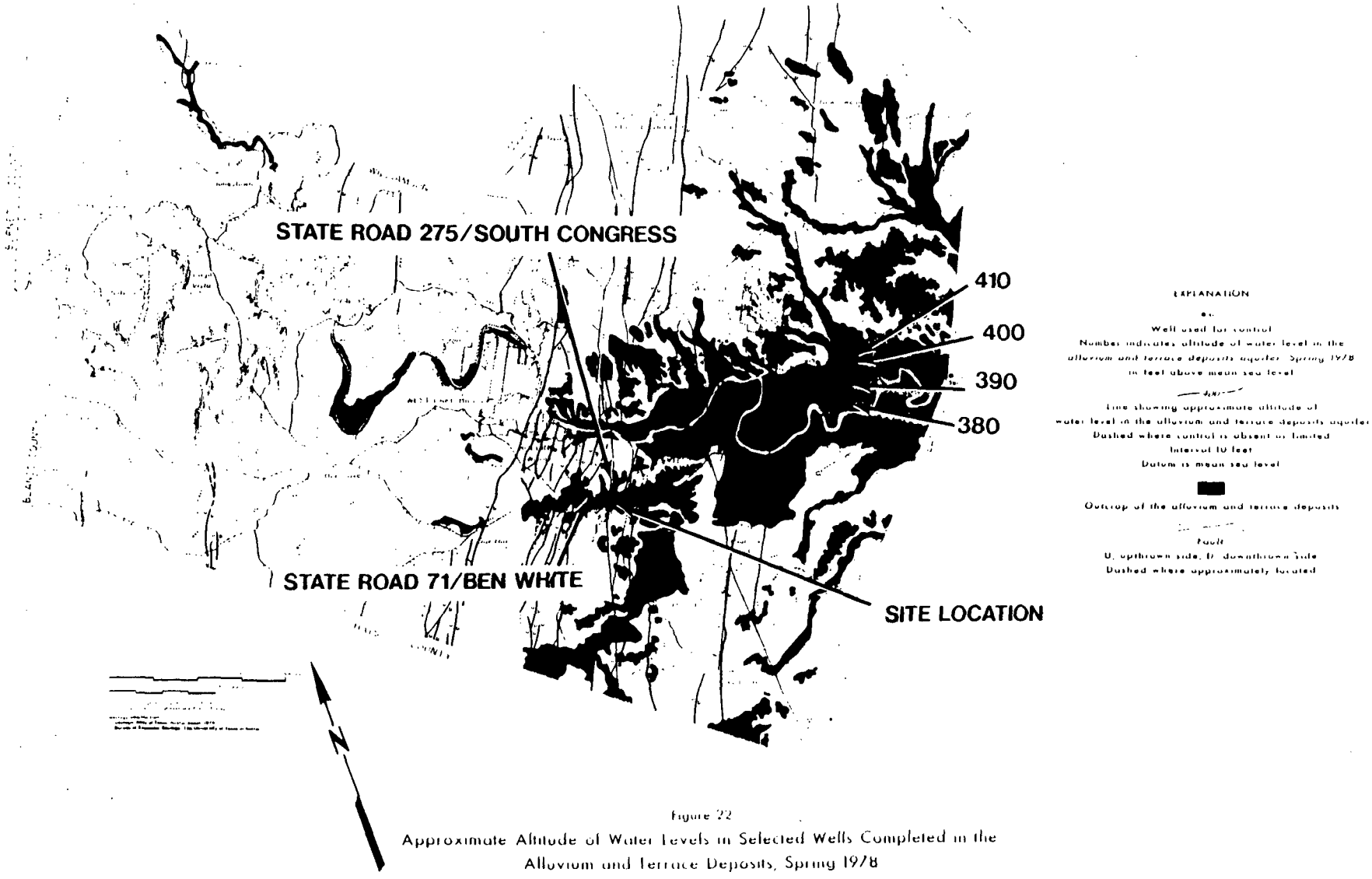


Figure 22

Approximate Altitude of Water Levels in Selected Wells Completed in the Alluvium and Terrace Deposits, Spring 1978

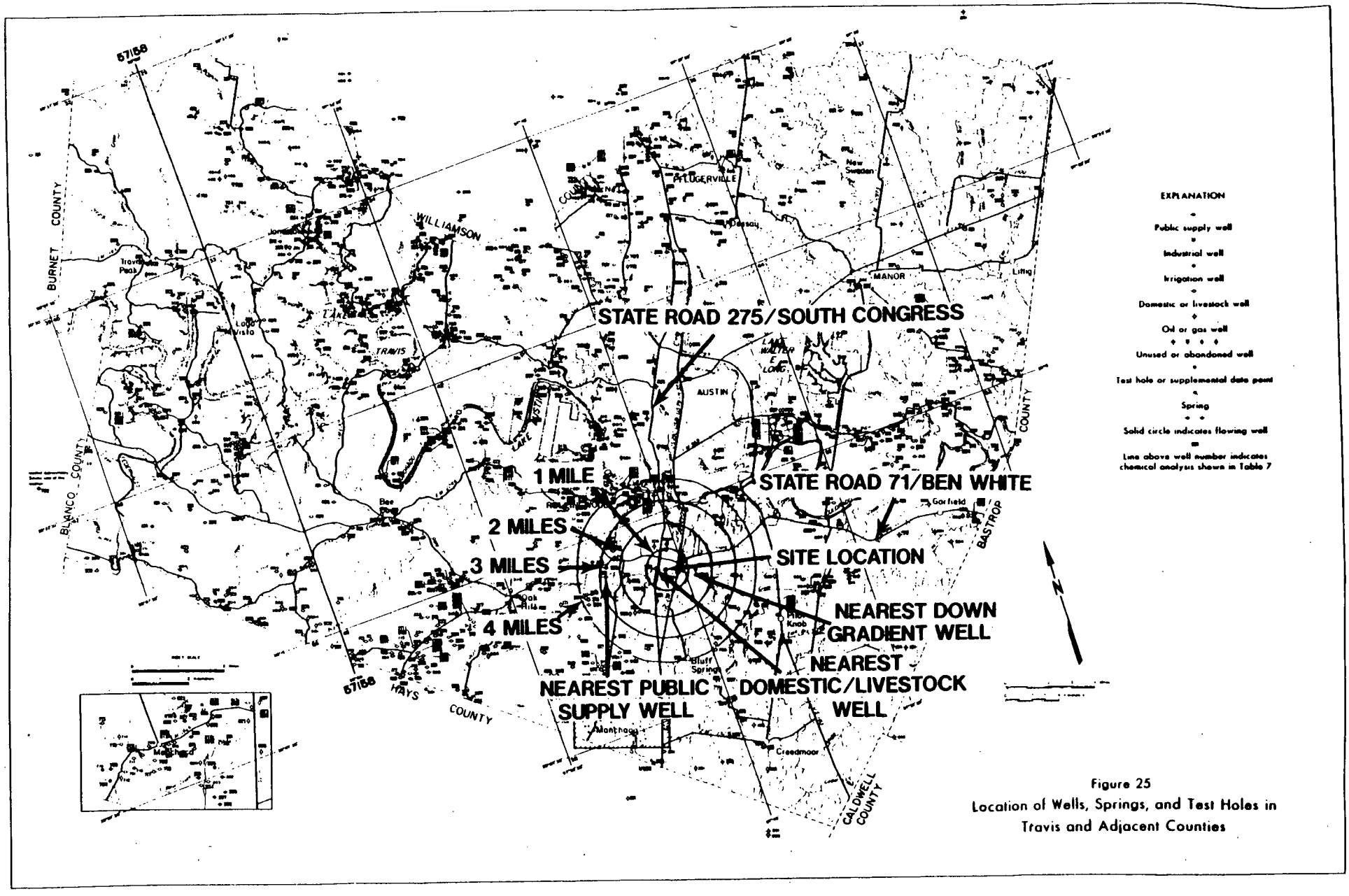


Figure 25
Location of Wells, Springs, and Test Holes in Travis and Adjacent Counties

REFERENCE 10

RECORD OF COMMUNICATION

TXD987989340

TYPE: Phone Call **DATE:** December 3, 1990 **TIME:** 2:45pm

TO: Alfredo Delgado
Consumer Affairs
City of Austin Water and
Waste Water Utility
(512)322-2710

FROM: Trudy K. Tannen
FIT Chemical Engineer
ICF Technology, Inc.
(214)744-1641

SUBJECT: Drinking Water for Austin

SUMMARY OF COMMUNICATION

The City of Austin obtains its drinking water from the Colorado River. One intake is located just northwest of Town Lake near Palmer Auditorium. There may be other drinking water intakes on the river in Austin. The utility service has approximately 150,000 metered connections. The service area includes the community of Del Valle, east of Austin. The City of Austin does not use any ground water in the drinking supply.

REFERENCE 11

TEXAS
PARKS AND WILDLIFE DEPARTMENT
4200 Smith School Road • Austin, Texas 78744 • 512-389-4800

COMMISSIONERS

CHUCK NASH
Chairman San Marcos

GEORGE C. "M" HIXON
Vice-Chairman
San Antonio

BOB ARMSTRONG
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DELO H. CASPARY
Rockport

JOHN WILSON KELSEY
Houston

BEATRICE CARR PICKENS
Dallas

A.R. (TONY) SANCHEZ, JR
Laredo

ANDREW SANSOM
Executive Director

November 20, 1990

Trudy K. Tannen
ICF Technology, Inc.
1509 Main Street, Suite 900
Dallas, Texas 75201

Dear Ms. Tannen:

In response to your November 15, 1990 request for information on sensitive species and natural communities within or near the Travis County preliminary ranking site, we offer the following comments. A search of the Texas Natural Heritage Program Information System revealed occurrences of special species and managed areas within the four mile radius and along Onion Creek.

Federal and State Endangered--
- Vireo atricapillus (Black-capped Vireo) G2G3 S2

Federal Category 2--
- Eurycea sp. (Barton Springs Salamander) G1 S1
- Streptanthus bracteatus (bracted twistflower) G2 S2
- Physostegia correllii (Correll's false dragon-head) G2 S2
- Notropis buccula (Smalleye Shiner) G2 S2 - believed introduced population
- Micropterus treculi (Guadalupe Bass) G3 S3 - known from Onion Creek and the Colorado River; endemic to eastern Edwards Plateau streams
- Thamnophis sirtalis annectens (Texas Garter Snake) G5T3 S3 - known from the Austin area and in the Onion Creek area

Other Sensitive Features--
- Invertebrate Cave

Managed Areas--
- McKinney Falls State Park - along Onion Creek
- Onion Creek Preserve - along Onion Creek
- Blunn Creek Preserve
- Zilker Preserve

The Heritage Program information included here is based on the best data currently available to the state regarding threatened, endangered, or otherwise sensitive species. However, these data do not provide a definite statement as to the presence or absence of special species or natural communities within your project area, nor can these data substitute for an evaluation by qualified biologists. This information is intended to assist you in avoiding harm to species that occur on your site.

This letter does not constitute an review of fish and wildlife impacts that might result from the activity for which this information is provided. Should you need an impact review from the Texas Parks and Wildlife Department, contact the Environmental Assessment Branch of the Resource Protection Division, attention Mr. Bob Spain, or contact him at 512/389-4725. All requests for reviews must be in writing.

Please contact the Texas Parks and Wildlife Department's Heritage Program before publishing or otherwise disseminating any specific locality information. Thank you for contacting us. Please feel free to call me at 512/448-4311 if you have questions.

Sincerely,

Dorinda Sullivan

Dorinda Sullivan, Data Manager
Texas Natural Heritage Program
Resource Protection Division

FEDERAL STATUS

LE - Listed Endangered
LT - Listed Threatened
LELT - Listed Endangered in part of range, Threatened in a different part
PE - Proposed to be listed Endangered
PT - Proposed to be listed Threatened
PEPT - Proposed Endangered, Threatened
S - Synonyms
C1 - Candidate, Category 1. USFWS has substantial information on biological vulnerability and threats to support proposing to list as endangered or threatened. Data are being gathered on habitat needs and/or critical habitat designations.
C2 - Candidate, Category 2. Information indicates that proposing to list as endangered or threatened is possibly appropriate, but substantial data on biological vulnerability and threats are not currently known to support the immediate preparation of rules. Further biological research and field study will be necessary to ascertain the status and/or taxonomic validity of the taxa in Category 2.
3 - Taxa no longer being considered for listing as threatened or endangered. Three subcategories indicate the reasons for removal from consideration.
3A - Former Candidate, rejected because presumed extinct and/or habitats destroyed
3B - Former Candidate, rejected because not a recognized taxon; i.e. synonym or hybrid
3C - Former Candidate, rejected because more common, widespread, or adequately protected
blank - Not currently listed

STATE STATUS

E - Listed as Endangered in the State of Texas
T - Listed as Threatened in the State of Texas
blank - Not currently listed

GLOBAL RANK

G1 - Critically imperiled globally, extremely rare, 5 or fewer occurrences. [Critically endangered throughout range.]
G2 - Imperiled globally, very rare, 6 to 20 occurrences. [Endangered throughout range.]
G3 - Very rare and local throughout range or found locally in restricted range, 21 to 100 occurrences. [Threatened throughout range.]
G4 - Apparently secure globally.
G5 - Demonstrably secure globally.
GA - Accidental in North America, now G#NA.
GE - An exotic species established in North America, now G#NE.
GH - Of historical occurrence through its range.
GU - Uncertain; most likely rank/uncertain (G2?), range (G1G2)
GX - Believed to be extinct throughout range.
Q - Qualifier denotes questionable rank or taxonomic assignment.
T - Subrank of subspecies or variety.

STATE RANK

S1 - Critically imperiled in state, extremely rare, very vulnerable to extirpation, 5 or fewer occurrences.
S2 - Imperiled in state, very rare, vulnerable to extirpation, 6 to 20 occurrences.
S3 - Rare in state, 20+ occurrences.
S4 - Apparently secure in state.
S5 - Demonstrably secure in state.
SA - Accidental in state.
SE - An exotic species established in state.
SH - Of historical occurrence in state. May be rediscovered.
SX - Apparently extirpated from State.

REFERENCE 12

MITRE

26 May 1989
W52-214

Ms. Lucy Sibold
U.S. Environmental Protection Agency
401 M Street, S.W.
Room 2636, Mail Code WH-548A
Washington, D.C. 20460

Dear Ms. Sibold:

Enclosed is a copy of the draft revised HRS net precipitation values for 3,345 weather stations where data were available. The data are presented by state code, station name, latitude longitude, and net precipitation in inches. A list of state codes is also enclosed.

The net precipitation values are provided to assist the Phase II - Field Testing efforts. It is suggested that the value from the nearest weather station in a similar geographic setting be used as the net precipitation value for a site.

If there are any questions regarding this material, please contact Dave Egan at (703) 883-7866.

Sincerely,

Andrew M. Platt
Group Leader
Hazardous Waste Systems

AMP:DEE/hme

Enclosures

cc: Scott Parrish

The MITRE Corporation
Civil Systems Division
7525 Colshire Drive, McLean, Virginia 22102-3481
Telephone (703) 883-6000 Telex 248923

FIELD NAME	FIELD DEFINITION
STATE-NUMBER	Characters 1-2 Cooperative State Code for each State. STATE CODE LISTING

01 Alabama	28 New Jersey
02 Arizona	29 New Mexico
03 Arkansas	30 New York
04 California	31 North Carolina
05 Colorado	32 North Dakota
06 Connecticut	33 Ohio
07 Delaware	34 Oklahoma
08 Florida	35 Oregon
09 Georgia	36 Pennsylvania
10 Idaho	37 Rhode Island
11 Illinois	38 South Carolina
12 Indiana	39 South Dakota
13 Iowa	40 Tennessee
14 Kansas	41 Texas
15 Kentucky	42 Utah
16 Louisiana	43 Vermont
17 Maine	44 Virginia
18 Maryland	45 Washington
19 Massachusetts	46 West Virginia
20 Michigan	47 Wisconsin
21 Minnesota	48 Wyoming
22 Mississippi	49 Not Used
23 Missouri	50 Alaska
24 Montana	51 Hawaii
25 Nebraska	66 Puerto Rico
26 Nevada	67 Virgin Islands
27 New Hampshire	91 Pacific Islands

STATION-NUMBER	Characters 3-6 Cooperative Station Number Range = 0001-9999.
DATA-CODE	Character 7 Data Indicator Code 1 = Maximum Mean Temperature 2 = Minimum Mean Temperature 3 = Average (Mean) Temperature 4 = Heating Degree Days 5 = Cooling Degree Days 6 = Precipitation (1951-80 Normals only)

OBS	STATE	NAME		LATNUM	LONNUM	NETPREC
2641	41	MC COOK		26.30	98.23	0.3647
2642	41	FALFURRIAS		27.13	98.09	1.0903
2643	41	LAREDO NO 2		27.31	99.28	0.0233
2644	41	KINGSVILLE		27.32	97.53	1.0121
2645	41	ALICE		27.44	98.04	1.6890
2646	41	CORPUS CHRISTI WSO	R	27.46	97.30	1.7390
2647	41	CORPUS CHRISTI		27.48	97.24	1.6836
2648	41	ENCINAL 3 NW		28.05	99.22	0.8944
2649	41	PORT O CONNOR		28.26	96.26	7.9240
2650	41	BEEVILLE 5 NE		28.27	97.42	3.5263
2651	41	COTULLA FAA AIRPORT		28.27	99.13	0.5928
2652	41	PORT LAVACA NO 2		28.38	96.38	8.0207
2653	41	GOLIAD		28.40	97.24	4.8189
2654	41	DILLEY		28.40	99.10	1.5284
2655	41	CRYSTAL CITY		28.41	99.50	0.3470
2656	41	MATAGORDA NO 2		28.42	95.58	9.0031
2657	41	EAGLE PASS		28.42	100.29	0.2235
2658	41	PALACIOS FAA AIRPORT		28.43	96.15	9.8209
2659	41	VICTORIA WSO	R	28.51	96.55	5.0430
2660	41	BAY CITY WATERWORKS		28.59	95.58	9.3658
2661	41	POTEET		29.02	98.35	2.8271
2662	41	DANEVANG 2 SE		29.03	96.11	7.1052
2663	41	ANGLETON 2 W		29.09	95.27	15.2626
2664	41	UVALDE		29.13	99.46	1.1524
2665	41	PIERCE 1 E		29.14	96.11	9.1547
2666	41	NEW GULF		29.16	95.55	8.4050
2667	41	NIXON		29.16	97.45	4.5626
2668	41	CHISOS BASIN		29.16	103.18	0.0000
2669	41	GALVESTON WSO	R	29.18	94.48	8.4385
2670	41	YOAKUM		29.18	97.09	5.7008
2671	41	DEL RIO WSO		29.22	100.55	0.0497
2672	41	HALLETTSVILLE		29.27	96.56	6.6609
2673	41	SAN ANTONIO WSO	R	29.32	98.28	3.7339
2674	41	PRESIDIO		29.33	104.21	0.0000
2675	41	SUGAR LAND		29.37	95.38	11.0523
2676	41	FLATONIA 2 W		29.41	97.08	7.4017
2677	41	LULING		29.41	97.40	6.6844
2678	41	NEW BRAUNFELS		29.42	98.07	6.0682
2679	41	BOERNE		29.47	98.44	5.7313
2680	41	SAN MARCOS		29.53	97.57	7.1484
2681	41	PORT ARTHUR WSO	R	29.57	94.01	16.1905
2682	41	HOUSTON INCONT AP		29.58	95.21	12.3027
2683	41	LIBERTY		30.03	94.49	17.2173
2684	41	BLANCO		30.06	98.25	7.9951
2685	41	BRENHAM		30.09	96.24	11.2405
2686	41	FREDERICKSBURG		30.16	98.52	3.0630
2687	41	AUSTIN WSO	R	30.18	97.42	5.4840
2688	41	CONROE		30.19	95.27	14.9689
2689	41	ALPINE		30.21	103.40	0.0000
2690	41	JUNCTION		30.30	99.47	1.6214
2691	41	SONORA		30.34	100.39	0.8081
2692	41	COLLEGE STATION FAA AP		30.35	96.21	10.9234
2693	41	TAYLOR		30.35	97.24	8.7022
2694	41	MOUNT LOCKE		30.40	104.00	0.0615
2695	41	HUNTSVILLE		30.43	95.33	14.0649

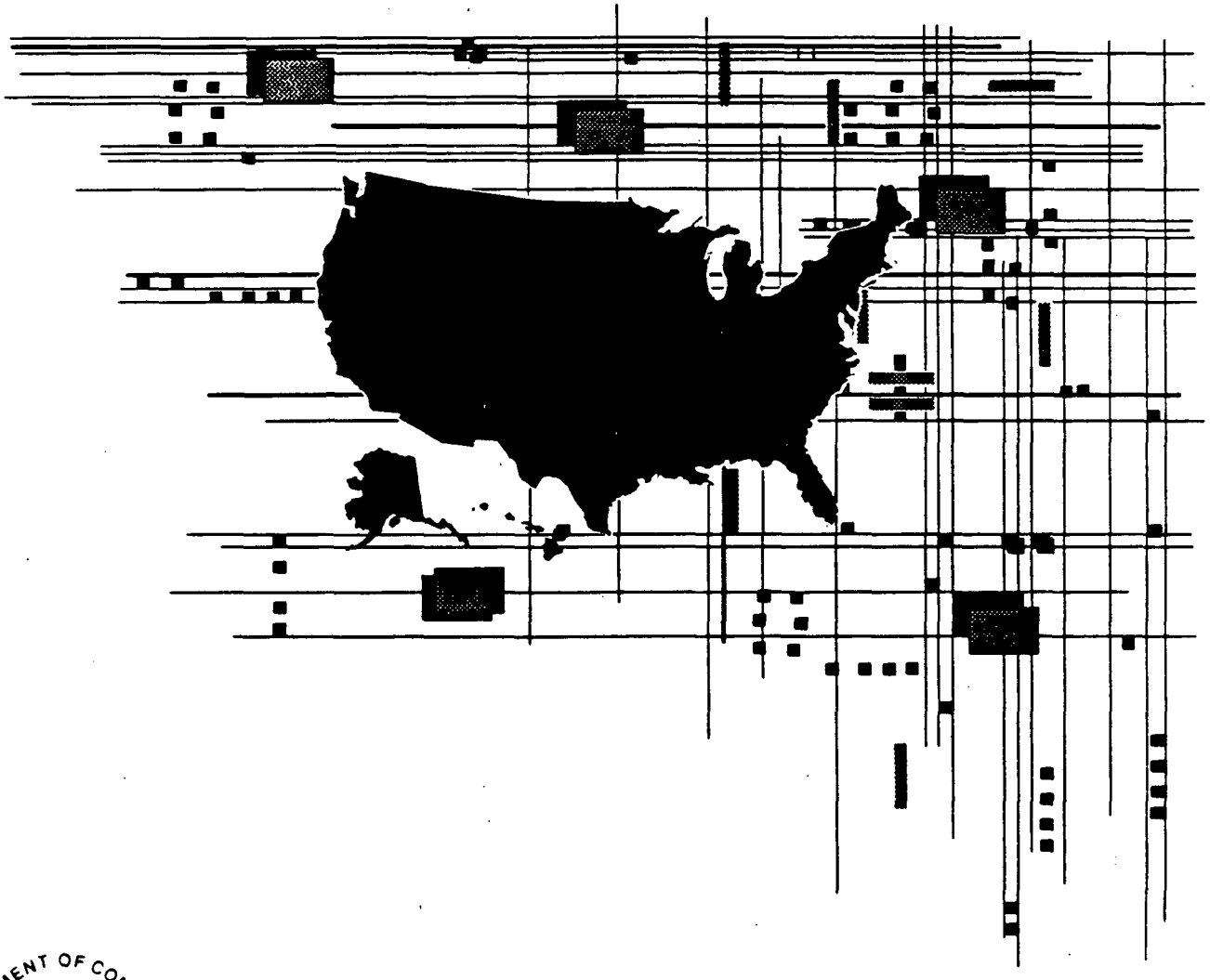
REFERENCE 13

CURRENT POPULATION REPORTS

Special Studies

Series P-23, No. 156

Estimates of Households, for Counties: July 1,1985



U.S. Department of Commerce
BUREAU OF THE CENSUS

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A-1. Corrections to 1980 census counts of population and housing units, for selected States and counties 69

Table 1. Estimates of Households, for Counties: July 1, 1985—Continued

(A dash (-) represents zero or rounds to zero. Estimates are consistent with special censuses since 1980. Corrections to 1980 census counts are not included. See text concerning rounding and average population per household)

State and county	Households				Average population per household		Population			
	July 1, 1985 (estimate)	April 1, 1980 (census)	Change, 1980-85 Number	Change, 1980-85 Percent	July 1, 1985 (estimate)	April 1, 1980 (census)	July 1, 1985 (estimate)	April 1, 1980 (census)	Change, 1980-85 Number	Change, 1980-85 Percent
Texas—Continued										
Nolan	6,500	6,446	100	0.8	2.71	2.66	17,800	17,359	400	2.6
Nueces	100,100	86,989	13,200	15.1	2.94	3.04	298,600	268,215	30,300	11.3
Ochiltree	4,000	3,486	500	14.6	2.73	2.73	11,000	9,588	1,400	14.4
Oldham	800	674	100	14.4	2.60	2.80	2,500	2,283	200	7.7
Orange	28,600	27,918	700	2.5	2.90	2.98	83,600	83,838	-200	-0.3
Palo Pinto	9,800	8,977	800	8.8	2.67	2.63	26,500	24,062	2,400	10.1
Panola	7,800	7,434	300	4.5	2.80	2.74	22,100	20,724	1,300	6.4
Parker	19,900	15,640	4,300	27.4	2.80	2.81	56,500	44,609	11,900	26.6
Parmer	3,400	3,489	-100	-1.5	3.14	3.13	10,900	11,038	-200	-1.4
Pecos	5,600	4,567	1,100	23.0	3.05	3.19	17,200	14,618	2,600	17.7
Polk	10,800	8,909	1,900	21.2	2.69	2.72	29,200	24,407	4,800	19.8
Potter	41,800	37,769	4,000	10.7	2.52	2.58	107,000	98,637	8,300	8.5
Presidio	1,800	1,680	100	8.5	3.08	3.08	5,600	5,188	400	8.5
Rains	2,200	1,911	300	15.1	2.61	2.53	5,700	4,839	900	18.5
Randall	31,200	26,709	4,500	16.9	2.72	2.73	86,700	75,062	11,700	15.5
Reagan	1,500	1,305	200	16.5	3.25	3.16	5,000	4,135	800	19.7
Real	1,000	900	100	10.4	2.75	2.74	2,700	2,469	300	10.8
Red River	5,700	6,042	-300	-5.7	2.70	2.62	15,700	16,101	-400	-2.6
Reeves	5,100	4,789	300	6.1	3.10	3.26	15,900	15,801	100	0.9
Refugio	3,000	3,168	-100	-4.2	2.81	2.91	8,600	9,289	-700	-7.4
Roberts	400	426	-100	-16.2	2.88	2.79	1,000	1,187	-200	-13.5
Robertson	5,900	5,518	400	6.5	2.69	2.62	16,000	14,653	1,300	9.2
Rockwall	7,000	4,865	2,200	44.2	2.99	2.96	21,200	14,528	6,600	45.7
Runnels	4,600	4,496	100	1.8	2.69	2.61	12,500	11,872	600	5.0
Rusk	15,300	15,011	300	1.9	2.77	2.71	43,000	41,382	1,600	3.9
Sabine	3,900	3,336	500	16.3	2.51	2.59	9,800	8,702	1,100	13.1
San Augustine	3,300	3,133	200	6.6	2.58	2.74	8,800	8,785	-	0.5
San Jacinto	4,800	4,088	700	17.8	2.88	2.79	13,900	11,434	2,400	21.3
San Patricio	18,700	17,551	1,200	6.7	3.25	3.28	61,200	58,013	3,200	5.5
San Saba	2,200	2,385	-200	-6.6	2.48	2.54	5,700	6,204	-500	-8.5
Schleicher	1,100	988	100	10.9	2.78	2.82	3,100	2,820	300	9.3
Scurry	7,000	6,376	600	9.1	2.81	2.80	19,900	18,192	1,700	9.6
Shackelford	1,400	1,493	-	-3.0	2.66	2.58	3,900	3,915	-	0.1
Shelby	9,000	8,555	500	5.6	2.62	2.67	23,900	23,084	900	3.7
Sherman	1,200	1,117	100	4.7	2.66	2.81	3,100	3,174	-	-0.8
Smith	55,300	46,042	9,200	20.0	2.67	2.73	150,500	128,366	22,200	17.3
Somervell	1,600	1,531	100	4.9	2.77	2.68	4,500	4,154	300	8.3
Starr	8,900	6,858	2,100	29.9	3.84	3.94	34,500	27,266	7,200	26.5
Stephens	4,200	3,928	300	6.6	2.49	2.51	10,500	9,926	600	5.6
Sterling	600	413	200	36.4	2.81	2.85	1,600	1,206	400	34.7
Stonewall	900	941	-	-5.2	2.57	2.48	2,400	2,406	-100	-2.3
Sutton	1,700	1,675	100	3.1	3.04	3.04	5,300	5,130	200	2.9
Swisher	3,200	3,294	-100	-4.1	2.81	2.93	8,900	9,723	-800	-8.0
Tarrant	388,200	310,272	77,900	25.1	2.68	2.72	1,059,600	860,880	198,700	23.1
Taylor	44,200	38,515	5,700	14.8	2.62	2.69	122,600	110,932	11,600	10.5
Terrell	500	570	-	-5.3	2.81	2.80	1,500	1,595	-100	-4.7
Terry	5,200	4,841	300	6.5	2.94	2.98	15,300	14,581	700	5.0
Throckmorton	900	853	-	5.2	2.39	2.38	2,200	2,053	100	5.5
Titus	8,500	7,740	700	9.2	2.67	2.73	23,000	21,442	1,500	7.1
Tom Green	35,400	30,369	5,100	16.7	2.64	2.67	97,500	84,784	12,700	15.0
Travis	206,700	158,432	48,300	30.5	2.48	2.53	533,700	419,573	114,100	27.2
Trinity	4,400	3,647	800	21.3	2.60	2.55	11,700	9,450	2,300	23.8
Tyler	6,700	5,870	800	14.1	2.73	2.73	18,500	16,223	2,300	14.0
Upshur	11,000	10,082	1,000	9.6	2.88	2.82	32,000	28,595	3,400	12.0
Upton	1,800	1,560	300	16.3	3.04	2.95	5,500	4,619	900	19.9
Uvalde	7,900	6,960	900	12.9	3.05	3.16	24,400	22,441	2,000	8.9

REFERENCE 14

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
AUSTIN, TEXAS
TRAVIS COUNTY

PANEL 80 OF 105
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
480624 0080 B

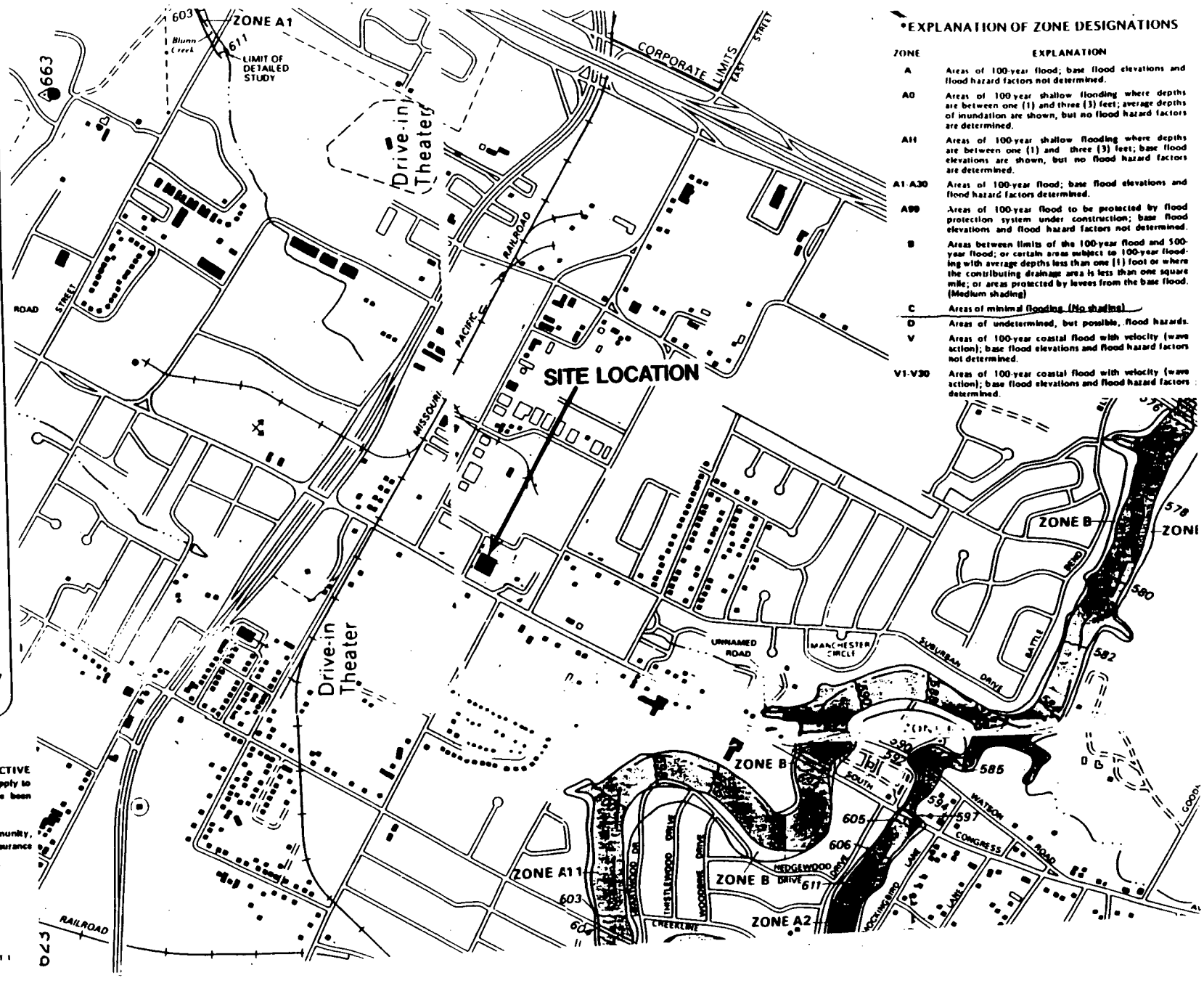
EFFECTIVE DATE:
SEPTEMBER 2, 1981

federal emergency management agency
federal insurance administration

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE



*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
AO	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

REFERENCE 15

Texas Water Commission

INTEROFFICE MEMORANDUM

TO : Files DATE: 04/26/90

THRU : Ernest W. Heyer, Chief, Program Services Unit, Field Operations Division

FROM : Daniel Brashear, Field Investigator, District 14 Field Office

SUBJECT: Capitol Metal Finishing, Reg. No. 31593, Sampling Inspections conducted January 24,1990, February 6, and April 24, 1990

Sampling inspections were conducted on January 24, 1990, February 6, 1990, and April 24, 1990 at Capitol Metal Finishing in order to determine the extent of site remediation. Copies of the C.O.C. tags are attached with a sketch showing sampling locations.

The April 24, 1990 inspection found that all tanks and containers, except for the large 3000 gallon fiberglass tank, had been shipped offsite since the February 6, 1990 inspection. The 3000 gallon tank was empty April 24, 1990. Records of these waste shipments offsite were not reviewed since Mr. Benjamin Jones, consultant, stated that the records were kept by Carl Booth at his "other facility" in Round Rock.

A sample collected from the 3000 gallon tank (SW 01435) on January 24, 1990 verified the pH to be 0.8 and the concentration of Chromium to be 2240 ppm. EP tox metal concentration was not requested since the sample was entirely a liquid phase. The tank was labeled Hazardous Waste for D002 and D007 with an accumulation start date of September 9, 1989. A sample of the absorbent at the base of the tank on February 6, 1990 found 6.5 ppm cyanide (SW 05557). Another tank sampled on February 6, 1990 (SW 05558) found 27,900 ppm EP Tox Chromium. This tank was a vat containing about 500 gallons of liquid and sludge. The tank was not labeled or dated.

Mr. Jones stated during the April 24, 1990 inspection that the concrete floors had all been acid etched and triple rinsed. Most of the floor surface had visible crystals on the surface. The crystals ranged in color from green to yellow to black. The crystals appeared to have formed in areas that liquid had pooled on the slab and evaporated, however some of the crystalline formations formed into mounds that were as much as two inches high. A composite sample was collected from the various "crystalline mounds" and will be forwarded later.

The April 24, 1990 inspection found that excavation of the contaminated soil on the south side and east side of the building has

stopped. A mound of excavated soil, about 80 cubic yards, remains piled on the south side of the building. The mound was not covered with plastic on April 24, 1990. A sample of the waste pile was collected and will be forwarded later. Several open pits contained rainwater. A sample of the accumulated rainwater collected on February 6, 1990 found slight contamination (SW 05560). A sample of the soil collected within one of the pits on the same day found high levels of contamination (SW 05559). Analysis of that sample are as follows:

EP Tox Chromium	72 ppm
Total Chromium	156 ppm
EP Tox Cadmium	0.5 ppm
Total Cadmium	156 ppm
Total Nickel	1100 ppm
Total Zinc	193 ppm
Total Cyanide	24 ppm

The building was not secured during any of the inspections. As of April 24, 1990, a fence had been constructed around the backyard, however a garage door had been left unlocked.

These inspections document that site remediation is incomplete. The observations of crystals forming from the concrete indicate that additional sampling should be conducted to determine the source. Samples of the roof, slab and foundation base should be analyzed to determine the extent of contamination. Please include this information with ongoing enforcement.

Attached is the CMEL coded as a Sampling Inspection. If you have any questions feel free to call me at 463-7803.

Daniel Brashear

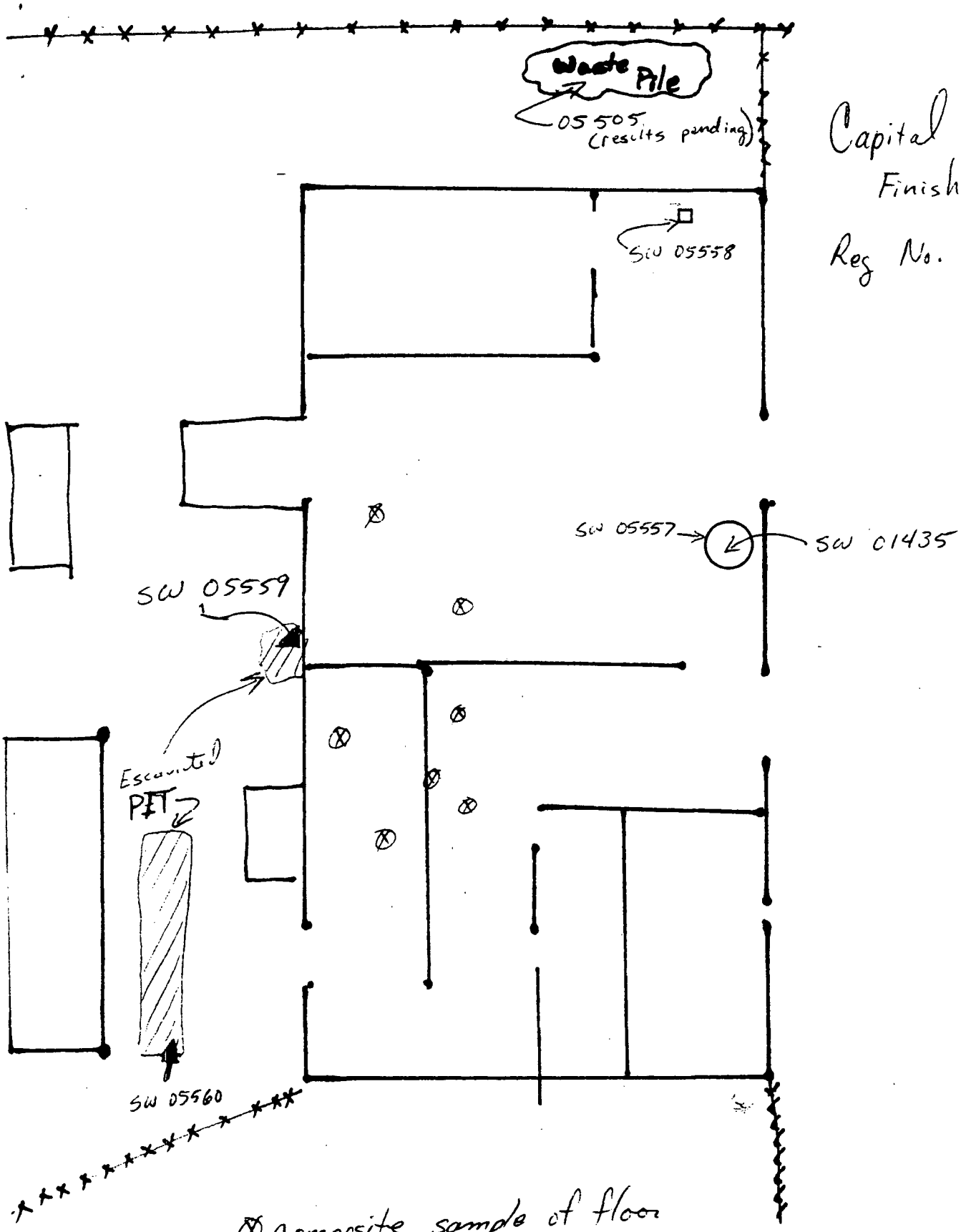
Daniel Brashear

Approval: Wm. John Young

:db

MAY _ 2

FIELD OPERATIONS



Capital Metal Finishing
Reg No. 31593

⊗ composite sample of floor sweepings of crystalline powder
SW 05504 - results pending

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86)

NO. SW 01435 District 14 Org. No. 334 Work No. P416 Lab TDH

Site Name Capital Metal Priority #602

Site Location Warehouse Row

Point of Collection tank on west entrace ≈ 3000 gall - from lid

County _____ Basin _____

Method of Collection Teflon Bailer

Type facility: ☐ Drum; ☒ Tank; ☐ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☐ Other

Time Collected 4:08 (am) (pm) Date Shipped 1-25-90

Add. COC #s AT13546

ODOR; ☒ Yes; ☐ No; Describe _____

JAN 29 P 12:

RECEIVED FEB 07 1990 FIELD OPERATIONS DISTRICT 14

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	Date Mo. (23–24)	Date Day (25–26)	Date Yr. (27–28)
31593			01	24	90

David Brahen (Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86)

NO. SW 01435 PRIORITY # 602

District 14 Org. No. 334 Work No. P416 Lab TDH

Material Sampled: ☐ Solid waste (W); ☒ Liquid waste (L); ☐ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments _____ (continued on back)

Lab Only: Date rec'd JAN 25 '90; cmplt FEB 3 1990; EH-O (8-78); Analyst sign.: [illegible]

Preservation: ☐ None; ☒ Ice; ☐ H_2SO_4; ☐ HNO_3

Other _____

Auxiliary Tags [illegible]

LEACHATE: ☐ EP Toxicity Series; ☐ TWC

2pt LW

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
pH 00403	0.8	Total Ni	mg/l 609		
~~COD~~ 00340		Total Cd	20.4		
~~TOC~~ 00680		Total Zn	530		
~~GC/MS~~		Total Cn	mg/L 2.31		
		Total Cr	2240		

TEXAS WATER COMMISSION TWC 0849 (Rev.05-23-86)

NO. SW 05560

District 14 Org. No. 334 Work No. P416 Lab TDH

Site Name Capital Metal 610

Site Location Warehouse Row

County Travis Basin Colorado

Method of Collection M.C. rinsed jar

Point of Collection Pit on NE corner of site - next to old WW treat. tanks -

Type facility: ☐ Drum; ☐ Tank; ☒ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☐ Other

Time Collected 3:20 (am/pm) Date Shipped 2-7-90

Add. COC #s

ODOR; ☐ Yes; ☒ No; Describe

FEB 6 1990

RECEIVED
MAR 01 1990
FIELD OPERATIONS
DISTRICT 14

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	Card Type (22)	Date Mo. (23–24)	Date Day (25–26)	Date Yr. (27–28)	Sub Code (29)
31593				02	06	90	

(Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86) 610

NO. SW 05560

District 14 Org. No. 334 Work No. P416 Lab TDH

Material Sampled: ☐ Solid waste (W); ☒ Liquid waste (L); ☐ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments May contain CN

1 qt. LW

(continued on back)

Lab Only | Date | rec'd: | cmplt: FEB 23 1990 | EHO 938

Analyst sign.:

Preservation: ☐ None; ☒ Ice; ☐ H_2SO_4; ☐ HNO_3

Other

Auxiliary Tags FEB

LEACHATE: ☐ EP Toxicity Series; ☐ TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
pH		Total Cd	µg/L		
00403	9.3		52~~48~~		
~~COD~~		Total Cr			
00340			332~~234~~		
~~TOC~~		Total Ni			
00680			402		
~~GC/MS~~		Total Zn			
			256		
		Total CN			
			0.19		

TEXAS WATER COMMISSION TWC 0849 (Rev.05-23-86)

District 14 Org. No. 334 Work No. P416 Lab TDH

NO. SW 05557

Site Name Capitol Metal Finishing

Site Location Warehouse Row

County Travis Basin Colorado

Method of Collection teflon scoop - m.c. rinsed jar

Point of Collection bottom and outside at base of green acid tank on west side and inside of building

Type facility: ☐ Drum; ☒ Tank; ☐ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☐ Other

Time Collected 2:30 (am, pm) Date Shipped 2-7-90

Add. COC #s

ODOR; ☐ Yes; ☐ No; Describe did not smell it

RECEIVED MAR 01 1990 FIELD OPERATIONS DISTRICT 14

FEB 13 1990

(Collector's Signature)

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	Cont. Type (22)	Date Mo. (23–24)	Date Day (25–26)	Date Yr. (27–28)	Lab Use (29)
3 1 5 9 3				0 2	0 6	9 0	

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value (71)

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86)

NO. SW 05557

District 14 Org. No. 334 Work No. P416 Lab TDH

Material Sampled: ☒ Solid waste (W); ☐ Liquid waste (L); ☐ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments

1 qt. SW

(continued on back)

Lab Only — Date rec'd: 02/06 cmpl: FEB 23 1990 — Analyst sign.:

Preservation: ☒ None; ☒ Ice; ☐ H_2SO_4; ☐ HNO_3

Other

Auxiliary Tags

LEACHATE: ☐ EP Toxicity Series; ☐ TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value (71)
pH		Total Ni mg/kg			
00403	5.0		108		
~~000~~		TOTAL Cd			
00340			8.8		
~~000~~		TOTAL Zn			
00680			202		
~~GC/MS~~		Total CN mg/L			
			6.5		

TEXAS WATER COMMISSION TWC 0849 (Rev.05 23 86)

NO. SW 05558

District 14 Org. No. 334 Work No. P416 Lab TDH

Site Name Capital Metal 610

Site Location Ware house Row

County Travis Basin Colorado

Method of Collection teflon scoop - M.C. rinsed jar

Point of Collection rat on south side and inside of building - near SW corner

Type facility: ☐ Drum; ☒ Tank; ☐ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☐ Other

Time Collected 2 40 (am/pm) Date Shipped 2-7-90

Add. COC #s

ODOR; ☐ Yes; ☐ No; Describe not smelled

RECEIVED
MAR 01 1990
FIELD OPERATIONS
DISTRICT 14

S.W. Registration (1–9)	Permit Number (10–18)	Page No. (19–21)	Card Type (22)	Date Mo. (23–24)	Date Day (25–26)	Date Yr. (27–28)	Mail Sample (29)
31593				02	06	90	

(Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86)

NO. SW 05558 610

District 14 Org. No. 334 Work No. P414 Lab TDH

Material Sampled: ☒ DB Solid waste (W); ☒ Liquid waste (L); ☐ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments ☒ may contain significant amounts of cyanide

1/2 qt. LW

(continued on back)

Lab Only | Date | rec'd: FEB 23 1990 | cmplt: | EH 0 940 (Lab No)

Analyst sign.: [signature] 2

Preservation: ☐ None; ☒ Ice; ☐ H_2SO_4; ☐ HNO_3

Other

Auxiliary Tags FEB 28 1990

LEACHATE: ☐ EP Toxicity Series; ☐ TWC

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
~~pH~~ DB PH		Total Cd	mg/L	EP TOX mg/L ~~DB~~ DB Cd	
00403	3.7		102		101
~~COD~~		Total Cr		EP TOX	Cr
00340			28000		27900
~~TOC~~		Total Ni			
00680			2770		
~~GC/MS~~		Total Zn			
			699		
		Total CN			
			<0.4		

TEXAS WATER COMMISSION TWC 0849 (Rev.05 23 86)

NO. SW 05559

District 14 Org. No. 334 Work No. P416 Lab TDH

Site Name Capital Metal

Site Location Warehouse Row

County Travis Basin Colorado

Method of Collection teflon scoop

Point of Collection base of slab on east side and behind of build - outside - side wall of escavation

Type facility: ☐ Drum; ☐ Tank; ☐ Impoundment; ☐ Landfill ☐ Waste pile; ☐ Landfarm; ☒ Other soil

Time Collected 3:00 am, pm Date Shipped 2-7-90

Add. COC #s

ODOR; ☐ Yes; ☒ No; Describe

FEB 8 [illegible]

S.W. Registration	Permit Number	Page No.	Date Mo.	Day	Yr.
1 9	10 18	19 21	23 24	25 26	27 28
3 1 5 9 3			0 2	0 6	9 0

(Collector's Signature)

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71

TEXAS WATER COMMISSION TWC-0849 (Rev.05-23-86)

NO. SW 05559

District 14 Org. No. 334 Work No. P416 Lab TDH

Material Sampled: ☐ Solid waste (W); ☐ Liquid waste (L); ☒ Soil (E); ☐ Well (M); ☐ Stream (S); ☐ Other (O)

Comments

(continued on back)

Lab Only Date rec'd: FEB 28 1990 cmplt: FEB 0 939

Analyst sign.: 2

Preservation: ☐ None; ☒ Ice; ☐ H_2SO_4; ☐ HNO_3

Other

Auxiliary Tags MAR 1 [illegible]

LEACHATE: ☐ EP Toxicity Series; ☐ TWC

RECEIVED MAR 05 1990 FIELD OPERATIONS DISTRICT 14

3/4 qt soil

30 Code	35 Parameter Value	44 Code	49 Parameter Value	58 Code	63 Parameter Value 71
~~RH~~		Total Cd mg/kg		EP TOX Cd mg/L	
0 0 4 0 3			1 5 6		0 . 5 8 4
~~COD~~		Total Cr		EP Tox Cr	
0 0 3 4 0			2 7 8 0		7 2 . 0
~~TOC~~		Total Ni			
0 0 6 8 0			1 1 0 0		
~~GC/MS~~		Total Zn			
			1 9 3		
		Total CN			
			2 4 . 4		

REFERENCE 16

code of federal regulations

Protection of Environment

40

PARTS 190 TO 299

Revised as of July 1, 1989

NATIONAL ARCHIVES AND RECORDS ADMINISTRATION
1985

§ 261.21 Characteristic of ignitability.

(a) A solid waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

(1) It is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume and has flash point less than 60°C (140°F), as determined by a Pensky-Martens Closed Cup Tester, using the test method specified in ASTM Standard D-93-79 or D-93-80 (incorporated by reference, see § 260.11), or a Setaflash Closed Cup Tester, using the test method specified in ASTM Standard D-3278-78 (incorporated by reference, see § 260.11), or as determined by an equivalent test method approved by the Administrator under procedures set forth in §§ 260.20 and 260.21.

(2) It is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard.

(3) It is an ignitable compressed gas as defined in 49 CFR 173.300 and as determined by the test methods described in that regulation or equivalent test methods approved by the Administrator under §§ 260.20 and 260.21.

(4) It is an oxidizer as defined in 49 CFR 173.151.

(b) A solid waste that exhibits the characteristic of ignitability, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number of D001.

[45 FR 33119, May 19, 1980, as amended at 46 FR 35247, July 7, 1981]

§ 261.22 Characteristic of corrosivity.

(a) A solid waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties:

(1) It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using either an EPA test method or an equivalent test method approved by the Administrator under the procedures set forth in §§ 260.20 and 260.21. The EPA test method for pH is specified as Method 5.2 in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (incorporated by reference, see § 260.11).

(2) It is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55°C (130°F) as determined by the test method specified in NACE (National Association of Corrosion Engineers) Standard TM-01-69 as standardized in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (incorporated by reference, see § 260.11) or an equivalent test method approved by the Administrator under the procedures set forth in §§ 260.20 and 260.21.

(b) A solid waste that exhibits the characteristic of corrosivity, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number of D002.

[45 FR 33119, May 19, 1980, as amended at 46 FR 35247, July 7, 1981]

§ 261.23 Characteristic of reactivity.

(a) A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has *any* of the following properties:

(1) It is normally unstable and readily undergoes violent change without detonating.

(2) It reacts violently with water.

(3) It forms potentially explosive mixtures with water.

(4) When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

(5) It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

(6) It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

(7) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.

(8) It is a forbidden explosive as defined in 49 CFR 173.51, or a Class A explosive as defined in 49 CFR 173.53

or a Class B explosive as defined in 49 CFR 173.88.

(b) A solid waste that exhibits the characteristic of reactivity, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number of D003.

§ 261.24 Characteristic of EP toxicity.

(a) A solid waste exhibits the characteristic of EP toxicity if, using the test methods described in Appendix II or equivalent methods approved by the Administrator under the procedures set forth in §§ 260.20 and 260.21, the extract from a representative sample of the waste contains any of the contaminants listed in Table I at a concentration equal to or greater than the respective value given in that Table. Where the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering, is considered to be the extract for the purposes of this section.

(b) A solid waste that exhibits the characteristic of EP toxicity, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number specified in Table I which corresponds to the toxic contaminant causing it to be hazardous.

TABLE I—MAXIMUM CONCENTRATION OF CONTAMINANTS FOR CHARACTERISTIC OF EP TOXICITY

EPA hazardous waste number	Contaminant	Maximum concentration (milligrams per liter)
D004	Arsenic	5.0
D005	Barium	100.0
D006	Cadmium	1.0
D007	Chromium	5.0
D008	Lead	5.0
D009	Mercury	0.2
D010	Selenium	1.0
D011	Silver	5.0
D012	Endrin (1,2,3,4,10,10-hexachloro-1,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo, endo-5,8-dimethano-naphthalene.	0.02
D013	Lindane (1,2,3,4,5,6-hexa- chlorocyclohexane, gamma isomer.	0.4
D014	Methoxychlor (1,1,1-Trichloro-2,2-bis [p-methoxyphenyl]ethane).	10.0
D015	Toxaphene ($C_{10}H_{10}Cl_8$, Technical chlorinated camphene, 67-69 percent chlorine).	0.5

TABLE I—MAXIMUM CONCENTRATION OF CONTAMINANTS FOR CHARACTERISTIC OF EP TOXICITY—Continued

EPA hazardous waste number	Contaminant	Maximum concentration (milligrams per liter)
D016	2,4-D, (2,4-Dichlorophenoxyacetic acid).	10.0
D017	2,4,5-TP Silvex (2,4,5-Trichlorophenoxypropionic acid).	1.0

Subpart D—Lists of Hazardous Wastes

§ 261.30 General.

(a) A solid waste is a hazardous waste if it is listed in this subpart, unless it has been excluded from this list under §§ 260.20 and 260.22.

(b) The Administrator will indicate his basis for listing the classes or types of wastes listed in this Subpart by employing one or more of the following Hazard Codes:

Ignitable Waste	(I)
Corrosive Waste	(C)
Reactive Waste	(R)
EP Toxic Waste	(E)
Acute Hazardous Waste	(H)
Toxic Waste	(T)

Appendix VII identifies the constituent which caused the Administrator to list the waste as an EP Toxic Waste (E) or Toxic Waste (T) in §§ 261.31 and 261.32.

(c) Each hazardous waste listed in this subpart is assigned an EPA Hazardous Waste Number which precedes the name of the waste. This number must be used in complying with the notification requirements of Section 3010 of the Act and certain recordkeeping and reporting requirements under Parts 262 through 265, 268, and Part 270 of this chapter.

(d) The following hazardous wastes listed in § 261.31 or § 261.32 are subject to the exclusion limits for acutely hazardous wastes established in § 261.5: EPA Hazardous Wastes Nos. FO20, FO21, FO22, FO23, FO26, and FO27.

[45 FR 33119, May 19, 1980, as amended at 48 FR 14294, Apr. 1, 1983; 50 FR 2000, Jan. 14, 1985; 51 FR 40636, Nov. 7, 1986]

§ 261.31 Hazardous wastes from non-specific sources.

The following solid wastes are listed hazardous wastes from non-specific sources unless they are excluded under §§ 260.20 and 260.22 and listed in Appendix IX.

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)

REFERENCE 17

RECORD OF COMMUNICATION

TYPE: Phone Call **DATE:** 8/23/91 **TIME:** 2:30 p.m.

TO: Mark Evans
Applications Unit
Surface Water Section

FROM: Warren P. Mitchell
FIT Biologist
ICF Technology, Inc.

SUBJECT: Names and uses of intakes for 15 miles downstream of the confluence of Blunn Creek and the Colorado River.

SUMMARY OF COMMUNICATION

In a telephone conversation with Mark Evans with the TWC, the following information was disclosed:

The following is a listing of names and uses assigned to surface water intakes for 15 miles downstream of the confluence of Blunn Creek and the Colorado River. This is a follow-up on information obtained on a November 14, 1990 memorandum (attachment).

TX 1088:	Longhorn Dam.
065800:	City of Austin/Municipal-industrial use.
065000:	Capital Aggregate/Mining use.
064700:	(b) (6) [redacted]/Irrigation.
061350:	(b) (6) [redacted]/Irrigation.
061320:	TXI/ Mining.
061310:	Syntex Materials/Mining.
061000:	Shepherd Farms/Irrigation.

TEXAS WATER COMMISSION

B. J. Wynne, III, Chairman
John E. Birdwell, Commissioner
Cliff Johnson, Commissioner

John J. Vay, General Counsel
Michael E. Field, Chief Hearings Examiner
Brenda W. Foster, Chief Clerk

Allen Beinke, Executive Director

November 14, 1990

Mr. Warren Mitchell
I C F
1509 Main ST, STE 900
Dallas, TX 75201-4809

Re: Water Rights Downstream of the Confluence of Blunn Creek and the Colorado River
Colorado River Basin
Travis County

Dear Mr. Mitchell:

Enclosed please find a map showing water rights (8) for 15 mil downstream of the confluence of Blunn Creek and the Colorado River as p our conversation today. Please note that Certificate of Adjudication No. 14-5394 is shown on the Colorado River but is listed on Onion Creek.

If you have any other questions concerning this matter, please call me at 512/371-6389.

Sincerely,

Mark Evans
Applications Unit
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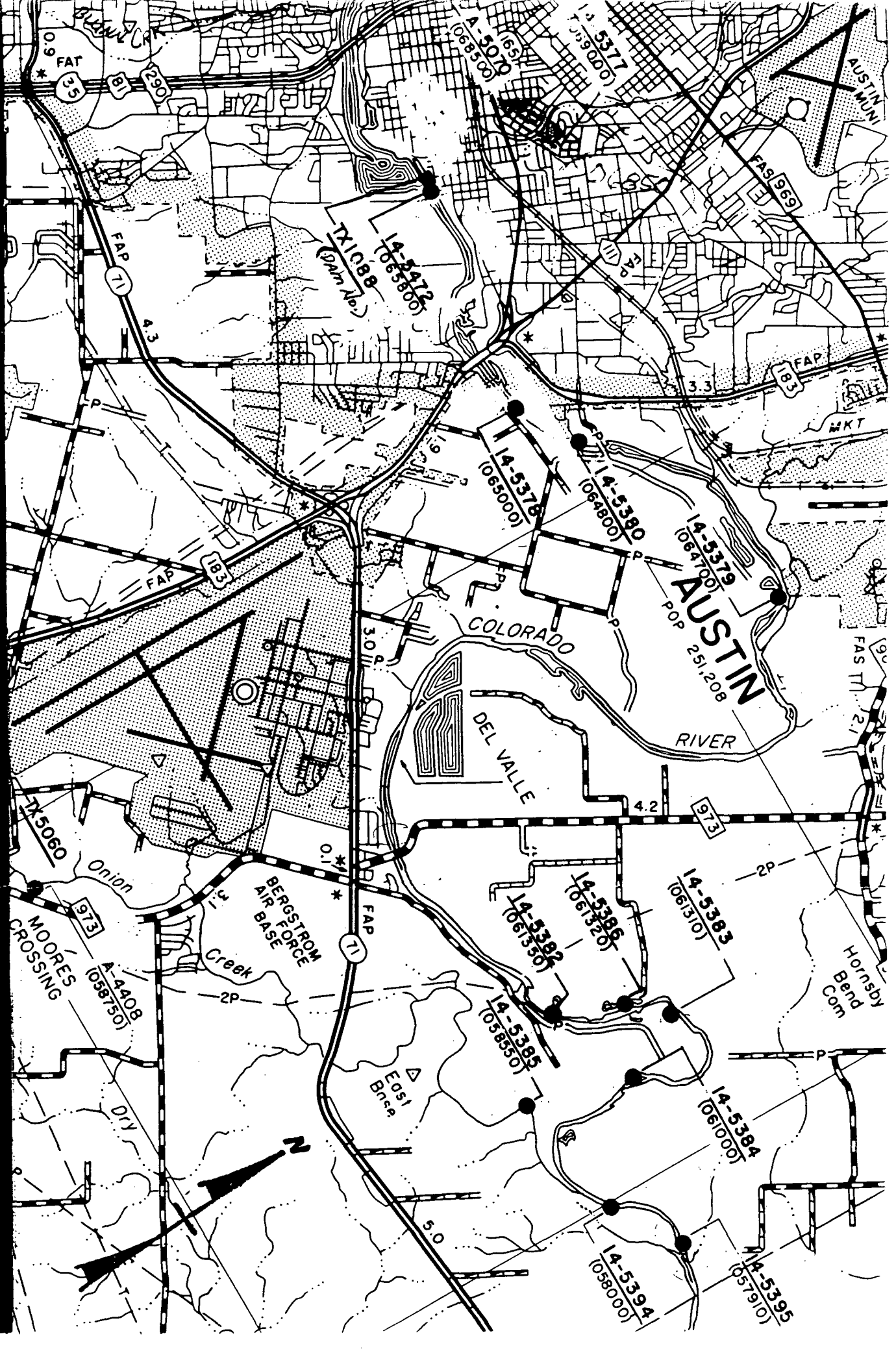

AUSTIN
POP 251,208
COLORADO
RIVER
DEL VALLE
BERGSTROM AIR FORCE BASE
MOORES CROSSING
Onion
Creek
Dry
East Base
Hornsby Bend Com
AUSTIN MUNI
FAS 969
FAP 71
FAP 183
FAP 183
FAP 71
FAS 973
973
TX1088 (Dam No.)
TX5060
A-5070 (068500)
14-5377 (069000)
14-5472 (065800)
14-5378 (065000)
14-5380 (064800)
14-5379 (064700)
14-5382 (061350)
14-5386 (061320)
14-5383 (061310)
14-5385 (058550)
14-5384 (061000)
14-5394 (058000)
14-5395 (057910)
A-4408 (058750)
MKT
N

REFERENCE 18

TEXAS SURFACE WATER QUALITY STANDARDS

Informational Copy

Texas Water Commission

December 1986

PREFACE

The Texas Surface Water Quality Standards are the current revision of a document, Water Quality Requirements, which the Texas Water Quality Board staff developed in early 1967. In order to comply with the Federal Water Pollution Control Act Amendments of 1972, the state's standards were revised and approved by the Environmental Protection Agency (EPA) on October 25, 1973. The standards have been amended on five subsequent occasions. In October 1974, the standards for the San Jacinto Basin and the Trinity-San Jacinto Coastal Basin were revised. In January 1975, the standards for designated segments which traverse the Edwards Aquifer were revised. Also, in October 1975, minor revisions of numerical values were incorporated into the Standards document, which was approved by EPA on February 9, 1976. In March 1981, the last required triennial revision of the standards was approved by EPA. A revision of the numerical criteria for the Houston Ship Channel area was approved in April 1984.

Major revisions have been incorporated into the current Texas Surface Water Quality Standards, which were compiled by the Texas Department of Water Resources, approved by the Texas Water Development Board on December 20, 1984, and approved by EPA on February 28, 1985. Under Texas Senate Bill 249, the responsibility for the application and development of the standards was assumed by the Texas Water Commission on September 1, 1985. Water quality standards were written and based on the strategies which are being developed to meet the 1988 goals of Public Law 95-217, as amended by Public Law 97-117. These goals require that, where attainable, water quality support aquatic life and contact recreation uses.

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(22) "Standards" - the designation of water bodies for desirable uses and the general and numerical criteria deemed necessary to protect those uses.

(23) "Suspended solids" - total suspended matter in water which is equivalent to nonfiltrable residue, as defined in the fifteenth edition of Standard Methods for the Examination of Water and Wastewater.

(24) "Water quality management (WQM) program" - the commission's overall program for attaining and maintaining water quality consistent with state standards, as authorized under the Texas Water Code, the commission's rules set forth in the Texas Administrative Code, and §§106, 205(j), 208, 303(e), and 314 of the Clean Water Act (33 USC §1251, et seq.).

(b) Abbreviations.

(1) "AP" - aquifer protection.

(2) "AS" - agricultural water supply.

(3) "CFR" - Code of Federal Regulations.

(4) "CR" - contact recreation.

(5) "CPP" - continuing planning process.

(6) "DO" - dissolved oxygen.

(7) "E" - exceptional quality aquatic habitat.

(8) "°F" - degree(s) Fahrenheit.

(9) "ft^3/s" - cubic feet per second.

(10) "H" - high quality aquatic habitat.

(11) "I" - intermediate quality aquatic habitat.

(12) "IS" - industrial water supply.

(13) "L" - limited quality aquatic habitat.

(14) "mg/L" - milligrams per liter.

(15) "mL" - milliliter.

(16) "N" - navigation.

(17) "NCR" - noncontact recreation.

(18) "NPDES" - National Pollutant Discharge Elimination System, as set out in §402 of the Clean Water Act (33 USC §1342).

(19) "PS" - public water supply.

(20) "7Q2" - seven-day, two-year low flow.

(21) "S" - shellfish waters.

(22) "TDS" - total dissolved solids.

(23) "USC" - United States Code.

(24) "USEPA" - U.S. Environmental Protection Agency.

(25) "USGS" - U.S. Geological Survey.

(26) "WQM" - water quality management.

SECTION VI. APPLICATION OF STANDARDS.

(a) General Criteria. General criteria set forth in Section VII of this title (relating to General Criteria) apply to all surface waters in the state at all times and specifically apply to substances attributed to waste discharges or the activities of man. General criteria do not apply to those instances in which surface water, as a result of natural phenomena, occasionally exhibit characteristics beyond the limits established by Section VII of this title (relating to General Criteria). Specific exemptions stated in this section or in a classified segment water quality standard supersede general criteria.

(b) Numerical Criteria. Numerical criteria may apply to one or more water uses and are set forth in Section VIII of this title (relating to Numerical Criteria) and in Section IX of this title (relating to Water Uses). The criteria apply to segments listed in Appendix A of Section XI of this title (relating to Appendices A through C) and specifically apply to substances attributed to waste discharges or the activities of man. Numerical criteria do not apply to surface waters which, as a result of natural phenomena, occasionally exhibit characteristics beyond the limits established by Section VIII of this title (relating to Numerical Criteria) and Section IX of this title (relating to Water Uses).

(c) Flow Criteria.

(1) Flow criteria in Appendix B of Section XI of this title (relating to Appendices A through C) are solely for the

(2) Table 1. Temperature Criteria for Surface Waters.

Surface Water Bodies	Temperature Criteria	
	Maximum Temperature	Maximum Temperature Differential (rise over ambient)
Freshwater Streams	See Appendix A of Section XI of this title (relating to Appendices A through C) for classified segment value	5°F
Freshwater Impoundments	See Appendix A of Section XI of this title (relating to Appendices A through C) for classified segment value	3°F
Tidal River Reaches, Bay and Gulf Waters		
Fall, Winter, Spring,	95°F	4°F
Summer (June, July, August)	95°F	1.5°F

(f) Bacteriological criteria.

(1) Bacteriological criteria are for fecal coliform organisms and consist of a measure of general quality and a limit on variations from general quality.

(2) Criteria for recreational uses are established in Section IX of this title (relating to Water Uses) and specifically listed for classified segments in Appendix A of Section XI of this title (relating to Appendices A through C).

(3) Criteria for shellfish waters are established in Section IX of this title (relating to Water Uses) and specifically listed for classified segments in Appendix A of Section XI of this title (relating to Appendices A through C).

SECTION IX. WATER USES.

The following list represents uses and supporting criteria deemed desirable by the commission. The order of the following list does not denote priority of use.

(a) Recreation. Recreational use consists of two subcategories, contact recreation waters and noncontact recreation waters.

(1) Contact recreation waters.

(A) Fecal coliform content shall not exceed two-hundred (200) colonies per one-hundred (100) mL as a geometric mean based on a representative sampling of not less than five (5) samples collected over not more than thirty (30) days.

(B) Fecal coliform content shall not equal or exceed four-hundred (400) colonies per one-hundred (100) mL in more than ten (10) percent of all samples, based on a representative sampling of not less than five (5) samples taken during any thirty (30) day period. If ten (10) or fewer samples collected within a thirty (30) day period are analyzed, no more than one (1) sample shall exceed four-hundred (400) colonies per one-hundred (100) mL.

(2) Noncontact recreation waters.

(A) Fecal coliform content shall not exceed two-thousand (2,000) colonies per one-hundred (100) mL as a geometric mean based on a representative sampling of not less than five (5) samples collected over not more than thirty (30) days.

(B) Fecal coliform content shall not equal or exceed four-thousand (4,000) colonies per one-hundred (100) mL in more than ten (10) percent of all samples, but based on at least five (5) samples, taken during any thirty (30) day period. If ten (10) or fewer samples collected within a thirty (30) day period are analyzed, no more than one (1) sample shall exceed four-thousand (4,000) colonies per one-hundred (100) mL.

(b) Domestic water supply.

(1) Use categories. Domestic water supply consists of two use subcategories, public water supply and aquifer protection.

(A) Public water supply. Segments designated for public water supply are those known to be used, or exhibiting characteristics that would allow them to be used as the supply source for community and non-community water supply systems, as defined by regulations promulgated pursuant to the Safe Drinking Water Act (42 USC §300f, et seq.).

(B) Aquifer protection. Segments designated for aquifer protection are capable of recharging the Edwards Aquifer. In accordance with commission rules, the principal purpose of this use designation is to protect the quality of water infiltrating into and recharging the aquifer.

(2) Use criteria. The following use criteria apply to both domestic water supply use subcategories.

(A) Radioactivity associated with dissolved minerals in the freshwater portions of river basin and coastal basin waters should not exceed levels established by regulations promulgated pursuant to the Safe Drinking Water Act unless the conditions are ambient.

(B) Surface waters utilized for domestic water supply shall not exceed toxic material concentrations that prevent them from being treated to meet regulatory requirements promulgated pursuant to the Safe Drinking Water Act.

(C) Chemical and microbiological quality of surface waters used for domestic water supply should conform to regulatory requirements promulgated pursuant to the Safe Drinking Water Act. Surface waters that do not meet drinking water standards but that are the only supply source may be designated for public water supply where chemical and microbiological constituents do not pose a potential health hazard.

(c) Aquatic life.

(1) Aquatic life subcategories. ~~The establishment of~~ numerical criteria for aquatic life is highly dependent on desired use, sensitivities of usual aquatic communities, and local physical and chemical characteristics. Five subcategories of use are established. They include limited quality, intermediate quality, high quality, and exceptional quality aquatic habitat and shellfish waters. Aquatic life subcategories designated for segments listed in Appendix A of Section XI of this title (relating to Appendices A through C) attempt to recognize the natural variability of aquatic community requirements and local environmental conditions.

(2) Limited, intermediate, high, and exceptional quality aquatic habitat.

(A) Limited quality aquatic habitat. Dissolved oxygen (DO) shall be maintained at not less than three (3) mg/L for freshwater aquatic habitat.

(B) Intermediate quality aquatic habitat. Dissolved oxygen (DO) shall be maintained at not less than four (4.0) mg/L for freshwater aquatic habitat and not less than three (3.0) mg/L for saltwater aquatic habitat.

(C) High quality aquatic habitat. Dissolved oxygen (DO) shall be maintained at not less than five (5.0) mg/L for freshwater aquatic habitat and not less than four (4.0) mg/L for saltwater aquatic habitat.

(D) Exceptional quality aquatic habitat. Dissolved oxygen (DO) shall be maintained at not less than six (6.0) mg/L for freshwater aquatic habitat and not less than five (5.0) mg/L for saltwater aquatic habitat.

(3) Shellfish waters.

(A) A one-thousand (1,000) foot buffer zone, measured from the shoreline at ordinary high tide, is established for all bay and gulf waters, except those contained in river or coastal basins as defined in Section III of this title (relating to Classification of Surface Waters). Fecal coliform content in buffer zones shall not exceed two-hundred (200) colonies per one-hundred (100) mL as a geometric mean of not less than five (5) samples collected over not more than thirty (30) days, or equal or exceed four-hundred (400) colonies per one-hundred (100) mL in more than ten (10) percent of all samples taken during a thirty (30) day period.

(B) Median fecal coliform concentration in bay and gulf waters, exclusive of buffer zones, shall not exceed fourteen (14) colonies per one-hundred (100) mL, with not more than ten (10) percent of all samples exceeding forty-three (43) colonies per one-hundred (100) mL.

(C) Shellfish waters should be maintained so that heavy metal and pesticide concentrations do not cause shellfish to exceed accepted guidelines for the protection of public health.

(D) Shellfish areas open to harvesting are identified by the Texas Department of Health in "Classification of Shellfish Harvesting Areas" maps.

(4) Toxic materials.

(A) Concentrations of non-persistent toxic materials shall not exceed one-tenth (0.1) of the ninety-six (96) hour median lethal concentration (LC_{50}) for a representative indigenous aquatic organism.

COLORADO RIVER BASIN		USES				CRITERIA						
SEGMENT NUMBER	SEGMENT NAME	RECREATION	AQUATIC LIFE	DOMESTIC WATER SUPPLY	OTHER	CHLORIDE (mg/L) Annual average not to exceed	SULFATE (mg/L) Annual average not to exceed	TOTAL DISSOLVED SOLIDS (mg/L) Annual average not to exceed	DISSOLVED OXYGEN (mg/L) Not less than	pH RANGE	FECAL COLIFORM (#/100 mL) Thirty-day geometric mean not to exceed	TEMPERATURE (°F) Not to exceed
1421	Concho River	CR	H	PS		600	500	2,000	5.0	6.5-9.0	200	90
1422	Lake Nasworthy	CR	H	PS		450	400	1,500	5.0	6.5-9.0	200	93
1423	Twin Buttes Reservoir	CR	H	PS		150	150	700	5.0	6.5-9.0	200	90
1424	Middle Concho/South Concho River	CR	H	PS		150	150	700	5.0	6.5-9.0	200	90
1425	O. C. Fisher Lake	CR	H	PS		150	150	700	5.0	6.5-9.0	200	90
1426	Colorado River Below E. V. Spence Reservoir	CR	H	PS		425	750	1,400	5.0	6.5-9.0	200	91
1427	Onion Creek	CR	H	PS		50	50	300	5.0	6.5-9.0	200	90
1428	Colorado River Below Town Lake	CR	H	PS		105	55	425	5.0	6.5-9.0	200	95
1429	Town Lake	CR*	H	PS		70	50	410	5.0	6.5-9.0	200	90
1430	Barton Creek	CR	H			40	40	500	5.0	6.5-9.0	200	90
1431	Mid Pecan Bayou	NCR				410	120	1100	2.0	6.5-9.0	2000	90
1432	Upper Pecan Bayou	CR	H	PS		190	140	760	5.0	6.5-9.0	200	90

* While Segment 1429 may exhibit quality characteristics which would make it suitable for contact recreation, the use is prohibited by loca regulation for reasons unrelated to water quality.