Hull & associates, inc.

April 27, 2009

David P. Simmons, P.E.
Brownfield Restoration Group
PO Box 215
43 Panama Street, Suite 1
Harpers Ferry, WV 25425

RE: RCRA 2020 Corrective Action Universe at RPM – Carboline Facility, 125 Fairgrounds Road, Xenia, Ohio, EPA ID NO. OHD030963615; BRG001.300.0005

Dear Mr. Simmons;

Hull & Associates, Inc (Hull) submits this letter report to Brownfield Restoration Group (BRG) documenting our Site Visit observations and review of available documents regarding Solid Waste Management Units (SWMU-2, SWMU-3, and SWMU-6) and Area of Concern (AOC-1) at the former Carboline facility located at 125 Fairgrounds Road in Xenia, Greene County, Ohio. Hull conducted Site visits on January 17, 2009 and April 11, 2009 to inspect SWMU-2 (Hazardous Waste Storage Area), SWMU-3 (D-Waste Storage Tank), SWMU-6 (Back Pad) and AOC-1 (Solvent Blending Tank Area) and reviewed a series of documents provided by BRG. A reference list of key documents is provided in Attachment A. Figure 1 is a Site Plan showing the locations of these SWMUs and AOC.

Background

The Site is the location of the former Carboline paint and coating facility that operated from 1962 to 2000. The manufacturing process reportedly consisted of the blending and/or milling of raw materials such as pigments, filler, solvents, resins, extenders and other additives into a suitable liquid or paste that was packaged in 1-gallon, 5-gallon, and 55-gallon containers for sale (Woodward-Clyde, 1990). The facility reportedly ceased operations in 2000. Removal of regulated substances and equipment removal was documented under Ohio EPA's Cessation of Regulation Operations (CRO) Documentation Program.

On April 5, 2007, USEPA Region V sent a letter to the former owner (Carboline) indicating that the Xenia facility is included in the 2020 Corrective Action Universe (2020 CAU) under the Resource Conservation and Recovery Act (RCRA). Carboline forwarded that letter to BRG, and BRG subsequently contacted the USEPA to obtain clarification of the impact of being placed on the 2020 CAU. The primary reason for being placed on the 2020 CAU is that the facility operated under interim status following the submittal of a Part A Permit Application in 1980. Although the company withdrew the Part A Application in 1982, they apparently did not close one of the two permitted units in accordance with RCRA.

Following its contact with the US EPA, BRG also received a letter from US EPA (dated July 17, 2007) requesting information that would address the recommendations for further action in a 1992 Preliminary Assessment/Visual Site Inspection (PA/VSI). The PA/VSI was part of USEPA Region V's Environmental Priorities Initiative, which was created "to identify and address RCRA facilities that have a high priority for corrective action under applicable RCRA and CERCLA authorities." The PA/VSI was the "first step in prioritizing facilities for corrective action." The

6397 Emerald Parkway • Suite 200 • Dublin, Ohio 43016
614.793.8777 fax 614.793.9070 www.hullinc.com

PA/VSI for this facility contained recommendations for subsurface soil sampling in the following areas:

SWMU-2: Hazardous Waste Storage Area
SWMU-3: D-Waste Storage Tank
SWMU-6: Back Pad
AOC-1: Solvent Blending Tank Area

Current Property Use and Property Visit Observations
A site visit was conducted by Hull representatives and BRG on January 17, 2009 to inspect the SWMUs and AOC identified by USEPA. The property is presently occupied by two tenants who appear to utilize the majority of the property with the exception of the former manufacturing building in the southeastern portion of the property. The tenants are Elsome Trucking and Seek-n-Destroy Paint Ball. The day of the January Site visit and walkover, the weather was overcast, with light flurries and temperatures in the 20's. A dusting of snow covered the ground surface. Hull conducted another visit on April 11, 2009 to inspect the SWMUs and AOC without the presence of snow. The weather during the April Site visit was sunny with temperatures in the low 50's.

The former hazardous waste storage area (SWMU-2) and former D-waste storage tank area (SWMU-3) occupy a portion of a larger maintained grass field reportedly used by Seek-n-Destroy as a paint ball course north of the former product storage and raw material warehouse. Although, there was a dusting of snow covering the ground during the January visit, no distressed vegetation, stained soil, or evidence of the former storage areas was observed. Hull returned to the Site on April 11, 2009 to further inspect the area, minus the snow covering. No distressed vegetation, stained soil, or evidence of the former storage areas was observed. Remnants of spent paint balls were observed scattered in this area.

The concrete back pad (SWMU-6) is situated in the western portion of the site. It consists of an uncovered concrete pad measuring approximately 50 feet by 200 feet. During the Site visit, the back pad was intact and was generally in good condition. Cracks were observed in the concrete pad predominantly in the southern third of the pad with fewer observed cracks in the northern portion of the pad. Many of the cracks appeared surficial, but some likely penetrated the concrete pad based on the presence of vegetation growing in the cracks. Dried paint residue was observed on the concrete pad, but was generally limited in extent to small isolated areas. Some of the dried paint appeared to be attributed to paint ball splatter. No staining or dried paint was observed around the perimeter of the concrete pad. Based on observations, it appears that any spills in this area were likely minor and restricted to small localized areas on the concrete surface.

Three solvent blending tanks (AOC-1) formerly occupied an area near the southeast corner of the manufacturing building. The concrete secondary containment surrounding the three former solvent blending tanks was intact and appeared to be in good condition. The three solvent above ground storage tanks had been previously removed. No cracks were observed within the interior of the containment structure. The northern portion of the secondary containment butted against a portion of the manufacturing building. Soil, debris piles and clean, emptied above ground storage tanks were present adjacent to the containment area to the south. Inspection of the ground surface in this area was limited due to the debris covering the ground and snow and

ice. In April, the debris was still observed and standing water with algae was present. No sheen was observed on the standing water and no staining or distressed vegetation was observed on the ground surface where visible.

Photographs of the April visit showing the SWMUs and AOC are included in Attachment B.

Discussion on SWMUs and AOC

SWMU 2 (Hazardous Waste Storage Area)
The PA/VSI indicates that this unit was closed and certified by a professional Engineer in 1982, but continued to operate as a less than 90-day hazardous waste storage area. At the time of the inspection, hazardous waste stored in this area included: waste paint material as F003, F005, D001, D005, D007, and D008; halogenated waste paint thinner as F001, F003, and F005; and miscellaneous dust as D007 and D008. According to the PA/VSI, in 1984 and 1985, USEPA and Ohio EPA respectively acknowledged a change in the facility's status from that of a transport, storage and disposal (TSD) facility to that of a generator with storage of waste less than 90 days. Although no releases had been documented from this unit, the PA/VSI recommended subsurface sampling due to observed stained soil in the vicinity of this area.

Carboline indicated in a November 2, 1994 letter to USEPA Region V that the hazardous waste storage area referenced in the PA/VSI was decommissioned and moved to a contained hazardous waste storage area near the southeastern portion of the manufacturing building.

A January 5, 2000 letter to Carboline from Ohio EPA indicated that the facility appears to be in substantial compliance with current applicable hazardous waste management regulations. On January 22, 2001, Ohio EPA representatives conducted the final walkthrough associated with the CRO inspection (CRO Inspection Report; March 14, 2001). Ms. Altman of Ohio EPA reportedly indicated during a February 14, 2008 teleconference call with Mr. Dave Simmons of BRG that during the CRO visits, a complete site walkthrough is performed and during the visit for this facility no stained soils were noted that would warrant further investigation. No violations of Ohio's CRO laws and rules were identified by Ohio EPA.

During the Site walkover by Hull in January and April 2009, no distressed vegetation, stained soil, or evidence of the former storage areas was observed.

SWMU 3 D-Waste Storage Tank
SWMU-3 was a 6,000-gallon, single wall steel above ground tank that was used to accumulate waste paint materials (D001, D007, and D008) for less than 90-days. The waste was removed in bulk by a contractor for off-property incineration. The 1992 PA/VSI indicated the unit was listed on the 1980 Part A permit application for the facility and that no releases from the unit were documented. It recommended subsurface sampling due to observed stained soil in the vicinity of the tank and staining on the tank. It also recommended an investigation of the closure status of the tank under RCRA.

Carboline closed the D-Waste storage tank in 1993. In April 1993, the tank was cleaned out, cut into pieces and scrapped at Xenia Iron and Metal. Tank residuals were drummed and disposed of at Envirosafe in Oregon, Ohio. The tank was closed after Carboline added a contained D-Waste storage tank (Carboline letter to USEPA; November 2, 1994). The new

location for the D-Waste storage tank appears to have been located near the southeast corner of the manufacturing building adjacent to the contained hazardous waste storage area.

A January 5, 2000 letter to Carboline from Ohio EPA indicated that the facility appears to be in substantial compliance with current applicable hazardous waste management regulations. On January 22, 2001, Ohio EPA representatives conducted the final walkthrough associated with the CRO inspection (CRO Inspection Report; March 14, 2001). Ms. Altman of Ohio EPA reportedly indicated during a February 14, 2008 teleconference call with Mr. Dave Simmons of BRG that during the CRO visits, a complete site walkthrough is performed and during the visit for this facility no stained soils were noted that would warrant further investigation. No violations of Ohio's CRO laws and rules were identified by Ohio EPA.

During the Site walkover by Hull in January and April 2009, no distressed vegetation, stained soil, or evidence of the former storage areas was observed.

SWMU 6 Back Pad

Based on the November 2, 1994 letter from Carboline to US EPA Region V, this area was not used to store off-specification paint. It was used to store finished goods during peak inventory periods. During the PA/VSI, the inspector appears to have erroneously identified this area as storing off-specification paint prior to disposal, although the report indicates unsold paint is shipped offsite as waste. Due to evidence of spills and cracked concrete in this area, PA/VSI recommended subsurface sampling.

Between May 1992 and November 2, 1994, the facility reportedly ceased using the back pad to store finished goods. A January 5, 2000 letter to Carboline from Ohio EPA indicated that the facility appears to be in substantial compliance with current applicable hazardous waste management regulations. In addition, the final walkthrough associated with the CRO inspection (see March 14, 2001 report) did not identify any stained soil requiring further investigation (BRG teleconference call with Ms. Altman of Ohio EPA; February 14, 2008). No violations of Ohio's CRO laws and rules were identified by Ohio EPA.

As indicated previously, cracks were observed in the concrete pad during the Site visits conducted by Hull. Many of the cracks appeared surficial, but some likely penetrated the concrete pad based on the presence of vegetation growing in the cracks. Dried paint residue was observed on the concrete pad, but was generally limited in extent to small isolated areas. No staining or dried paint was observed around the perimeter of the concrete pad. Based on observations, it appears that any spills in this area were likely minor and restricted to small localized areas on the concrete surface.

AOC 1 Solvent Blending Tank Area

This area was occupied by three solvent blending tanks, each with a capacity of 600 gallons. Two documented spills occurred from the solvent blending tanks; one in August 1991 and the other in March 1992. In August 1991, 20 gallons of butyl cellosolve was released to Shawnee Creek and in March 1992, more than 800 gallons of a mixture of methyl ethyl ketone and toluene was released to Shawnee Creek. The November 2, 1994 letter from Carboline to US EPA Region V indicated that the PA/VSI incorrectly identified the August 1991 material as methanol. Since two spills had been reported from this area and cracks existed in the adjacent loading dock and drains, the PA/VSI recommended subsurface sampling in this area.

In May 1992, Carboline retained Bowser Morner to conduct a subsurface investigation of the area adjacent to the former solvent blending tanks to determine if spills that had occurred in this area had impacted soil and groundwater. Reportedly, a mixture of toluene and methyl ethyl ketone was spilled in the area being investigated. Three soil borings, B-1 through B-3, were advanced using hollow stem auger augers to a maximum depth of 14.5 feet. Soil samples were collected continuously using a two-foot split spoon sampler. Boring locations were selected by Mr. Jim Crawford of the Ohio EPA. An approximately 2.5-foot water saturated sand unit was encountered in borings B-1 and B-2 at depths of 7.5 feet and 6.0 feet, respectively. A saturated zone was not encountered in B-3 that was advanced to a depth of 14.5 feet.

The soil samples collected from the 0.5- to 2.5-foot depth interval in each boring exhibited the highest photoionization (PID) field screening reading and were subsequently submitted for laboratory analysis. PID readings were between 1 part per million to non-detect for soil samples collected below a depth of 2.5 feet. Soil samples were analyzed for volatile organic compounds (VOCs) by U.S. EAP Method 8240. A single groundwater sample was collected at B-2 and analyzed for VOCs by Method 8260.

Soil analytical results indicate the presence of toluene, ethylbenzene and xylenes in B-3 at concentrations of 2.4 mg/kg, 16 mg/kg, and 6.7 mg/kg, respectively and toluene at B-2 at a concentration of 0.2mg/kg. No other VOCs were detected above their laboratory detection limits in the soil borings. No VOCs were detected in the groundwater sample collected at B-1. A copy of the Bowser Morner report is included in Attachment C.

The 1992 Bowser Morner report indicates that VOC impacts to the subsurface are minimal and that most likely further investigation is not warranted in this area. An OEPA summary of the spill and Bowser Morner report is documented in an August 10, 1992 Memo by Jim Crawford of Ohio EPA. The memo concludes that no further investigation appears warranted in this area.

In addition, the final walkthrough associated with the CRO inspection (see March 14, 2001 report) did not identify any stained soil requiring further investigation. Consequently, the CRO inspection and Bowser Morner report may provide enough evidence of closure to preclude any further investigation of AOC-1.

If you have any questions regarding this letter report, please do not hesitate to contact me at (614) 793-8777.

Sincerely,

Raymond Kennedy

Raymond L. Kennedy
Senior Project Manager

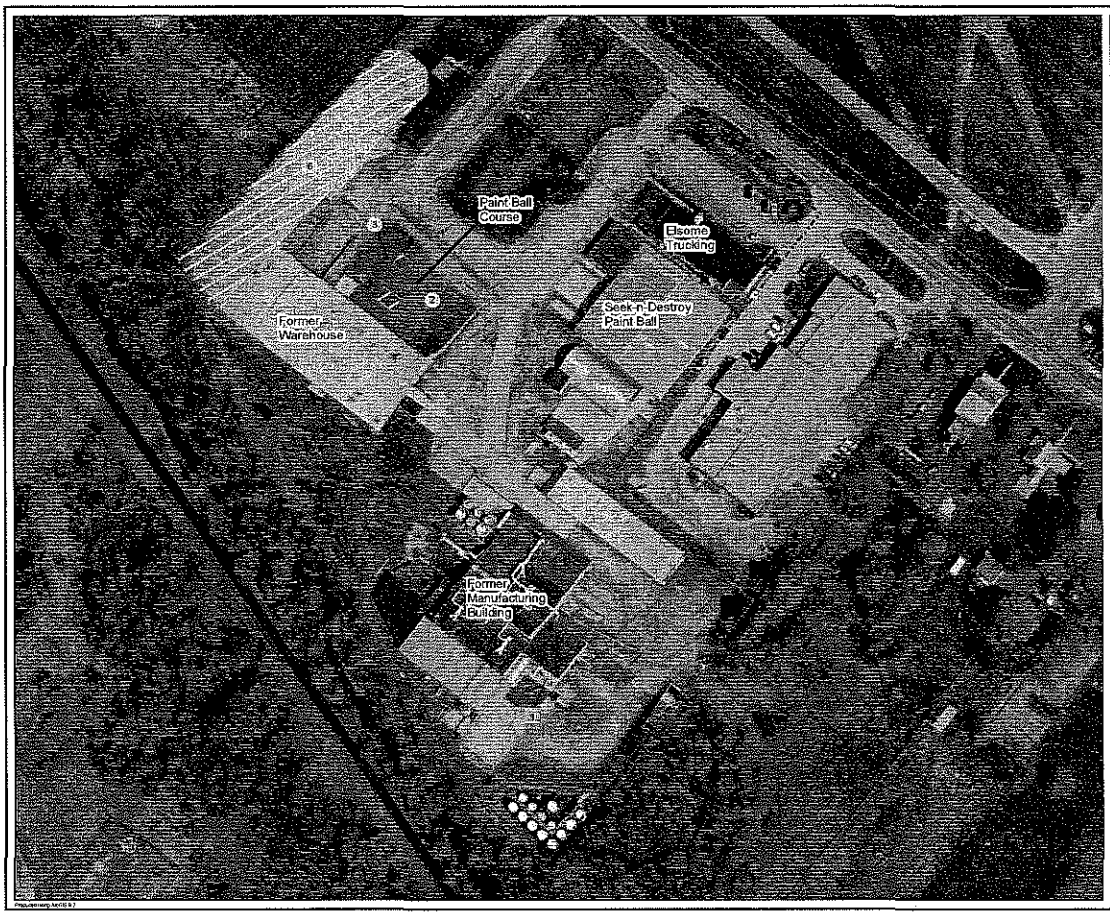
W. Rish, II.

William Rish Ph.D.
Principal

attachments

FIGURES

6397 Emerald Parkway • Suite 200 • Dublin, Ohio 43016
614.793.8777 fax 614.793.9070 www.hullinc.com



Hull & Associates, Inc.
6397 Emerald Parkway
Suite #200
Dublin, OHIO 43016
Phone: (614) 760-5777
Fax: (614) 760-5770
www.hullinc.com
© 2009, Hull & Associates, Inc.

Solid Waste Management Units (SWMUs)

SWMU-2	Hazardous Waste Storage Area
SWMU-3	D-Waste Storage Tank
SWMU-6	Back Pad

Areas of Concern (AOCs)

AOC-1	Solvent Blending Tanks

Legend
- Approximate Site Boundary
- Solid Waste Management Units
- Areas of Concern

N

0 25 50 100 Feet
1:1,200

Former Carbotine Facility

Site Layout Plan

125 Fairground Road
City of Xenia, Greene County, Ohio

Ohio
Quadrangle Location

Date: April 2009

Project Number: BRG001
Geodatabase: BRG001.mdb
File Name: BRG001_02_Fig01_SitePlan.mxd

Figure 1

ATTACHMENT A

Key Documents

CHRONOLOGY OF KEY DOCUMENTS

- *Part A Application (Forms 3510-1 & -3)* [November 18, 1980] – Sent by Carboline
  - Lists SWMUs 2 and 3
- *RCRA Inspection Report* [October 1, 1981] – Performed by Flanigan (OEPA)
  - Indicates TSD activity at the site
- *Letter Allowing Facility to Operate under Interim Status* [March 30, 1982] – Sent by Klepitsch (USEPA, R5)
- *Letter Requesting Part B Permit App* [March 31, 1982] – Sent by Klepitsch (USEPA, R5)
  - Part B Permit Application is due September 30, 1982
- *Letter Withdrawing Part A Application* [August 26, 1982] – Sent by Stewart (Carboline)
  - Indicates that waste in the HW Storage Facility was removed for disposal
- *Letter Acknowledging Aug 26, 1982 Letter and Request for Information* [December 12, 1982] – Sent by Miner (USEPA, R5)
  - Requests certification of closure by owner and independent engineer
  - Indicates closure did not follow portions of 40 CFR Part G
    - Facility did not submit closure plan
    - Closure was not subject to a public comment period
    - Closure plan was not approved by Regional Administrator
- *Letter Transmitting Certification of Closure* [December 17, 1982] – Sent by Stewart (Carboline)
- *Letter Rescinding Part B Call-In* [September 28, 1984] – Sent by Klepitsch (USEPA, R5)
  - Indicates facility's current status under RCRA was that of Large Quantity Generator (i.e., no longer a TSDF)
- *Letter Acknowledging Change to Generator Status Only* [April 1, 1985] – Sent by Crepeau (OEPA)
- *Draft Environmental Regulatory Compliance Audit* [July 1990] – Prepared by Woodward-Clyde Consultant

  This report indicates that the facility:
  - Applied for Part A Permit (interim status) in 1981
  - Received HW Facility Installation and Operation Permit (No. 05-29-0573) from OH HW Facility Approval Board in 1982
  - Requested to be deleted as a HW TSD facility in 1985, but retained generator status
  - Delisting granted after Carboline certified that their HW closure plan had been implemented
- *Report on Subsurface Investigation of Carboline* [June 22, 1992] – Prepared by Bowser Morner
  - Borings advanced in vicinity of solvent blending tanks (SWMU 6)
  - VOCs in soil all below VAP standards for residential direct contact; Ethylbenzene and toluene concentrations in Boring 3 (0-2.5') were slightly above the migration to GW Soil Screening Level for Region 9 Preliminary Remediation Goals.
  - PID readings below 2.5' indicate that migration of paint solvents did not appear to migrate to deeper soils.
- *Preliminary Assessment/Visual Site Inspection* [November 6, 1992] – Prepared by PRC Environmental Management (under contract to USEPA Office of Waste Programs Enforcement)
  - Six (6) SWMUs and two (2) AOCs were identified during the PA/VSI
  - Indicates Part A listed two solid waste management units (SWMUs) – SWMU 2, storage in drums and SWMU 3, storage in a tank

    - Indicates that SWMU 6 (Back Pad that stores off-spec paint prior to being placed into SWMUs 2 and 3) also required the submission of a Part A or B Permit Application (see Table 1, p. 6)
    - SWMU 2 was closed in 1982, but SWMU 3 had apparently not been closed as of the report
    - Report recommends soil and sediment sampling focusing on SWMU 2, SWMU 3, SWMU 6 (Back Pad), AOC 1 (Solvent Blending Tank), and AOC 2 (NPDES Outfall)
    - Report includes list of approximately 20 references
- *Hazardous Waste Tank Closure* [February 1993]
    - Shows chronology of bidding, cleaning, scrapping of former HW tank (tank cut into pieces for disposal on April 29, 1993)
- *CRO Regulated Substance & Equipment Removal (90 Day-Final Form)* [Nov 6, 2000]
    - Documents removal/disposition of final materials at plant
- *Response to PA/VSI Report* [November 2, 1994]
    - Includes diagram with decommissioned SWMU 2 (HW Storage Area) and disposal of SWMU 3 (D-Waste Storage Tank)
    - Indicates that SWMU 6 is NOT used to store off-spec paint (i.e., it is used to store finished goods)
- *Notice of Violation* [December 22, 1998]
    - Indicates that two (2) vertical HW tanks were removed in 1994 (see item 1c in NOV).
- *Environmental Site Review for the Property at 125 Fairgrounds Road, Xenia, OH* [January 31, 2000]
    - No discussion of TSD status in this report
- *CRO Final Inspection Letter* [March 14, 2001]
    - Indicates 1/22/01 inspection did not identify any violations of Ohio CRO laws
    - Included walkthrough of entire facility, inspection of remaining stationary structures, and completion of checklist
    - Checklist indicates (p. 7) that "during final closure period all contaminated equipment, structures, and soil were properly disposed of or decontaminated unless otherwise specified in OAC rules 3745-66-97, -67-28, -67-58, -67-80, -68-10" AND that "generated hazardous wastes were handled in accordance with all applicable requirements of Chapter 3745-52 of the Administrative Code"
    - OEPA SW District Contacts: Cathy L. Altman, Division of HWM; Paul Pardi, DHWM; Tim Staiger, DHWM
- *Request for Information Letter to BRG* [July 17, 2007] – sent by Nordine (USEPA, R5)
    - Indicates PA/VSI contained recommended actions for three SWMUs [Nos. 2 (HW Storage Area), 3 (D-Waste Storage Tank), and 6 (Back Pad)] and one AOC [No. 1 (Solvent Blending Area)]
    - Requests new information since PA/VSI including analytical data
- *Telecon between David Simmons (BRG) and Cathy Altman (OEPA)* [February 14, 2008]
    - Ms. Altman indicated that during the CRO visits, a complete site walkthrough is performed and during the visit for this facility no stained soils were noted that would warrant further investigation
    - Ms. Altman also indicated that her office is reviewing the 2020 CAU list to determine if some sites, including Carboline, do not belong on the list

ATTACHMENT B

Site Photographs of SWMU-2, SWMU-3, SWMU-6 and AOC-1

PHOTO 1: View looking southwest at area where 6,000 gal. D-Waste AST was formerly located. Area presently used as a paintball course.

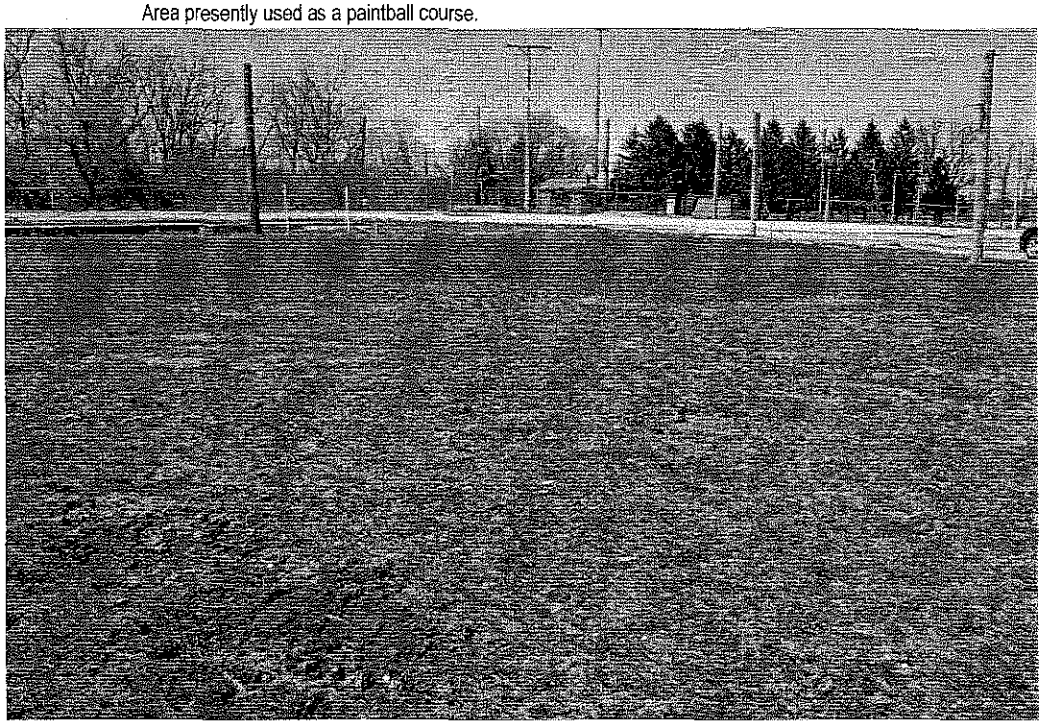


PHOTO 2: View looking west-northwest at area where 6,000-gal D-Waste AST was former located. Area presently used as a paintball course.

Hull & Associates, Inc.
6397 Emerald Parkway
Suite 200
Dublin, Ohio 43016
Phone: (614) 793-8777
Fax: (614) 793-9070
www.hullinc.com
© 2008, Hull & Associates, Inc.

Former
Carboline Facility

Photographs of SWMU-3 Area
D-Waste Storage Tank

125 Fairgrounds Road
Xenia, Greene County, Ohio

Date:
April 2009

Project Number: BRG001
File Name:
BRG001.300.000

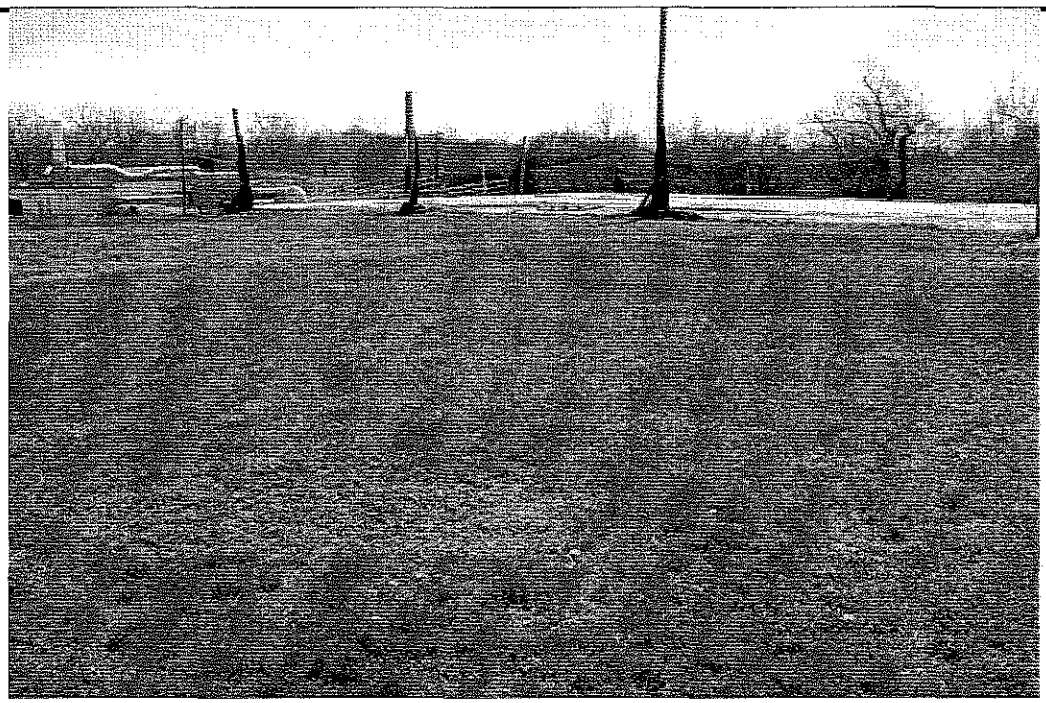


PHOTO 3: View looking southeast at former less than 90-day hazardous waste storage area. Area presently used as a paintball course.

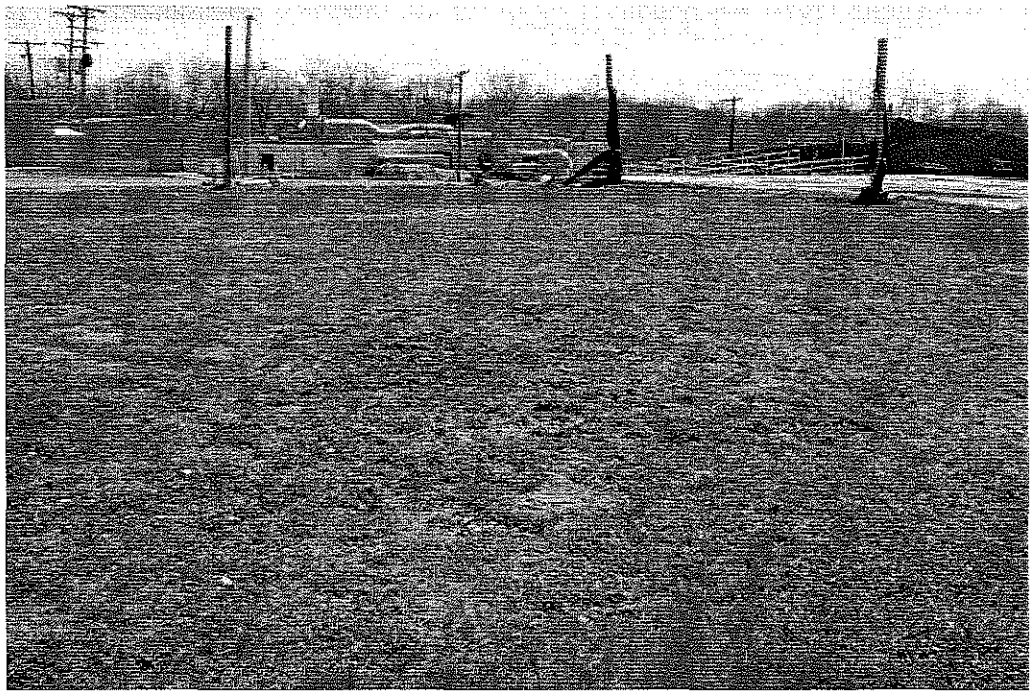


PHOTO 4: Another view looking southeast at less than 90 day former hazardous waste storage area. Area presently used as a paintball course.

Hull & Associates, Inc.
6397 Emerald Parkway
Suite 200
Dublin, Ohio 43016
Phone: (614) 793-8777
Fax: (614) 793-9070
www.hullinc.com
© 2008, Hull & Associates, Inc.

Former
Carboline Facility

Photographs of SWMU-2 Area
Hazardous Waste Storage Area

125 Fairgrounds Road
Xenia, Greene County, Ohio

Date:
April 2009

Project Number: BRG001
File Name:
BRG001.300.000

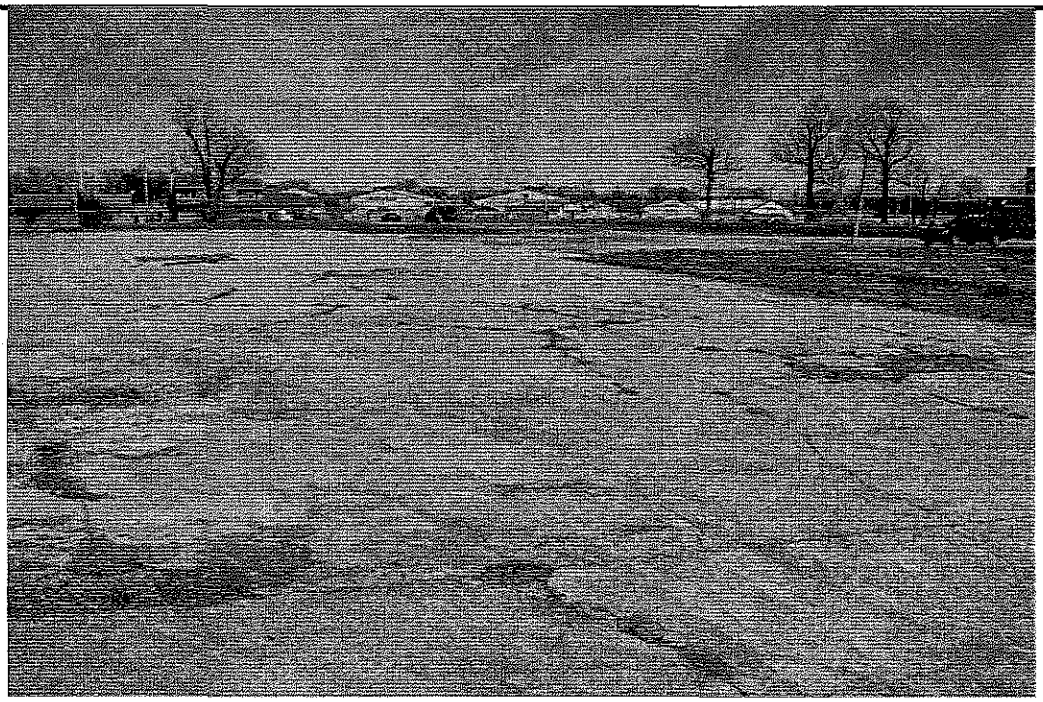


PHOTO 5: View looking northeast at backpad area. Some minor dried paint observed on concrete. main building.

PHOTO 6: Another view of back pad showing the presence of dried paint on concrete.

Hull & Associates, Inc.
6397 Emerald Parkway
Suite 200
Dublin, Ohio 43016
Phone: (614) 793-8777
Fax: (614) 793-9070
www.hullinc.com
© 2008, Hull & Associates, Inc.

Former
Carboline Facility

Phtographs of SWMU-6 Area
Back Pad

125 Fairgrounds Road
Xenia, Greene County, Ohio

Date:
April 2009

Project Number: BRG001
File Name:
BRG001.300.000

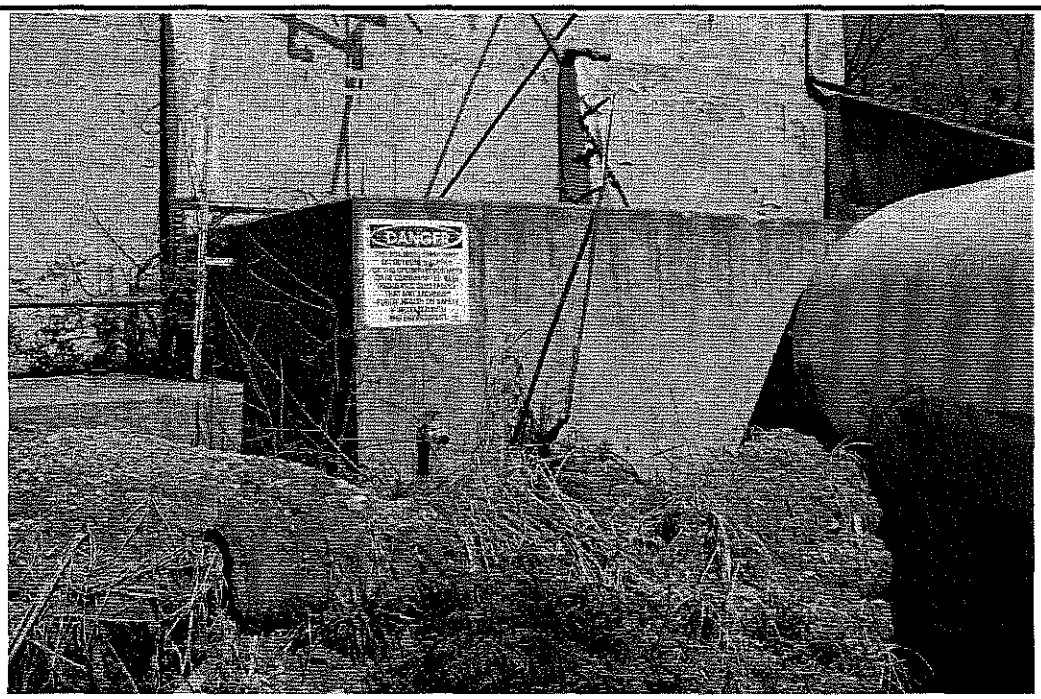


Photo 7: View looking northeast at concrete containment that surrounding former solvent tanks.
Note: scrapped tanks are present in this area of the property.

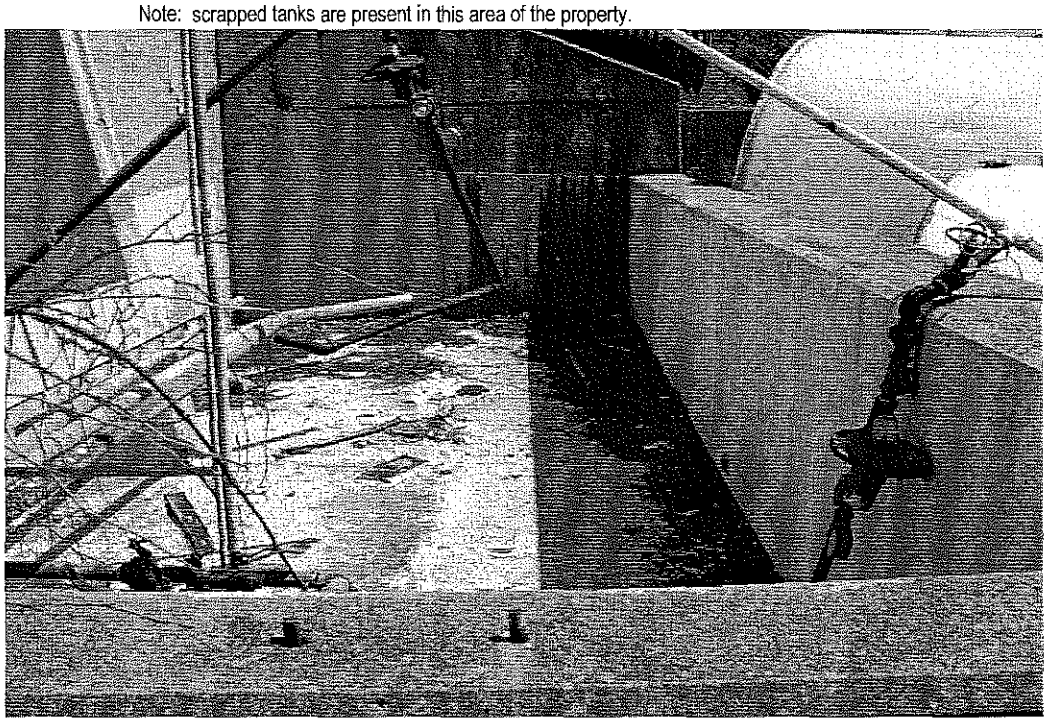


Photo 8: View looking at former solvent ASTs concrete containment structure.

Hull & associates, inc.
6397 Emerald Parkway
Suite 200
Dublin, Ohio 43016
Phone: (614) 793-8777
Fax: (614) 793-9070
www.hullinc.com
© 2008, Hull & Associates, Inc.

Former
Carboline Facility

Property Photographs
AOC-1 Area

125 Fairgrounds Road
Xenia, Greene County, Ohio

Date:
April 2009

Project Number: BRG001
File Name:
BRG001.300.000

Photo 9: View looking at dirt/debris piled up near containment structure. AOC-1

Photo 10 Standing water, and steel tanks being stagged in the area of the former solvent tanks. AOC-1

Hull & associates, inc.
6397 Emerald Parkway
Suite 200
Dublin, Ohio 43016
Phone: (614) 793-8777
Fax: (614) 793-9070
www.hullinc.com
© 2008, Hull & Associates, Inc.

Former
Carboline Facility

Property Photographs
AOC-1 Area

125 Fairgrounds Road
Xenia, Greene County, Ohio

Date:
April 2009

Project Number: BRG001
File Name:
BRG001.300.000

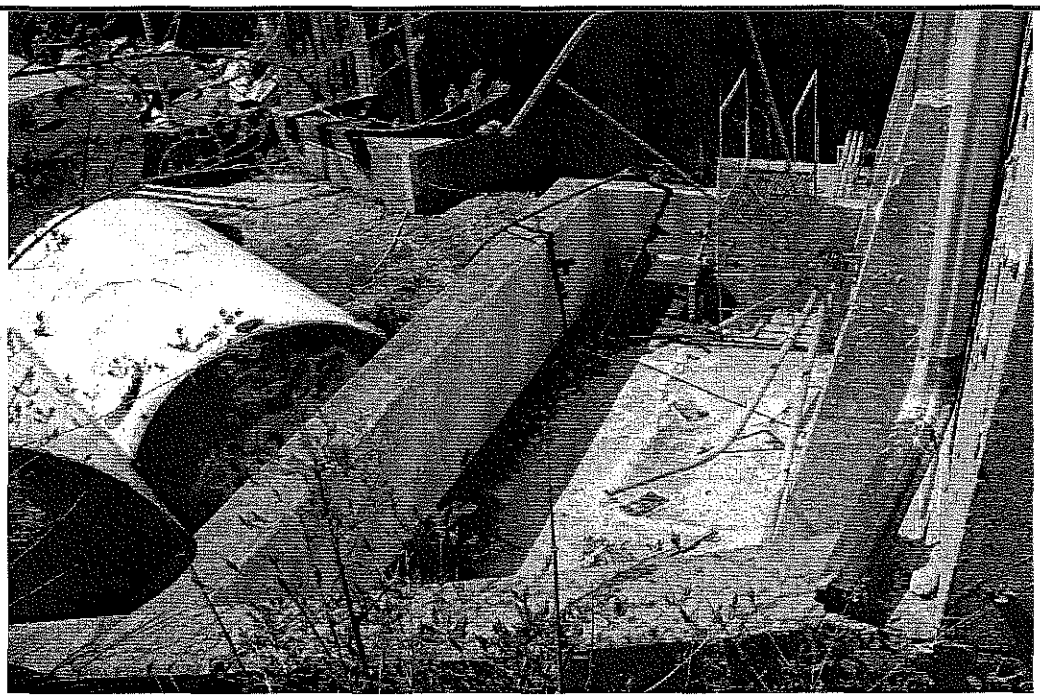


PHOTO 11: View looking at concrete containment structure that surrounding the former solvent ASTs. AOC-1

Hull & Associates, Inc.
6397 Emerald Parkway
Suite 200
Dublin, Ohio 43016
Phone: (614) 793-8777
Fax: (614) 793-9070
www.hullinc.com
© 2008, Hull & Associates, Inc.

Former
Carboline Facility

Property Photographs
AOC-1 Area

125 Fairgrounds Road
Xenia, Greene County, Ohio

Date:
April 2009

Project Number: BRG001
File Name:
BRG001.300.000

ATTACHMENT C

June 1992 Bowser Morner Report

BOWSER
MORNER

V A1

X35

Report on Subsurface Investigation of
Carboline,
Ankeney Mill Road,
Xenia, Ohio

For

Carboline
P.O. Box 370
Xenia, Ohio 45385

ALL REPORTS REMAIN THE CONFIDENTIAL PROPERTY OF BOWSER-MORNER AND NO PUBLICATION OR DISTRIBUTION OF REPORTS MAY BE MADE WITHOUT OUR EXPRESS WRITTEN CONSENT, EXCEPT AS AUTHORIZED BY CONTRACT

Report on Subsurface Investigation of
Carboline,
Ankeney Mill Road,
Xenia, Ohio

For

Carboline
P.O. Box 370
Xenia, Ohio 45385

Report No. 12208-692-311

June 22, 1992

BOWSER
MORNER

BOWSER MORNER
COMMITTED TO EXCELLENCE
SINCE 1911

4516 Taylorsville Road
P.O. Box 51
Dayton, OH 45401-0051
513-236-8805
513-233-2016 FAX

June 22, 1992

Carboline
P.O. Box 370
Xenia, Ohio 45385

Attention: Mr. Thomas W. Higgins

Dear Mr. Higgins:

Your copies of our report on the subsurface investigation we performed for you at the Carboline site on Ankeney Mill Road in Xenia, Ohio are enclosed. For your information, recommendations are given here, not in the actual report.

No methyl ethyl ketone was detected in any of the soil samples or the water sample tested. No volatile organic compounds (VOC's) were detected by SW-846 Method 8240 in Soil Sample 1-1A from Boring 1 or in the water sample from Boring 2. Toluene was detected in Soil Sample 2-1A from Boring 2 at a level of 0.2 mg/kg and in Soil Sample 3-1A from Boring 3 at a level of 16 mg/kg. Ethylbenzene and xylene were also detected in the soil sample from Boring 3, at levels of 2.4 mg/kg and 6.7 mg/kg, respectively.

All of the samples analyzed were from the top 2-1/2 feet of the borings. The sample from Boring 3, where the highest levels of VOC's were found, was native soil that seemed to be fill from under an old loading dock where the aboveground storage tanks sat. The photo-ionization detector (PID) readings indicate that paint solvents probably did not migrate downward to any great extent at the locations sampled.

Your business is appreciated; we are always glad to help you in any way we can. We look forward to working with you again soon. In the meantime, please call us if you have any questions or if we can help you in any way.

Sincerely,

Bowser-Morner Associates, Inc.

Stephen D. Sommer

Stephen D. Sommer
Hydrogeologist

SDS/mwt
1-Client
2-File

BOWSER-MORNER

4518 Taylorsville Road • P.O. Box 51 • Dayton, Ohio 45401 • 513/236-8805

ENGINEERING REPORT

REPORT TO: Carboline
P.O. Box 370
Xenia, Ohio 45385

REPORT DATE: June 22, 1992

REPORT NO.: 12208-692-311

Attention: Mr. Thomas W. Higgins

REPORT ON: Subsurface Investigation, Carboline Site, Ankeney Mill Road, Xenia, Ohio

1.0 AUTHORIZATION

Written authorization to proceed with this project was received from Mr. Thomas Higgins of Carboline on May 8, 1992. The project was conducted in accordance with our proposal and agreement dated May 6, 1992.

2.0 PURPOSE

The purpose of this investigation was to determine if paint solvents were in the soils or groundwater in the borings made on the site and to describe the hydrogeologic conditions near the location of three aboveground storage tanks at the Carboline site in Xenia, Ohio.

3.0 BACKGROUND INFORMATION

A paint and coating manufacturing facility is on the site, near Shawnee Creek in Xenia, Ohio. A mixture of toluene and methyl ethyl ketone (MEK) was spilled in the location to be investigated. The release may have affected soil and/or groundwater in the immediate area.

This investigation was intended to determine if toluene and MEK have affected soils and groundwater sampled from near the spill, and if so, to attempt to define the extent of soils and/or groundwater affected.

All Reports Remain The Confidential Property of BOWSER-MORNER And No Publication Or Distribution Of Reports May Be Made Without Our Express Written Consent, Except As Authorized By Contract.

4.0 HYDROGEOLOGICAL INVESTIGATION

4.1 Site Description

4.1.1 Location

The site is on Ankeney Mill Road southwest of the county fairgrounds in Xenia, Ohio. The development of surrounding area is industrial/commercial. A site location map is included in Appendix A.

4.1.2 Geography

The site lies on gently to steeply sloping land on the east side of Shawnee Creek. Most of the surrounding area consists of industrial and commercial buildings and undeveloped land along Shawnee Creek.

4.1.3 Climate

The climatic conditions at the site are typical for the eastern Midwest. The mean annual temperature is 53 degrees Fahrenheit and the average annual precipitation is 39 to 40 inches. Precipitation is the major recharge mechanism for groundwater in this area. Recharge for groundwater is estimated to be provided by six inches of total annual precipitation.

4.2 Geology

4.2.1 Surface Geology

The soils on the site are developed on clayey glacial till with occasional sand and gravel lenses. These soils have low permeability and may have a seasonally high water table. The glacial till deposits in this area are 20 to 40 feet thick.

4.2.2 Bedrock Geology

The glacial outwash deposits are underlain by thin bedded limestones and calcareous shales of the upper Ordovician Richmond group.

4.3 Hydrogeology

4.3.1 Water Use

Most of the water in the area is used for industrial and commercial purposes. This water is supplied by the Xenia water system.

4.3.2 Water Resources

The water resources in the area are poor. Yields of less than three gallons per minute (gpm) can be developed from the occasional sand and gravel deposits at depths of less than 40 feet.

The Ohio Department of Natural Resources water well logs for wells within one mile of the site are included in Appendix B.

5.0 SUBSURFACE INVESTIGATION

5.1 Boring and Sampling

On May 21 and 22, 1992, three borings were advanced to depths of 10.5, 8.5, and 12.5 feet at locations specified by Mr. Jim Crawford of the Ohio Environmental Protection Agency (OEPA). These borings were made to provide data on the soils, to determine the depth to groundwater, and to determine if paint solvent constituents were in the soil at the locations where Borings 1, 2, and 3 were made and groundwater from the location where Boring 2 was made.

The borings were made with a boring rig using hollow-stem augers and employing standard penetration resistance methods (140-pound hammer, 30-inch drop, two-inch-O.D.

split spoon sampler) at two-foot intervals (continuously) beginning at the ground surface directly beneath the concrete pavement. The depths where these "A"-type split-spoon samples were obtained are noted on the boring logs. Soil cuttings from the borings were placed in D.O.T.-approved drums and left on-site for the client's disposal. The boring location plan and the boring logs are included in Appendix C. When the borings were completed, they were plugged with bentonite chips and capped with concrete.

Before the ground was broken, the boring equipment was decontaminated with high-pressure steam. The sampling equipment was manually decontaminated by removing loose soil, washing it in detergent, rinsing with clean tap water, and air drying the equipment between samples.

The disturbed split-spoon samples were visually classified, logged, and screened with a photo-ionization detector (PID) designed to detect rising organic vapors such as those released from paint solvents. The samples were then sealed in moisture-proof jars, placed on ice, and taken to the laboratory. The PID readings are listed in Table 1.

TABLE 1

PID READINGS

Results are given in parts per million (ppm)

Sample No.	Depth	Result		
		Boring 1	Boring 2	Boring 3
1A	0.5 - 2.5 feet	2.0*	5.0*	22.0*
2A	2.5 - 4.5 feet	0.4	0.6	0.6
3A	4.5 - 6.5 feet	0.6	0.6	0.2
4A	6.5 - 8.5 feet	ND	0.8	0.2
5A	8.5 - 10.5 feet	0.4	---	1.0

BOWSER MORNER

(TABLE 1, PID READINGS, Continued)

Results are given in parts per million (ppm)

Sample No.	Depth	Result		
		Boring 1	Boring 2	Boring 3
6A	10.5 - 12.5 feet	---	---	0.2
7A	12.5 - 14.5 feet	---	---	0.2

*Submitted to laboratory for analysis

ND = None Detected

5.2 Groundwater

Groundwater was encountered in Borings 1 and 2 at depths ranging from 6.0 feet in Boring 2 to 7.5 feet in Boring 1. No groundwater was encountered in Boring 3.

5.3 Field Observations

In all of the borings, gray silty glacial till was encountered starting from the ground surface to depths of 6.0 to 14.5 feet.

A 2.5-foot-thick layer of water-saturated sand was encountered at a depth of 7.5 feet of Boring 1. Gray silty glacial till was encountered under this sand. Groundwater from this sand rose rapidly in the augers to a depth of three feet in this boring.

Boring 2 was advanced with a five-foot slotted auger. A 2.5-foot-thick layer of saturated sand was encountered at a depth of six feet in this boring. No water from this sand entered the slotted auger. After the augers were withdrawn, the water rose to a depth of 5.5 feet. A sample of this water was collected using a new disposable bailer. Gray silty glacial till was encountered under this sand.

No saturated sand was encountered in Boring 3 from the ground surface to a depth of 14.5 feet. This boring could not be advanced further due to physical limitations of the rig and the hardness of the glacial till.

5.4 Sample Analyses

The soil sample with the highest PID reading from each boring and the water sample from Boring 2 were submitted for laboratory analysis within 24 hours after the samples were collected.

These samples were analyzed for volatile organic compounds (VOC's) by EPA SW-846 Method 8240. The results are summarized in Table 2. The laboratory reports are included in Appendix E.

TABLE 2

LABORATORY RESULTS

VOLATILE ORGANIC COMPOUND ANALYSES

Location	Sample No.	Depth	PID Reading	Result
Boring 1	1-1A	0.5 - 2.5 feet	2.0 ppm*	All BDL**
Boring 2	2-1A	0.5 - 2.5 feet	5.0 ppm	Toluene -- 0.2 mg/kg All Other VOC's*** -- BDL
Boring 3	3-1A	0.5 - 2.5 feet	22.0 ppm	Ethylbenzene -- 2.4 mg/kg Toluene -- 16 mg/kg Xylene -- 6.7 mg/kg All Other VOC's -- BDL
Boring 2	Water	---	---	All BDL

*Parts per million
**Below detection limits
***Volatile organic compounds

6.0 SUMMARY

No volatile organic compounds (VOC's) were detected by SW-846 Method 8240 in Soil Sample 1-1A from Boring 1 or in the water sample from Boring 2. Toluene was detected in Soil Sample 2-1A from Boring 2 at a level of 0.2 mg/kg and in Soil Sample 3-1A from Boring 3 at a level of 16 mg/kg. Ethylbenzene and xylene were also detected in the soil sample from Boring 3, at levels of 2.4 mg/kg and 6.7 mg/kg, respectively.

All of the samples analyzed were from the top 2-1/2 feet of the borings. The sample from Boring 3, where the highest levels of VOC's were found, was native soil that seemed to be fill from under an old loading dock where the aboveground storage tanks sat. The photo-ionization detector (PID) readings indicate that paint solvents probably did not migrate downward to any great extent at the locations sampled.

Thank you for selecting Bowser-Morner Associates, Inc. for this project. Your business is appreciated, and we look forward to working with you again soon. In the meantime, if you have any questions or if we can help you in any way, please let us know.

Sincerely,

BOWSER-MORNER ASSOCIATES, INC.

Stephen D. Sommer

Stephen D. Sommer
Hydrogeologist

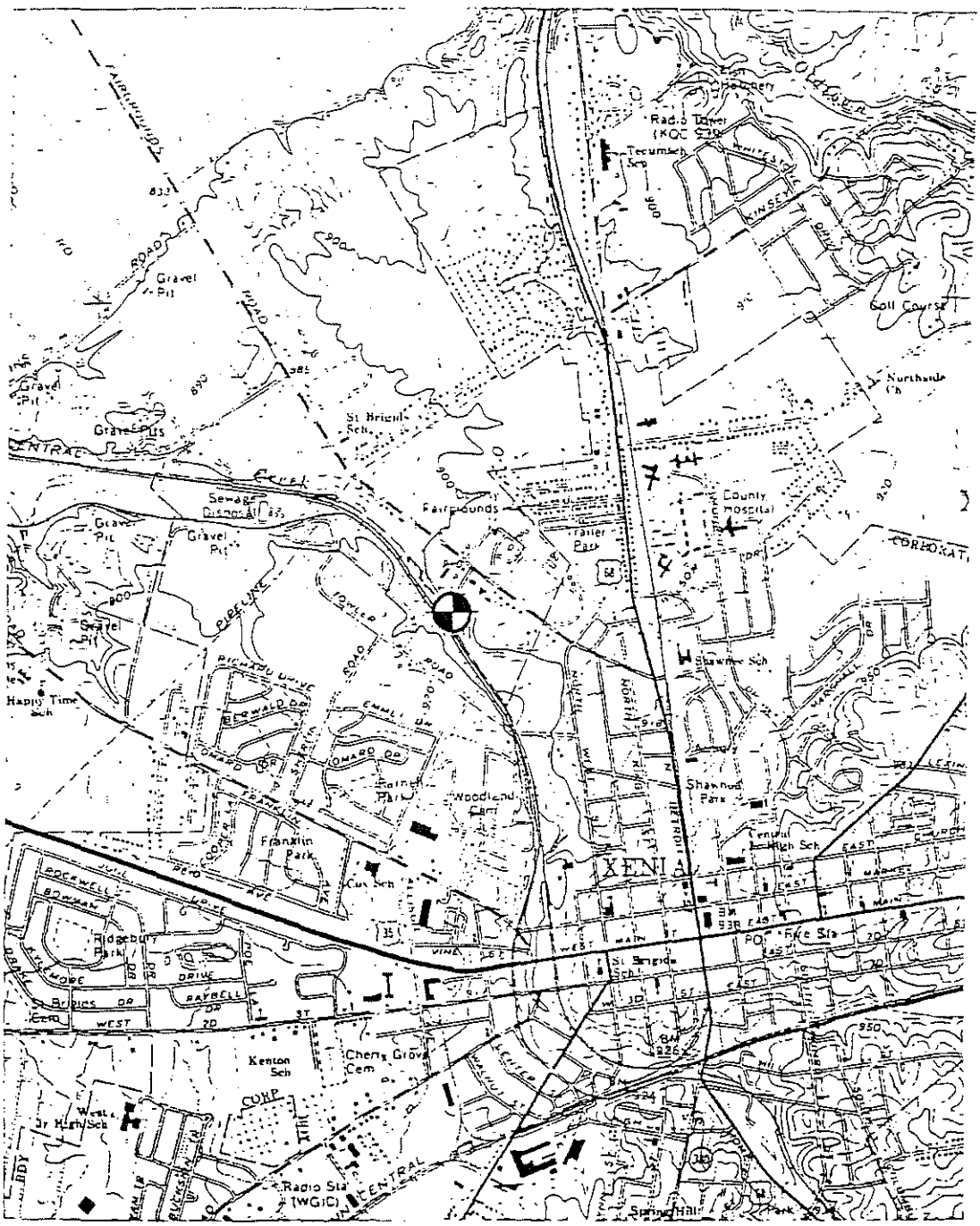
SDS/mwt
3-Client
3-File

BOWSER MORNER

APPENDIX A

SITE LOCATION MAP

BOWSER MORNER



SITE LOCATION MAP

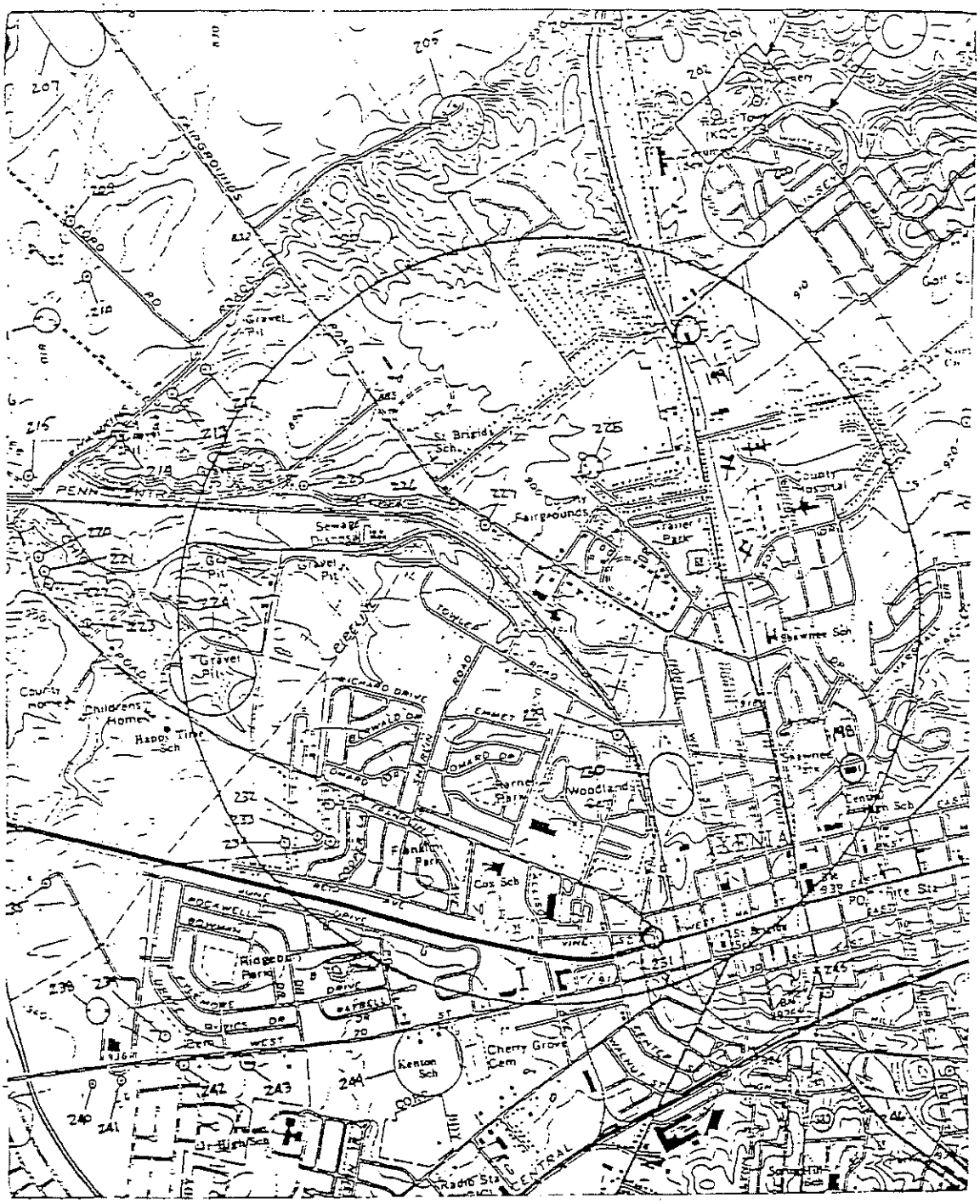
SITE LOCATION

APPENDIX B

OHIO DEPARTMENT OF NATURAL RESOURCES

WATER WELL LOGS

BOWSER MORNER


Fairgrounds
Gravel Pit
St Brigid's Sch
County Hospital
Sewage Disposal
Fairgrounds
Fairer Park
Gravel Pit
Gravel Pit
Gravel Pit
Towler Road
Elgin Ave
Richard Drive
Emmet
Elmwood Dr
Shilaker
Orchard Dr
Orchard Dr
Corner Farm
Woodland Cem
Hebrewner Sch
Children's Home
Happy Time Sch
County Home
Frankfort Park
Cos Sch
Rockwell
Rockwell
Ridgedale Park
Eastmore
Dennis Dr
Raffell Dr
Raffell St
West
Kenton Sch
Cherry Grove Cem
Jr High Sch
Radio Sta
Central
Walnut St
Vine
Fire Sta
PO
Sch
Sch
Sch

WELL LOG AND DRILLING REPORT

ORIGINAL

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
1562 W. First Avenue
Columbus 12, Ohio

PLEASE USE PENCIL OR TYPEWRITER DO NOT USE INK.

№ 318337

County Greene Township Xenia Section of Township

Owner Xenia City Board of Education Address E. Church St. Xenia O.

Location of property Central High School Sutton Dr.

CONSTRUCTION DETAILS	BAILING OR PUMPING TEST
Casing diameter 6" OD Length of casing 20'	Pumping Rate 6 G.P.M. Duration of test — hrs.
Type of screen None Length of screen	Drawdown 100 ft. Date 1/18/66
Type of pump Submersible	Static level-depth to water 10 ft.
Capacity of pump 5 to 9 GPM.	Quality (clear, cloudy, taste, odor) Clear
Depth of pump setting 140'	
Date of completion 1/18/66	Pump installed by Weaver

WELL LOG

Formations Sandstone, shale, limestone, gravel and clay	From	To
Clay	0 Feet	2 Ft.
Gravel & clay	2	20
Shale	20	150
Water from thin limestone layers in the shale!		

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.

N.

W. E.

S.

See reverse side for instructions

Drilling Firm Don Weaver Date 1/18/66

Address Xenia O. Signed Don Weaver

198

WEL LOG AND DRILLING RE ORT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Fountain Square
Columbus, Ohio 43224

NO CARBON PAPER NECESSARY – SELF-TRANSCRIBING

603593

COUNTY Greene TOWNSHIP Xenia SECTION OF TOWNSHIP

OWNER Wickline's Landscaping + Nursery ADDRESS 1625 N. Detroit St.

LOCATION OF PROPERTY Same Xenia O

CONSTRUCTION DETAILS

Casing diameter 5 3/8 Length of casing 26

Type of screen Length of screen

Type of pump

Capacity of pump

Depth of pump setting

Date of completion March 1982

BAILING OR PUMPING TEST
(specify one by circling)

Test rate 6 gpm Duration of test hrs

Drawdown 15 ft Date

Static level (depth to water) 10 ft

Quality (clear, cloudy, taste, odor) Clear

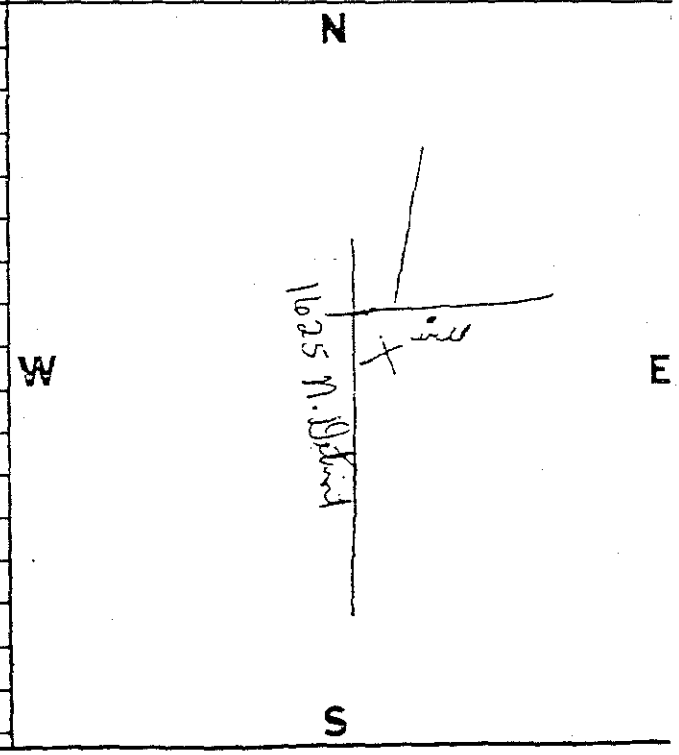
Pump installed by

WELL LOG*

Formations: sandstone, shale, limestone, gravel, clay	From	To
Clay + gravel	0 ft	24 ft
Blue shale	24	570

SKETCH SHOWING LOCATION

Locate in reference to numbered state highways, street intersections, county roads, etc.



DRILLING FIRM John E. Wolfe + Son DATE March 1982

ADDRESS Xenia, Ohio SIGNED John E. Wolfe

*If additional space is needed to complete well log, use next consecutive numbered form.

ORIGINAL COPY - ODNR, DIVISION OF WATER, FOUNTAIN SQ., COLS., OHIO 43224

(19)

WELL LOG AND DRILLING REPORT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
1562 W. First Avenue
Columbus, Ohio

PLEASE USE PENCIL OR TYPEWRITER. DO NOT USE INK.

No. 243383

County Greene Township Xenia Section of Township

Owner R. J. Larson Address

Location of property Xenia E. on old SR 35 in Xenia

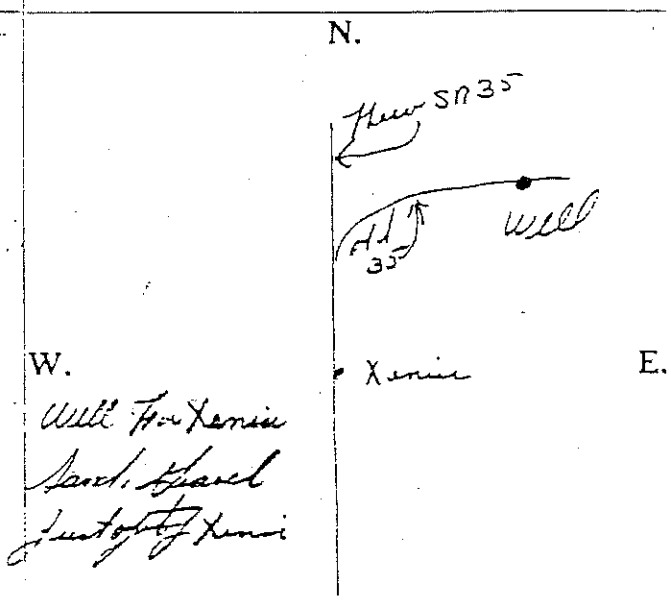
CONSTRUCTION DETAILS	BAILING OR PUMPING TEST
Casing diameter 5 Length of casing 82	Pumping rate 2 G.P.M. Duration of test 1 hrs.
Type of screen Length of screen	Drawdown 35 ft. Date 8-9-61
Type of pump	Developed capacity 2 Gal Per Min
Capacity of pump	Static level—depth to water 40 ft.
Depth of pump setting	Pump installed by
Date of completion	

WELL LOG

Formations Sandstone, shale, limestone, gravel and clay	From	To
Clay	0 Feet	5 Ft.
Gravel	5	50
Clay	50	82
Shale	82	85
Depth of Well	85 feet	

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.



See reverse side for instructions

Drilling Firm Clinton Well Drillers Date 8-12-61

Address R.R. 1 Wilmington Signed Jack Fisher

324

WE . LOG AND DRILLING R ORT

ORIGINAL

NO CARBON PAPER NECESSARY— SELF-TRANSCRIBING

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Geological Survey
Fountain Square
Columbus, Ohio 43224 Phone (614) 466-5344

487822

COUNTY Greene TOWNSHIP Xenia O. SECTION OF TOWNSHIP OR LOT NUMBER

OWNER Hugh Pagett ADDRESS 149 Hawkins School House Rd

LOCATION OF PROPERTY above

CONSTRUCTION DETAILS

Casing diameter 5" O.D Length of casing 84' 6"

Type of screen None Length of screen

Type of pump Submersible

Capacity of pump 10 GPM

Depth of pump setting 100 ft

Date of completion Bygone

BAILING OR PUMPING TEST
(specify one by circling)

Test rate 30 gpm Duration of test 3 hrs

Drawdown 10 ft Date Mar-21, 77

Static level (depth to water) 67 ft

Quality (clear, cloudy, taste, odor) Clear

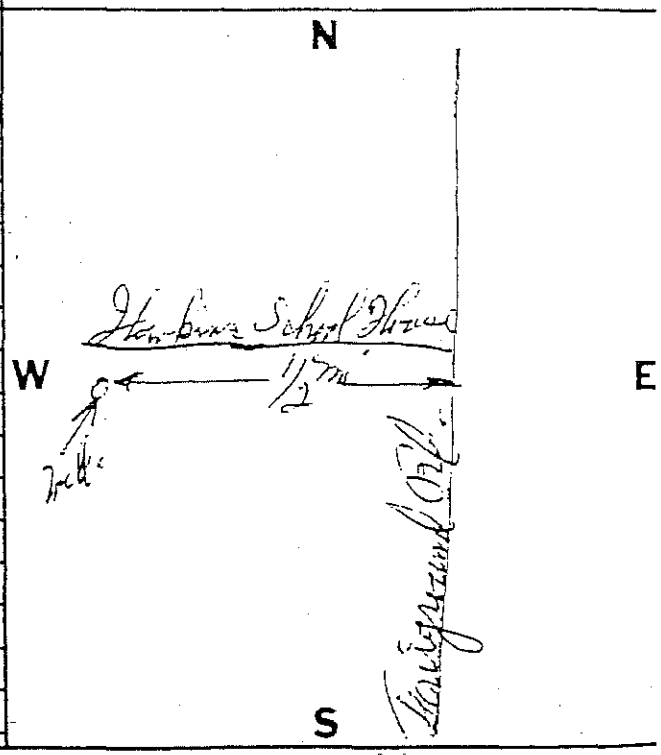
Pump installed by Owner

WELL LOG*

Formations: sandstone, shale, limestone, gravel, clay	From	To
Top gravel	0 ft	15 ft
Red Clay	15	35
Blue clay	35	60
Brown clay & sand	60	65
Clay & gravel	65	75
Gravel (Dirty)	75	90
Shale	90	125
Water from about 90 ft		

SKETCH SHOWING LOCATION

Locate in reference to numbered state highways, street intersections, county roads, etc.



DRILLING FIRM Don Weaver DATE May 21, 77

ADDRESS Xenia O. SIGNED Don Weaver

*If additional space is needed to complete well log, use next consecutive numbered form.

2.25

WELL LOG AND DRILLING REPORT

ORIGINAL

NO CARBON PAPER NECESSARY— SELF-TRANSCRIBING

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
65 S. Front St., Rm. 815 Phone (614) 469-2646
Columbus, Ohio 43215

434036

County Greene Township Xenia Section of Township

Owner M. F. Moran Address Fairground Rd.

Location of property Fairground Rd at Intersection of Purcell Dr.

CONSTRUCTION DETAILS

Casing diameter 6" 00 Length of casing 50'

Type of screen Gravelpack Length of screen None

Type of pump Submersible

Capacity of pump 10 GPM.

Depth of pump setting 45

Date of completion Apr 3 1973

BAILING OR PUMPING TEST
(Specify one by circling)

Test Rate 8 G.P.M. Duration of test 3 hrs

Drawdown 35 ft. Date Apr 3, 1973

Static level-depth to water 7 ft.

Quality (clear, cloudy, taste, odor) Clear

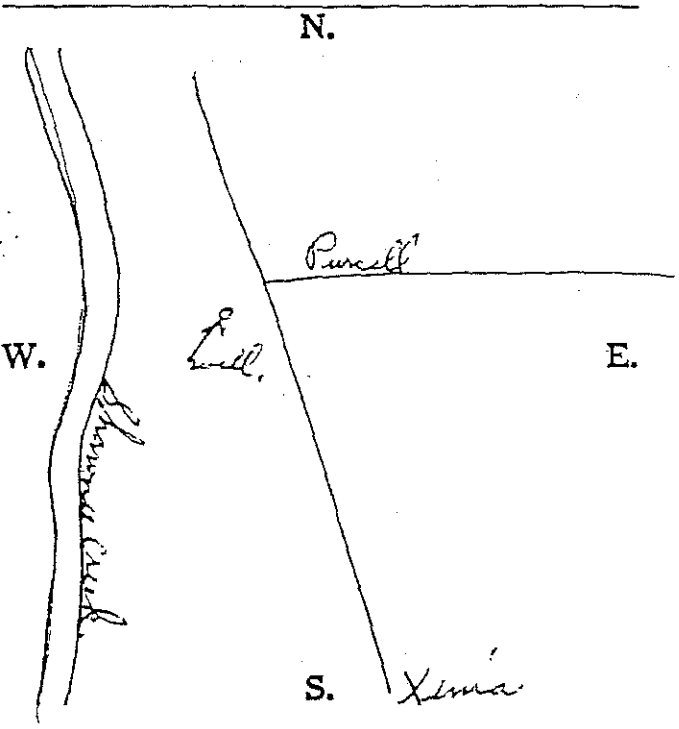
Pump installed by Weaver

WELL LOG*

Formations Sandstone, shale, limestone, gravel and clay	From	To
Topsoil	0 Feet	2 Ft.
Clay	2	10
Hard pan	10	16
Hard clay & gravel	16	20
Shale with interbedded layers of hard pan	20	50

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.



Drilling Firm Don Weaver Date Apr 3 1973

Address Xenia O. Signed Don Weaver

*If additional space is needed to complete well log, use next consecutive numbered ~~form~~.

(226)

WELL LOG AND DRILLING REPORT

ORIGINAL

NO CARBON PAPER NECESSARY— SELF-TRANSCRIBING

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
65 S. Front St., Rm. 815 Phone (614) 469-2646
Columbus, Ohio 43215

434043

County Greene Township Xenia Section of Township

Owner Ellis P Snyder Address Fairground Rd.

Location of property Above

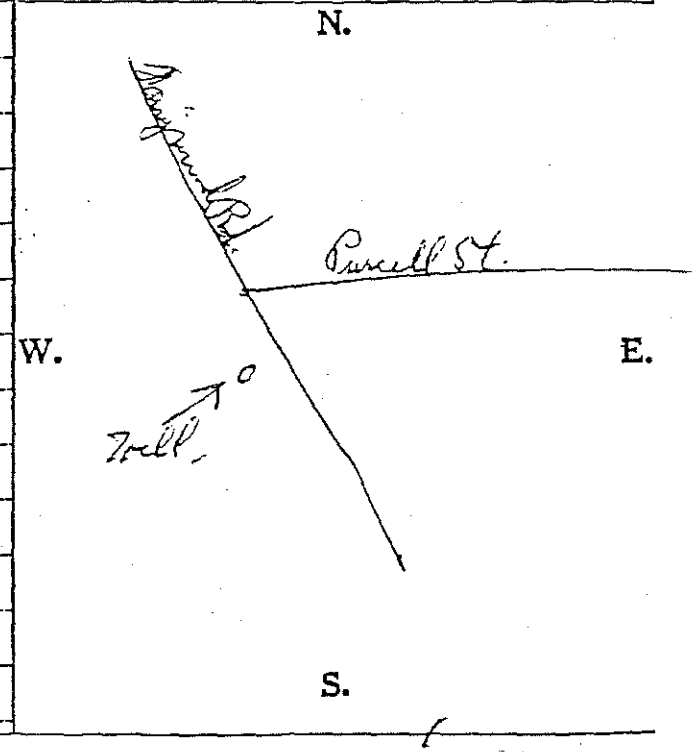
CONSTRUCTION DETAILS	BAILING OR PUMPING TEST (Specify one by circling)
Casing diameter 6" OD Length of casing 27' 6"	Test Rate 36 G.P.M. Duration of test 1 hrs
Type of screen None Length of screen	Drawdown 10 ft. Date June 21, 73
Type of pump Submersible	Static level-depth to water 10 ft.
Capacity of pump 10 GPM.	Quality (clear, cloudy, taste, odor) Clear
Depth of pump setting 40 ft.	
Date of completion June 22, 73	Pump installed by Weaver

WELL LOG*

Formations Sandstone, shale, limestone, gravel and clay	From	To
Topsoil	0 Feet	2 Ft.
Brown clay gravel	2	20
Gravel (water)	20	27
Shale	27	50

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.



Drilling Firm Don Weaver Date June 22 73

Address Xenia, O. Signed Don Weaver

*If additional space is needed to complete well log, use next consecutive numbered form.

227

WELL LOG AND DRILLING REPORT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
1562 W. First Avenue
Columbus, Ohio 43212

PLEASE USE PENCIL OR TYPEWRITER
DO NOT USE INK

Nº 333533

County Franklin Township Jackson Section of Township

Owner E. A. Hicks Address 126 Rinehart Dr.

Location of property Endsley & Omalley Dr. Lot 2.

CONSTRUCTION DETAILS

Casing diameter 6" O.D. Length of casing 41 ft.
Type of screen Length of screen
Type of pump Submersible
Capacity of pump 10 G.P.M.
Depth of pump setting 71 ft.
Date of completion Oct 13. 1967

BAILING OR PUMPING TEST

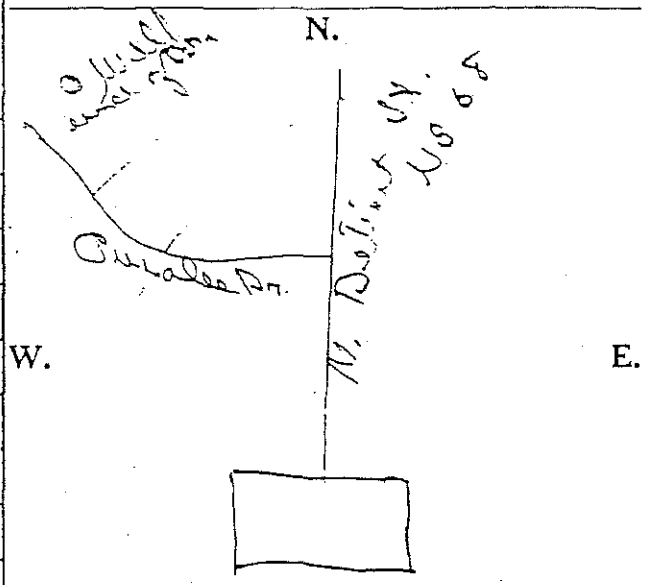
Pumping Rate 7 G.P.M. Duration of test 5 hrs.
Drawdown 3 ft. Date 10/3/67
Static level-depth to water 17 ft.
Quality (clear, cloudy, taste, odor) Clear
Pump installed by W. A. Crumley

WELL LOG*

Formations Sandstone, shale, limestone, gravel and clay	From	To
Top Soil	0 Feet	4 Ft.
Shale	4	12
Sand & Clay	12	23
Gravel	23	25
Clay	25	37
Salt	37	80
Perforated Casing from 23 to 25		
Water Screen from 23 to 25 ft.		
40 ft 2 1/2 Tubes in Shale		

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.



See reverse side for instructions

Drilling Firm W. A. Crumley Date Oct. 17, 1967
Address Lucas O. Signed W. A. Crumley
45385.

*If additional space is needed to complete well log, use next consecutive numbered form.

(228)

WE . LOG AND DRILLING R(ORT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Fountain Square
Columbus, Ohio 43224

NO CARBON PAPER NECESSARY – SELF-TRANSCRIBING

632914

COUNTY Green TOWNSHIP Xenia SECTION OF TOWNSHIP

OWNER Merchants & Mechanics STL ADDRESS 20 S. Limestone ST.

LOCATION OF PROPERTY 467 Towler Rd.

CONSTRUCTION DETAILS

Casing diameter 6 in Length of casing 64 FT

Type of screen Length of screen

Type of pump

Capacity of pump

Depth of pump setting

Date of completion

BAILING OR PUMPING TEST
(specify one by circling)

Test rate 6 gpm Duration of test 1 hrs

Drawdown 10 ft Date 7-19-86

Static level (depth to water) 31 FT. ft

Quality (clear, cloudy, taste, odor) Clear

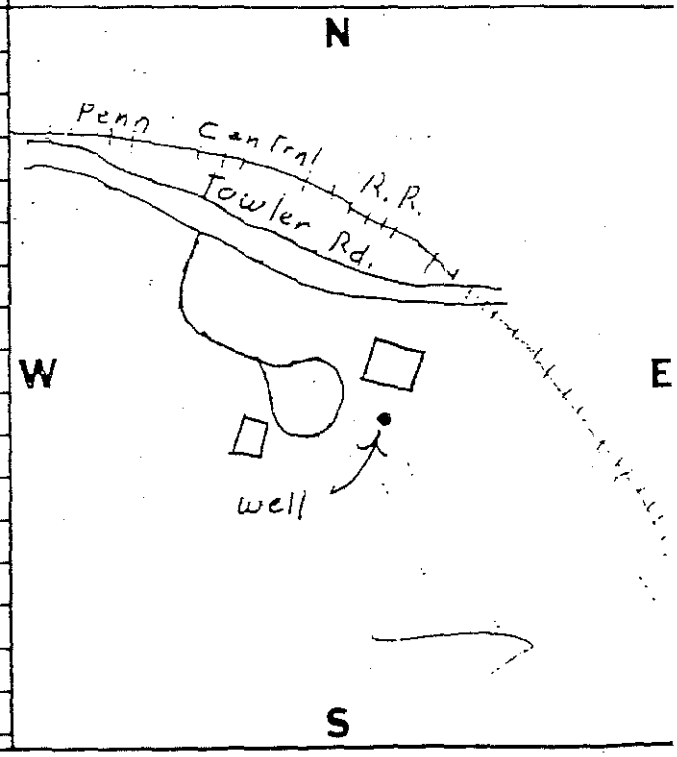
Pump installed by Paul Clark

WELL LOG*

Formations: sandstone, shale, limestone, gravel, clay	From	To
Clay	0 ft	8 ft
gravel	8	25
Clay	25	60
Sand & gravel	60	64
WATER AT	64	
Clay	64	99
Shale	99	110

SKETCH SHOWING LOCATION

Locate in reference to numbered state highways, street intersections, county roads, etc.



DRILLING FIRM Lower Well Drilling DATE 7-19-86

ADDRESS 2531 S. Limestone St. SIGNED David V. Lower

*If additional space is needed to complete well log, use next consecutive numbered form.

229

ORIGINAL COPY – ODNR, DIVISION OF WATER, FOUNTAIN SQ., COLS., OHIO 43224

WELL LOG AND DRILLING REPORT

ORIGINAL

NO CARBON PAPER NECESSARY— SELF-TRANSCRIBING

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
65 S. Front St., Rm. 815 Phone (614) 469-2646
Columbus, Ohio 43215

No. 409324

County Greene Township Xenia City Section of Township

Owner Xenia Foundry Co. Address

Location of property West St

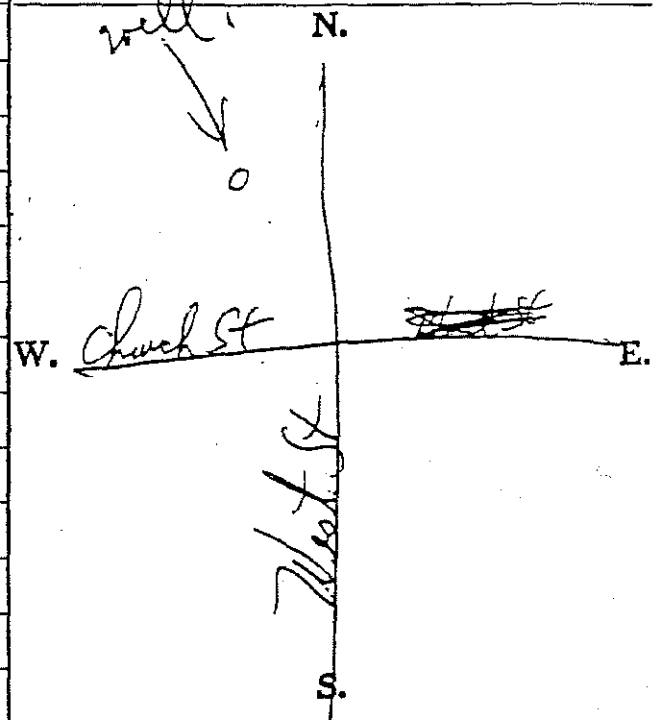
CONSTRUCTION DETAILS	BAILING OR PUMPING TEST (Specify one by circling)
Casing diameter 6" OD Length of casing 31	Test Rate 10 G.P.M. Duration of test 4 hrs.
Type of screen None Length of screen	Drawdown 40 ft. Date June 25, 1971
Type of pump Submersible	Static level-depth to water 10 ft.
Capacity of pump 10 GPM	Quality (clear, cloudy, taste, odor) Clear
Depth of pump setting 60 ft.	
Date of completion June 25, 1971	Pump installed by Weaver

WELL LOG*

Formations Sandstone, shale, limestone, gravel and clay	From	To
Top soil	0 Feet	3 Ft.
Yellow clay	3	20
Blue clay	20	29
Course sand (water)	29	32
Shale	32	100

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.



Drilling Firm Don Weaver Date June 25 1971

Address Xenia O. Signed Don Weaver

*If additional space is needed to complete well log, use next consecutive numbered ~~form~~ 2301

WELL LOG AND DRILLING REPORT

ORIGINAL

NO CARBON PAPER NECESSARY— SELF-TRANSCRIBING

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
65 S. Front St., Rm. 815 Phone (614) 469-2646
Columbus, Ohio 43215

No. 409323

County Greene Township Xenia ~~City~~ Section of Township

Owner Xenia Foundry Co. Address

Location of property West St.

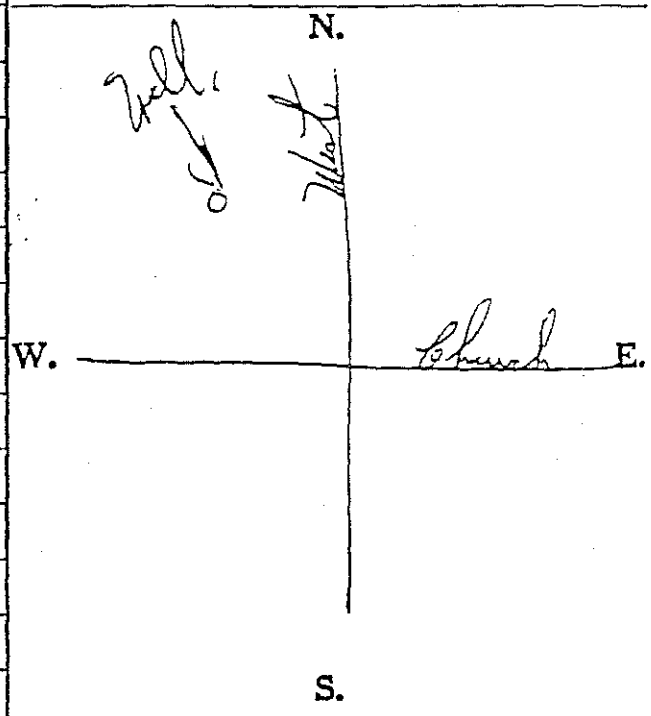
CONSTRUCTION DETAILS	BAILING OR PUMPING TEST (Specify one by circling)
Casing diameter 6" OD Length of casing 31	Test Rate 20 G.P.M. Duration of test 4 hrs.
Type of screen None Length of screen	Drawdown 20 ft. Date June 25, 1971
Type of pump Submersible	Static level-depth to water 80 ft.
Capacity of pump 20 GPM.	Quality (clear, cloudy, taste, odor) Clear
Depth of pump setting 60 ft.	
Date of completion June 25, 1971	Pump installed by Weaver

WELL LOG*

Formations Sandstone, shale, limestone, gravel and clay	From	To
Topsoil	0 Feet	3 Ft.
Yellow Clay	3	29
Gravel (water)	29	32
Shale	32	95

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.



Drilling Firm Don Weaver Date June 25 1971

Address Xenia O. Signed Don Weaver

*If additional space is needed to complete well log, use next consecutive numbered form.

(230)

WELL LOG AND DRILLING REPORT

ORIGINAL

NO CARBON PAPER NECESSARY— SELF-TRANSCRIBING

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
65 S. Front St., Rm. 815 Phone (614) 469-2646
Columbus, Ohio 43215

No. 409322

County Greene Township Xenia ~~City~~ Section of Township

Owner Xenia Foundry & Mfg Co. Address West St. Xenia O.

Location of property West Street

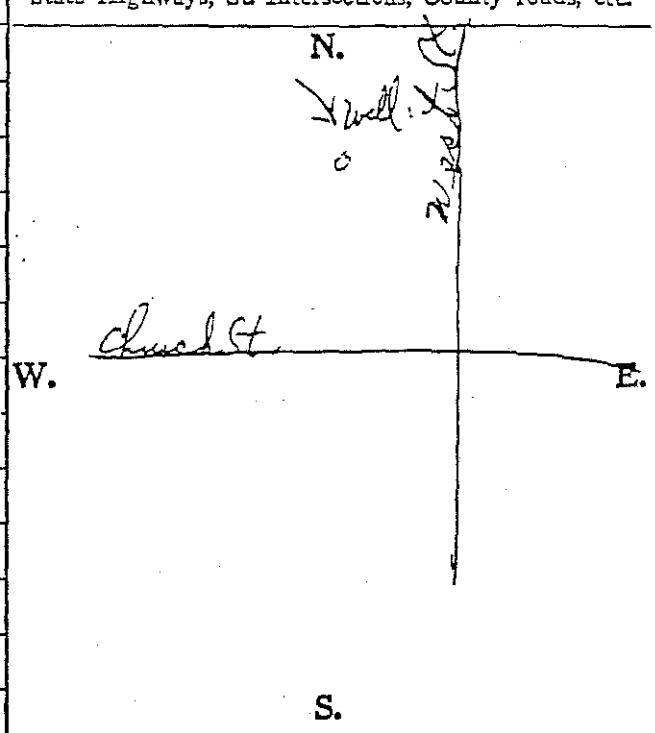
CONSTRUCTION DETAILS	BAILING OR PUMPING TEST (Specify one by circling)
Casing diameter 6" OD Length of casing 31 ft.	Test Rate 30 G.P.M. Duration of test 4 hrs.
Type of screen none, Length of screen	Drawdown 15 ft. Date June 25, 1971
Type of pump Submersible	Static level-depth to water 8 ft.
Capacity of pump 30 GPM.	Quality (clear, cloudy, taste, odor) Clear
Depth of pump setting 60 ft.	
Date of completion June 25, 1971	Pump installed by Weaver

WELL LOG*

Formations Sandstone, shale, limestone, gravel and clay	From	To
Topsoil	0 Feet	3 Ft.
Yellow clay	3	19
Blue clay	19	29
Gravel (water)	29	32
Shale with limestone layers	32	120

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.



Drilling Firm Don Weaver Date June 25 1971

Address Xenia O. Signed Don Weaver

*If additional space is needed to complete well log, use next consecutive numbered form.

230

W' L LOG AND DRILLING R' ORT

ORIGINAL

NO CARBON PAPER NECESSARY— SELF-TRANSCRIBING

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
65 S. Front St., Rm. 815 Phone (614) 469-2646
Columbus, Ohio 43215

434011

County Greene ~~Township~~ Xenia City Section of Township

Owner Lee Minick Address Main & Dayton Ave.

Location of property

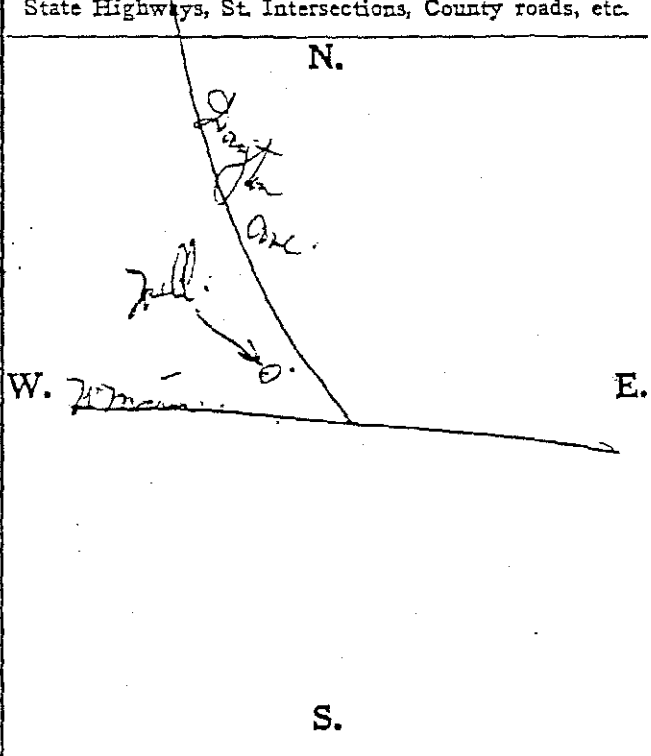
CONSTRUCTION DETAILS	BAILING OR PUMPING TEST (Specify one by circling)
Casing diameter 6" OD Length of casing 27'	Test Rate 3 G.P.M. Duration of test 4 hrs
Type of screen none Length of screen	Drawdown 50 ft. Date Apr. 15, 1972
Type of pump Submersible	Static level-depth to water 8 ft.
Capacity of pump 10 GPM	Quality (clear, cloudy, taste, odor) Clear
Depth of pump setting 65 ft.	
Date of completion Apr. 20, 1972	Pump installed by Weaver

WELL LOG*

Formations Sandstone, shale, limestone, gravel and clay	From	To
Topsoil	0 Feet	2 Ft.
Brown clay	2	12
Blue clay	12	14
Brown clay & gravel	14	27
Shale	27	72

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.



Drilling Firm Tom Weaver Date Apr. 20, 1972

Address Xenia O. Signed Tom Weaver

*If additional space is needed to complete well log, use next consecutive numbered form.

231

WELL LOG AND DRILLING REPORT

ORIGINAL

NO CARBON PAPER NECESSARY— SELF-TRANSCRIBING

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Geological Survey
Fountain Square
Columbus, Ohio 43224 Phone (614) 466-5344

487807

COUNTY Greene TOWNSHIP Xenia SECTION OF TOWNSHIP OR LOT NUMBER

OWNER James Nunnery ADDRESS Richard Dr.

LOCATION OF PROPERTY Above

CONSTRUCTION DETAILS

Casing diameter 6" OD Length of casing 102'

Type of screen None Length of screen

Type of pump None

Capacity of pump

Depth of pump setting

Date of completion Oct 27, 76

BAILING OR PUMPING TEST
(specify one by circling)

Test rate 10 gpm Duration of test 2 hrs

Drawdown 28 ft Date Oct 26, 76

Static level (depth to water) 40 ft

Quality (clear, cloudy, taste, odor) Clear

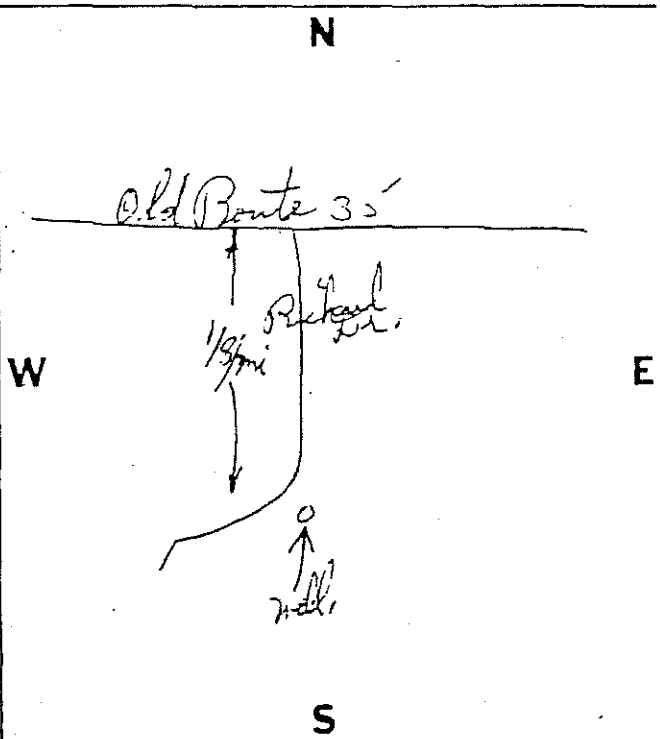
Pump installed by

WELL LOG*

Formations: sandstone, shale, limestone, gravel, clay	From	To
Top soil	0 ft	3 ft
Red clay	3	52
Blue clay	52	60
Sand & water	61	96
Hard blue clay	96	99
Gravel (water)	99	102

SKETCH SHOWING LOCATION

Locate in reference to numbered state highways, street intersections, county roads, etc.



DRILLING FIRM Don Weaver DATE Oct 28, 76

ADDRESS Xenia, O. SIGNED Don Weaver

*If additional space is needed to complete well log, use next consecutive numbered form.

932

WELL LOG AND DRILLING REPORT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
1939 Fountain Square Drive
Columbus, Ohio 43224

688997

TYPE OR USE PEN
SELF-TRANSCRIBING
PRESS HARD!

Permit Number _____

COUNTY Greene TOWNSHIP Xenia SECTION OF TOWNSHIP _____

OWNER Helen J. Owen PROPERTY ADDRESS 188 Richard Dr

LOCATION OF PROPERTY 188 Richard Dr.

CONSTRUCTION DETAILS

CASING

Casing Diameter 5-5/8 in. Length of Casing 203 ft.

Type: ☒ Steel ☒ Galv. ☐ PVC ☐ Other _____

Joints: ☐ Threaded ☒ Welded ☐ Solvent ☐ Other _____

SCREEN

Type (wire wrapped, louvered, etc.) _____ Material _____

Length _____ ft. Diameter _____ in.

Set between _____ ft. and _____ ft. Slot _____

GROUT

Material _____ Volume used _____

Method of installation _____

Depth: placed from _____ ft. to _____ ft.

☐ Rotary ☒ Cable ☐ Augered ☐ Driven ☐ Dug ☐ Other _____

BAILING OR PUMPING TEST
(specify one by circling)

WELL TEST

Test rate 7 gpm Duration of test _____ hrs.

Drawdown (water level during pumping) 50 ft.

Measured from: ☐ top of casing ☒ ground level ☐ Other _____

Static Level (depth to water) 55 ft. Date: _____

Quality (clear, cloudy, taste, odor) _____

PUMP

Type of pump _____ Capacity _____ gpm

Pump set at _____ ft.

Pump installed by _____

Pitless Device ☐ Adapter ☐ Preassembled unit

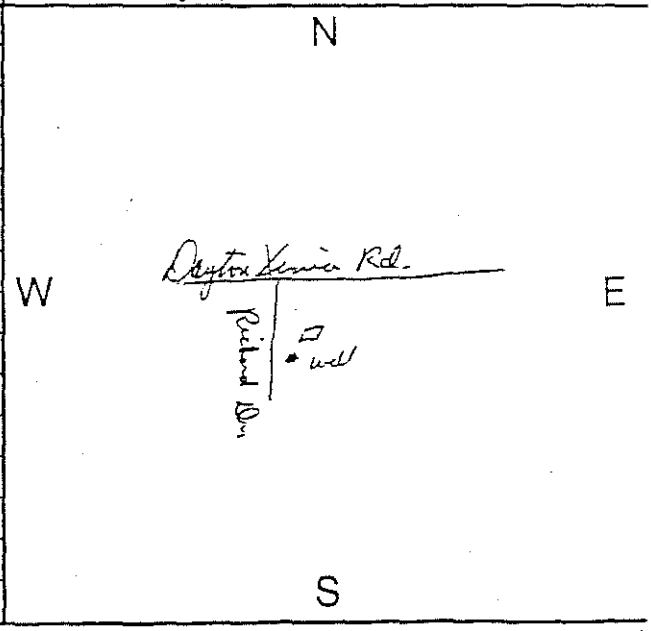
Use of Well _____

WELL LOG*

Show color, texture, hardness, and formation: sandstone, shale, limestone, gravel, clay, sand	From	To
Clay	0 ft.	4 ft.
Dry gravel	4	51
Clay + gravel	51	185
Green Shale	185	201
Blue Shale	201	218

SKETCH SHOWING LOCATION

Show distances well lies from numbered state highways, street intersections, county roads, etc.



* If additional space is needed to complete well log, use next consecutively numbered form.

DNR 7802.88

DRILLING FIRM John E. White SIGNED John E. White

ADDRESS 3873 US 68 S. DATE 11-8-8

CITY, STATE, ZIP Xenia, Ohio 45385 ODH REGISTRATION NUMBER 15

232.1

Completion of this form is required by 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.

ORIGINAL COPY - ODNR, DIVISION OF WATER, 1939 FOUNTAIN SQ. DRIVE, COLS., OHIO 43224

Y= 1,588,000 ±2,
X= 620,000S

WELL LOG AND DRILLING REPORT

State of Ohio
OHIO WATER RESOURCES BOARD
Department of Public Works
553 E. Broad St., Columbus 15, Ohio

№ 49157

County Greene Township Xenia Section of Township or Lot Number

Owner Charles Kruff Address Xenia

Location of property 1 mile west of Xenia, 1/4 mile south of Rt 35

CONSTRUCTION DETAILS

Casing diameter — Length of casing

Type of screen Length of screen

Type of pump JET

Capacity of pump

Depth of pump setting

PUMPING TEST

Pumping rate G.P.M. Duration of test hrs.

Drawdown 40 ft. Date

Developed capacity

Static level of completed well ft.

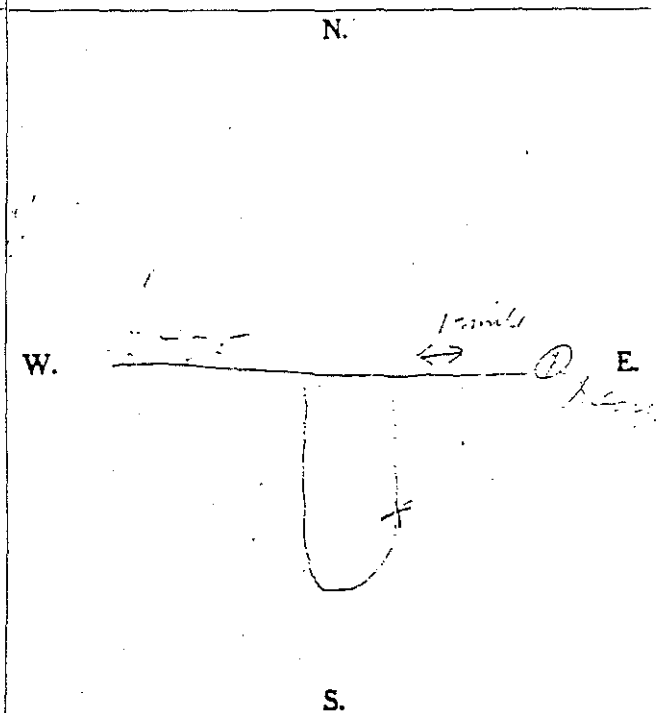
Pump installed by Owner

WELL LOG

Formations Sandstone, shale, limestone, gravel and clay	From	To
	~~0 Feet~~	Ft.
[illegible]	113	[illegible]
[illegible]	[illegible]	[illegible]
mud	[illegible]	155
[illegible]	155	[illegible]
mud	160	167
[illegible]	[illegible]	[illegible]
shale	165	170
water out	[illegible]	

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.



See reverse side for instructions

Drilling Firm W. L. Scott Date 4-6-54

Address RR #3 Box 24-C Springfield Signed [illegible]

233

WELL LOG AND DRILLING REPORT

ORIGINAL

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Columbus, Ohio

GWC

XENIA

№ 168708

County Greene Township ~~Beaver Creek~~ ~~Xenia~~ Section of Township or Lot Number

Owner Glendon Wiseman Address Xenia O. RD # 4

Location of property 3/4 mi west of Xenia just south of Old Rt. 35

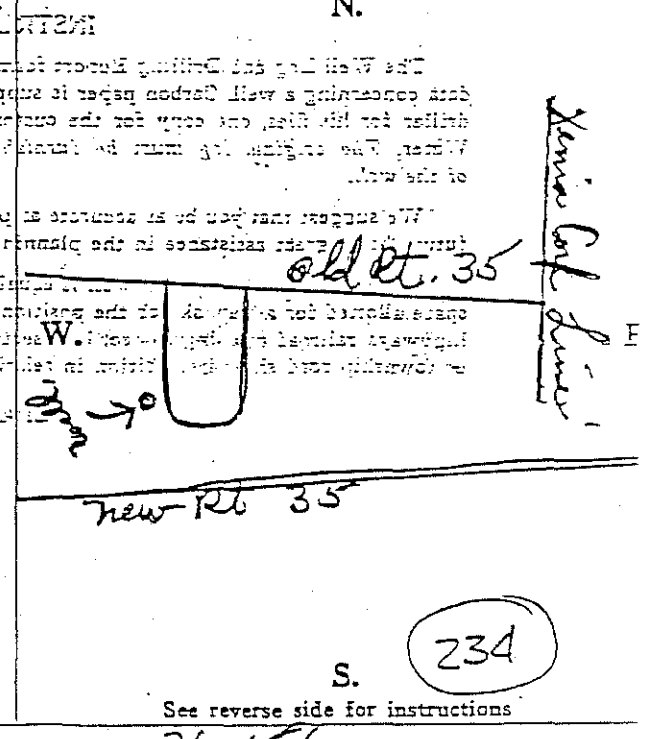
CONSTRUCTION DETAILS	PUMPING TEST
Casing diameter 5" 10 Length of casing 170'	Pumping rate 10 G.P.M. Duration of test 3 hr
Type of screen Length of screen	Drawdown 10 ft. Date 3/14/56
Type of pump	Developed capacity 600 G.P.H.
Capacity of pump	Static level—depth to water 60
Depth of pump setting	Pump installed by

WELL LOG

Formations Sandstone, shale, limestone, gravel and clay	From	To
Top soil	0 Feet	3 Ft.
Clay & gravel	3	90
Gravel	90	110
Gravel & sand	110	168
Shale (water)	168	170
Limestone (water)	170	173

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.



234

See reverse side for instructions

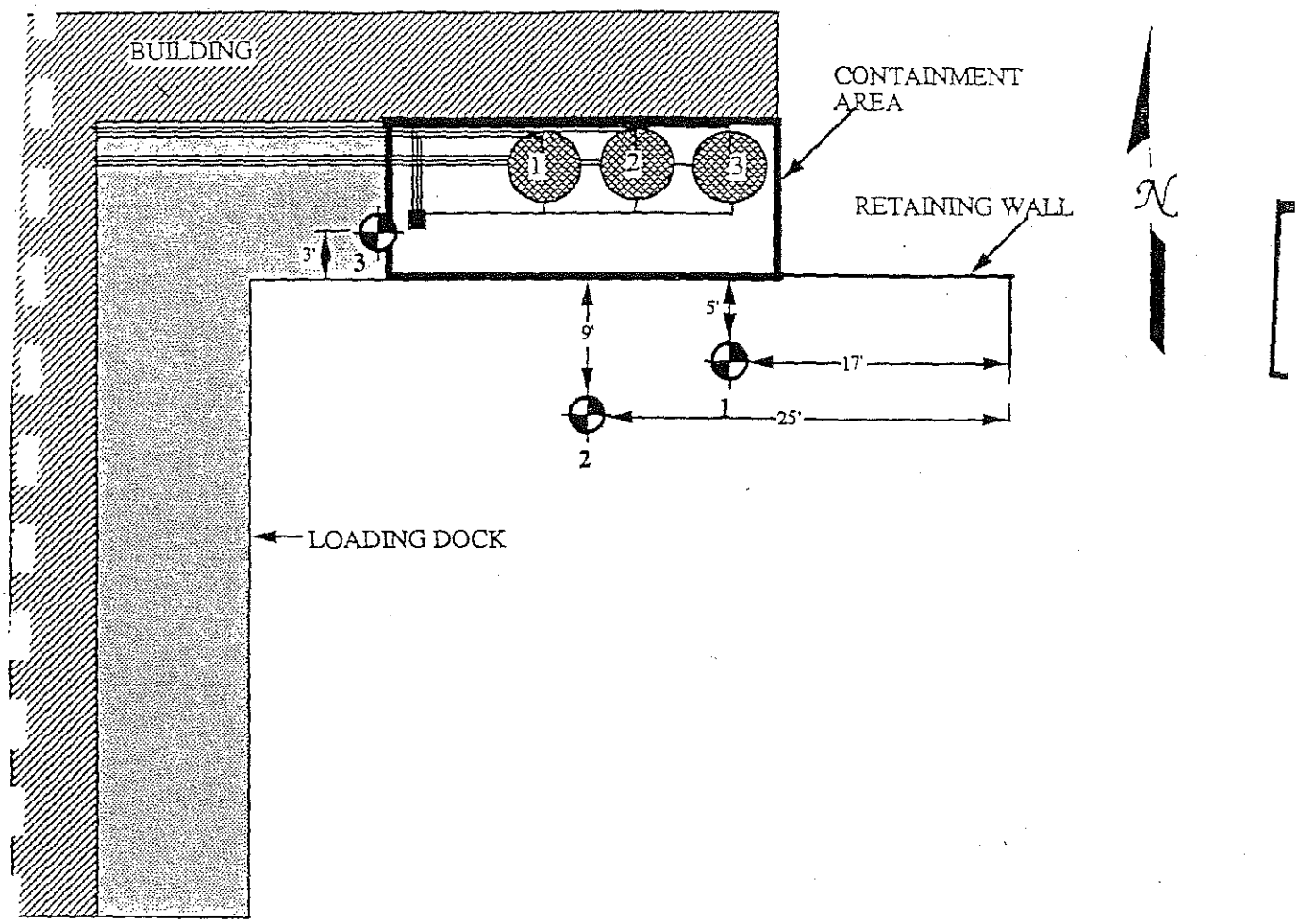
Drilling Firm Don Weaver Date 3/14/56

Address Xenia O. Signed Don Weaver

APPENDIX C

BORING LOCATION PLAN AND BORING LOGS

BOWSER
MORNER



BORING LOCATION

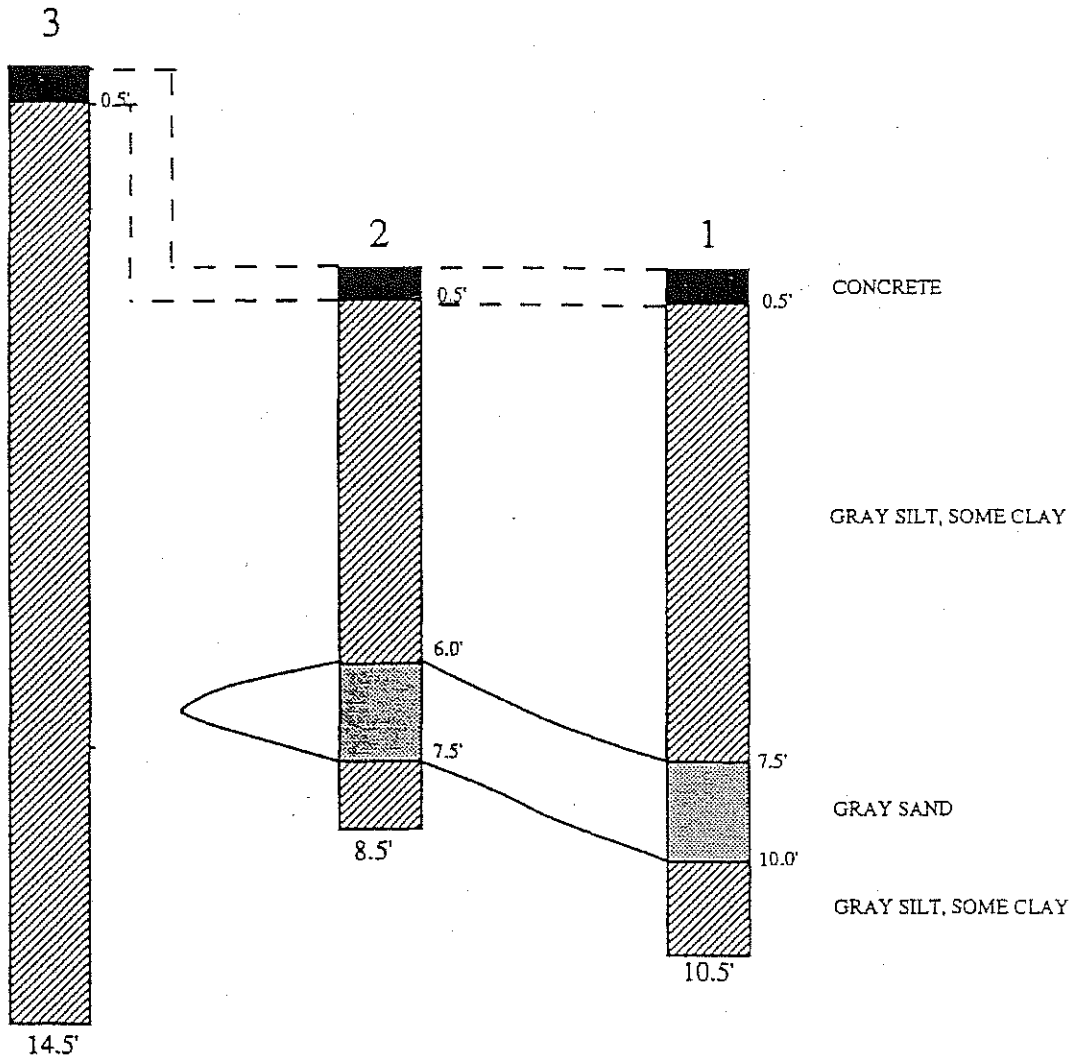
PUMP LOCATION

ABOVE GROUND STORAGE TANK

PIPING

BORING LOCATION PLAN

CARBOLINE
ANKENEY MILL ROAD
XENIA, OHIO
12208 NOT TO SCALE 5-29-92



GENERALIZED SOIL PROFILE

CARBOLINE
ANKENEY MILL ROAD
XENIA, OHIO
12208 NOT TO SCALE 5-29-92

Log of Boring No. 1

Carboline
Ankeney Mill Road, Xenia, Ohio

Boring Location: As shown on boring location plan
Surface Elevation: Not Taken
Date Started: 05-21-92
Date Completed: 05-21-92

Depth or Elevation:	Description of Material	Sample # & Type	Sample Depth	Blows Per 6"	"N" Blows/ft. Or Core Rec.
0.0'	Concrete				
0.5'	Very stiff gray silt, trace clay, trace sand, trace gravel - damp	1A	0.5 - 2.5	8 -10-12-18	22
		2A	2.5 - 4.5	12-20-22-30	42
	As above - becomes hard	3A	4.5 - 6.5	15- 9-20-32	29
5'					
	As above - becomes very stiff	4A	6.5 - 8.5	12-22-33-65	55
7.5'	Very dense gray sand, some gravel, trace silt - wet	5A	8.5 - 10.5	11-17-22-30	39
10.0'	Hard gray silt, some clay, trace sand				
	Bottom of Boring at 10.5'				
15'					
20'					
25'					
30'					

Method: Hollow Stem Auger
Technician: AW, SN
Job No. 12208/jmm

Water Observations
Initial Depth: 7.5 ft
Completion Depth: 3.0 ft
Depth After: _____ hrs. _____

Type Sampler
[X] A. Split-Spoon
[ ] B.
[ ] C. Shelby Tube

Log of Boring No. 2

Carboline
Ankeney Mill Road, Xenia, Ohio

Boring Location: As shown on boring location plan
Surface Elevation: Not Taken
Date Started: 05-21-92
Date Completed: 05-21-92

Depth or Elevation:	Description of Material	Sample # & Type	Sample Depth	Blows Per 6"	"N" Blows/ft. Or Core Rec.
0.0'	Concrete				
0.5'	Very stiff gray silt, some clay, trace sand, trace gravel - moist	1A	0.5 - 2.5	5 - 6 -12-15	18
		2A	2.5 - 4.5	8 -15-19-28	34
	As above - becomes hard	3A	4.5 - 6.5	8 -11-14-21	25
5'					
6.0'	Medium dense gray sand, some silt, trace clay, trace gravel - wet	4A	6.5 - 8.5	16-18-19-26	37
7.5'	Hard gray silt, some clay, trace sand, trace gravel - moist				
10'	Bottom of Boring at 8.5'				
15'					
20'					
25'					
30'					

Method: Hollow Stem Auger
Technician: AW, SN
Job No. 12208/jmm

Water Observations
Initial Depth: 6.0
Completion Depth: 5.5
Depth After: _____ hrs. _____

Type Sampler
[X] A. Split-Spoon
[ ] B.
[ ] C. Shelby Tube

Log of Boring No. 3

Carboline
Ankeney Mill Road, Xenia, Ohio

Boring Location: As shown on boring location plan
Surface Elevation: Not Taken
Date Started: 05-22-92
Date Completed: 05-22-92

Depth or Elevation:	Description of Material	Sample # & Type	Sample Depth	Blows Per 6"	"N" Blows/ft. Or Core Rec.
0.0'	Concrete				
0.5'	Medium stiff gray silt, some clay, some sand, trace gravel - moist	1A	0.5 - 2.5	3 - 3 - 4 - 7	7
	(ORIGINAL) As above, becomes very stiff	2A	2.5 - 4.5	9 -12-17-19	29
		3A	4.5 - 6.5	8 -14-20-20	34
5'	As above, becomes very hard	4A	6.5 - 8.5	18-22-18-34	40
	As above	5A	8.5 - 10.5	18-23-24-20	47
10'	As above	6A	10.5 - 12.5	39-43-48-60	91
	As above	7A	12.5 - 14.5	33-41-37-28	78
	As above				
15'	Bottom of Boring at 14.5' Auger refusal				
20'					
25'					
30'					

Method: Hollow Stem Auger
Technician: BT
Job No. 12208/jmm

Water Observations
Initial Depth: None
Completion Depth: None
Depth After _____ hrs. _____

Type Sampler
[X] A. Split-Spoon
[ ] B.
[ ] C. Shelby Tube

APPENDIX D

LABORATORY RESULTS

BOWSER MORNER

BOWSER MORNER

Shipping: 4518 Taylorsville Rd. • Dayton, OH 45424 Mailing: P.O. Box 51 • Dayton, OH 45401
513/236-8805

LABORATORY REPORT

To: 12208 Carboline
Attn: Stephen Sommer

Date: 06/03/92
Lab. No.: 9205318 001
Sample No.: 99787
Authorization:

On: One (1) Sample Received May 22, 1992 for Chemical Analysis.

Sample Identification: 1-1A 5-21-92 Boring 1 0.5-2.5 FT (Grab Sample)

ANALYTE	RESULT	UNITS	METHOD LIMIT
....VOLATILE ORGANICS....			
Benzene	BPQL	mg/Kg	0.1
Bromodichloromethane	BPQL	mg/Kg	0.3
Bromoform	BPQL	mg/Kg	0.3
Bromomethane	BPQL	mg/Kg	0.1
Carbon Tetrachloride	BPQL	mg/Kg	0.3
Chlorobenzene	BPQL	mg/Kg	0.1
Chloroethane	BPQL	mg/Kg	0.3
2-Chloroethylvinyl Ether	BPQL	mg/Kg	0.5
Chloroform	BPQL	mg/Kg	0.3
Chloromethane	BPQL	mg/Kg	0.3
cis-1,3-Dichloropropene	BPQL	mg/Kg	0.1
Dibromochloromethane	BPQL	mg/Kg	0.1
1,1-Dichloroethane	BPQL	mg/Kg	0.1
1,2-Dichloroethane	BPQL	mg/Kg	0.1
1,1-Dichloroethylene	BPQL	mg/Kg	0.1
1,2-Dichloropropane	BPQL	mg/Kg	0.1
Ethylbenzene	BPQL	mg/Kg	0.1
Methylene Chloride	BPQL	mg/Kg	0.3
1,1,2,2-Tetrachloroethane	BPQL	mg/Kg	0.1
Tetrachloroethylene	BPQL	mg/Kg	0.1
Toluene	BPQL	mg/Kg	0.1
trans-1,2-Dichloroethylene	BPQL	mg/Kg	0.1
trans-1'3-Dichloropropene	BPQL	mg/Kg	0.1
1,1,1-Trichloroethane	BPQL	mg/Kg	0.3
1,1,2-Trichloroethane	BPQL	mg/Kg	0.1
Trichloroethylene	BPQL	mg/Kg	0.1
Trichlorofluoromethane	BPQL	mg/Kg	0.1
Vinyl Chloride	BPQL	mg/Kg	0.3

The above analysis was performed in accordance with procedures listed in Title 40 of the Code of Federal Regulations, Parts 136.6 and 261-Appendices II and III. In lieu of other arrangements, all samples recovered for this project will be retained at this laboratory for a period of 30 days. All reports remain the confidential property of BOWSER-MORNER, INC. and no publication or distribution may be made without our expressed written consent, except as authorized by contract.

BOWSER MORNER

Shipping: 4518 Taylorsville Rd. • Dayton, OH 45424 Mailing: P.O. Box 51 • Dayton, OH 45401
513/236-8805

LABORATORY REPORT

Xylene	BPQL	mg/Kg	0.3
Acetone	BPQL	mg/Kg	4
Acrolein	BPQL	mg/Kg	0.5
Acrylonitrile	BPQL	mg/Kg	0.4
Carbon Disulfide	BPQL	mg/Kg	0.3
Dibromomethane	BPQL	mg/Kg	0.3
Dichlorodifluoromethane	BPQL	mg/Kg	0.3
Methyl Butyl Ketone	BPQL	mg/Kg	2
Methyl Ethyl Ketone	BPQL	mg/Kg	4
Methyl Isobutyl Ketone	BPQL	mg/Kg	2
Stryene	BPQL	mg/Kg	0.3
1,2,3 Trichloropropane	BPQL	mg/Kg	0.5
Vinyl Acetate	BPQL	mg/Kg	0.5

Respectfully Submitted,
BOWSER-MORNER, INC.
Analytical Sciences Division

Eric C. Wiegert, Manager
Environmental Sciences Laboratory

ECW/VTB
1 -Client
2 -File

The above analysis was performed in accordance with procedures listed in "the 40 of the Code of Federal Regulations, Parts 136.6 and 261-Appendices II and III. In lieu of other arrangements, all samples recovered for this project will be retained at this laboratory for a period of 30 days. All reports remain the confidential property of BOWSER-MORNER, INC. and no publication or distribution may be made without our expressed written consent, except as authorized by contract.

BOWSER MORNER

Shipping: 4518 Taylorsville Rd. • Dayton, OH 45424 Mailing: P.O. Box 51 • Dayton, OH 45401
513/236-8805

LABORATORY REPORT

To: 12208 Carboline
Attn: Stephen Sommer

Date: 06/03/92
Lab. No.: 9205318 002
Sample No.: 99788
Authorization:

On: One (1) Sample Received May 22, 1992 for Chemical Analysis.

Sample Identification: 2-1A 5-21-92 Boring 2 0.5-2.5 FT (Grab Sample)

ANALYTE	RESULT	UNITS	METHOD LIMIT
....VOLATILE ORGANICS....			
Benzene	BPQL	mg/Kg	0.1
Bromodichloromethane	BPQL	mg/Kg	0.3
Bromoform	BPQL	mg/Kg	0.3
Bromomethane	BPQL	mg/Kg	0.1
Carbon Tetrachloride	BPQL	mg/Kg	0.3
Chlorobenzene	BPQL	mg/Kg	0.1
Chloroethane	BPQL	mg/Kg	0.3
2-Chloroethylvinyl Ether	BPQL	mg/Kg	0.5
Chloroform	BPQL	mg/Kg	0.3
Chloromethane	BPQL	mg/Kg	0.3
cis-1,3-Dichloropropene	BPQL	mg/Kg	0.1
Dibromochloromethane	BPQL	mg/Kg	0.1
1,1-Dichloroethane	BPQL	mg/Kg	0.1
1,2-Dichloroethane	BPQL	mg/Kg	0.1
1,1-Dichloroethylene	BPQL	mg/Kg	0.1
1,2-Dichloropropane	BPQL	mg/Kg	0.1
Ethylbenzene	BPQL	mg/Kg	0.1
Methylene Chloride	BPQL	mg/Kg	0.3
1,1,2,2-Tetrachloroethane	BPQL	mg/Kg	0.1
Tetrachloroethylene	BPQL	mg/Kg	0.1
Toluene	0.2	mg/Kg	0.1
trans-1,2-Dichloroethylene	BPQL	mg/Kg	0.1
trans-1,3-Dichloropropene	BPQL	mg/Kg	0.1
1,1,1-Trichloroethane	BPQL	mg/Kg	0.3
1,1,2-Trichloroethane	BPQL	mg/Kg	0.1
Trichloroethylene	BPQL	mg/Kg	0.1
Trichlorofluoromethane	BPQL	mg/Kg	0.1
Vinyl Chloride	BPQL	mg/Kg	0.3

The above analysis was performed in accordance with procedures listed in Title 40 of the Code of Federal Regulations, Parts 136.6 and 261-Appendices II and III. In lieu of other arrangements, all samples recovered for this project will be retained at this laboratory for a period of 30 days. All reports remain the confidential property of BOWSER-MORNER, INC. and no publication or distribution may be made without our expressed written consent, except as authorized by contract.

BOWSER MORNER

Shipping: 4518 Taylorsville Rd. • Dayton, OH 45424 Mailing: P.O. Box 51 • Dayton, OH 45401
513/236-8805

LABORATORY REPORT

Lab No.: 9205318 002

Xylene	BPQL	mg/Kg	0.3
Acetone	BPQL	mg/Kg	4
Acrolein	BPQL	mg/Kg	0.5
Acrylonitrile	BPQL	mg/Kg	0.4
Carbon Disulfide	BPQL	mg/Kg	0.3
Dibromomethane	BPQL	mg/Kg	0.3
Dichlorodifluoromethane	BPQL	mg/Kg	0.3
Methyl Butyl Ketone	BPQL	mg/Kg	2
Methyl Ethyl Ketone	BPQL	mg/Kg	4
Methyl Isobutyl Ketone	BPQL	mg/Kg	2
Stryene	BPQL	mg/Kg	0.3
1,2,3 Trichloropropane	BPQL	mg/Kg	0.5
Vinyl Acetate	BPQL	mg/Kg	0.5

Respectfully Submitted,
BOWSER-MORNER, INC.
Analytical Sciences Division

Eric C. Wiegert, Manager
Environmental Sciences Laboratory

ECW/SAB
1 -Client
2 -File

The above analysis was performed in accordance with procedures listed in the Code of Federal Regulations, Parts 136.6 and 261-Appendices II and III. In lieu of other arrangements, all samples recovered for this project will be retained at this laboratory for a period of 30 days. All reports remain the confidential property of BOWSER-MORNER, INC. and no publication or distribution may be made without our expressed written consent, except as authorized by contract.

BOWSER MORNER

Shipping: 4518 Taylorsville Rd. • Dayton, OH 45424 Mailing: P.O. Box 51 • Dayton, OH 45401
513/236-8805

LABORATORY REPORT

To: 12208 Carboline
Attn: Stephen Sommer

Date: 06/03/92
Lab. No.: 9205318 003
Sample No.: 99789
Authorization:

On: One (1) Sample Received May 22, 1992 for Chemical Analysis.

Sample Identification: 2-W 5-21-92 Boring 2 - Water
(Grab Sample)

ANALYTE	RESULT	UNITS	METHOD LIMIT
....VOLATILE ORGANICS....			
Benzene	BPQL	ug/L	5
Bromodichloromethane	BPQL	ug/L	10
Bromoform	BPQL	ug/L	10
Bromomethane	BPQL	ug/L	5
Carbon Tetrachloride	BPQL	ug/L	10
Chlorobenzene	BPQL	ug/L	5
Chloroethane	BPQL	ug/L	10
2-Chloroethylvinyl Ether	BPQL	ug/L	20
Chloroform	BPQL	ug/L	10
Chloromethane	BPQL	ug/L	10
cis-1,3-Dichloropropene	BPQL	ug/L	5
Dibromochloromethane	BPQL	ug/L	5
1,1-Dichloroethane	BPQL	ug/L	5
1,2-Dichloroethane	BPQL	ug/L	5
1,1-Dichloroethylene	BPQL	ug/L	5
1,2-Dichloropropane	BPQL	ug/L	5
Ethylbenzene	BPQL	ug/L	5
Methylene Chloride	BPQL	ug/L	10
1,1,2,2-Tetrachloroethane	BPQL	ug/L	5
Tetrachloroethylene	BPQL	ug/L	5
Toluene	BPQL	ug/L	5
trans-1,2-Dichloroethylene	BPQL	ug/L	5
trans-1'3-Dichloropropene	BPQL	ug/L	5
1,1,1-Trichloroethane	BPQL	ug/L	10
1,1,2-Trichloroethane	BPQL	ug/L	5
Trichloroethylene	BPQL	ug/L	5
Trichlorofluoromethane	BPQL	ug/L	5
Vinyl Chloride	BPQL	ug/L	10

The above analysis was performed in accordance with procedures [illegible] Code of Federal Regulations, Parts 136.6 and 261-Appendices II and III. In lieu of other arrangements, all samples recovered for this project [illegible] laboratory for a period of 30 days. All reports remain the confidential property of BOWSER-MORNER, INC. and no publication or distribution [illegible] without our expressed written consent, except as authorized by contract.

BOWSER MORNER

Shipping: 4518 Taylorsville Rd. • Dayton, OH 45424 Mailing: P.O. Box 51 • Dayton, OH 45401
513/236-8805

LABORATORY REPORT

Lab No.: 9205318 003

Xylene	BPQL	ug/L	10
Acetone	BPQL	ug/L	100
Acrolein	BPQL	ug/L	20
Acrylonitrile	BPQL	ug/L	200
Carbon Disulfide	BPQL	ug/L	10
Dibromomethane	BPQL	ug/L	10
Dichlorodifluoromethane	BPQL	ug/L	10
Methyl Butyl Ketone	BPQL	ug/L	100
Methyl Ethyl Ketone	BPQL	ug/L	200
Methyl Isobutyl Ketone	BPQL	ug/L	100
Stryene	BPQL	ug/L	10
1,2,3 Trichloropropane	BPQL	ug/L	20
Vinyl Acetate	BPQL	ug/L	20

Respectfully Submitted,
BOWSER-MORNER, INC.
Analytical Sciences Division

Eric C. Wiegert, Manager
Environmental Sciences Laboratory

ECW/SAB
1 -Client
2 -File

The above analysis was performed in accordance with procedures listed in Title 40 of the Code of Federal Regulations, Parts 136.6 and 261-Appendices II and III. In lieu of other arrangements, all samples recovered for this project will be retained at this laboratory for a period of 30 days. All reports remain the confidential property of BOWSER-MORNER, INC. and no publication or distribution may be made without our expressed written consent, except as authorized by contract.

BOWSER MORNER

BOWSER-MORNER
4518 Taylorsville Road
P.O. Box 51
Dayton, OH 45401-0838

7205018-001-WX-WS

CHAIN OF CUSTODY RECORD

BOWSER-MORNER, INC., DISTRICT OFFICES
2416-B Overdrive, Lexington, KY 40510
122 S. St. Clair St., P.O. Box 838, Toledo, OH 43696

JOB NO.: 12208
PROJECT NAME: Carboline
SAMPLER'S (Signature): Stephen D. Sommer

BMI Sample No.	DATE	TIME	Composite	Grab	SAMPLE LOCATION/DESCRIPTION	NO. OF CONTAINERS	Sulfric Acid	Nitric Acid	~~Non-Preserved~~ Iced	Other	40 ml. VOA	Liter Jar			REMARKS
1-1A	5/21			X	Boring 1 0.5-2.5 ft 99787	1			X			1			VOC's (8240)
2-1A	5/21			X	Boring 2 0.5-2.5 ft 99788	1			X			1			
2-W	5/21			X	Boring 2 - Water 99789	6			X		6				

NOTE - 6 VOA Bottles contain varying amounts of sediment - use best samples of the 6 available VOA Bottles.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Stephen D. Sommer	5/22/92 8:09 AM				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)

Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Cooler No.	Cooler Temp.°C	Remarks:
		Julia Welk	5/22/92 8:09 am			

BOWSER MORNER

Shipping: 4518 Taylorsville Rd. • Dayton, OH 45424 Mailing: P.O. Box 51 • Dayton, OH 45401
513/236-8805

LABORATORY REPORT

To: 12208 Carboline
Attn: Stephen Sommer

Date: 06/03/92
Lab. No.: 9205326 001
Sample No.: 99880
Authorization:

On: One (1) Sample Received May 22, 1992 for Chemical Analysis.

Sample Identification: 3-1A 5/22/92 Boring 3 (Grab Sample)

ANALYTE	RESULT	UNITS	METHOD LIMIT
....VOLATILE ORGANICS....			
Benzene	BPQL	mg/Kg	0.1
Bromodichloromethane	BPQL	mg/Kg	0.3
Bromoform	BPQL	mg/Kg	0.3
Bromomethane	BPQL	mg/Kg	0.1
Carbon Tetrachloride	BPQL	mg/Kg	0.3
Chlorobenzene	BPQL	mg/Kg	0.1
Chloroethane	BPQL	mg/Kg	0.3
2-Chloroethylvinyl Ether	BPQL	mg/Kg	0.5
Chloroform	BPQL	mg/Kg	0.3
Chloromethane	BPQL	mg/Kg	0.3
cis-1,3-Dichloropropene	BPQL	mg/Kg	0.1
Dibromochloromethane	BPQL	mg/Kg	0.1
1,1-Dichloroethane	BPQL	mg/Kg	0.1
1,2-Dichloroethane	BPQL	mg/Kg	0.1
1,1-Dichloroethylene	BPQL	mg/Kg	0.1
1,2-Dichloropropane	BPQL	mg/Kg	0.1
Ethylbenzene	2.4	mg/Kg	0.1
Methylene Chloride	BPQL	mg/Kg	0.3
1,1,2,2-Tetrachloroethane	BPQL	mg/Kg	0.1
Tetrachloroethylene	BPQL	mg/Kg	0.1
Toluene	16	mg/Kg	0.1
trans-1,2-Dichloroethylene	BPQL	mg/Kg	0.1
trans-1'3-Dichloropropene	BPQL	mg/Kg	0.1
1,1,1-Trichloroethane	BPQL	mg/Kg	0.3
1,1,2-Trichloroethane	BPQL	mg/Kg	0.1
Trichloroethylene	BPQL	mg/Kg	0.1
Trichlorofluoromethane	BPQL	mg/Kg	0.1
Vinyl Chloride	BPQL	mg/Kg	0.3

The above analysis was performed in accordance with procedures listed in Title 40 of the Code of Federal Regulations, Parts 136,6 and 261-Appendices II and III. In lieu of other arrangements, all samples recovered for this project will be retained at this laboratory for a period of 30 days. All reports remain the confidential property of BOWSER-MORNER, INC. and no publication or distribution may be made without our expressed written consent, except as authorized by contract.

BOWSER MORNER

Shipping: 4518 Taylorsville Rd. • Dayton, OH 45424 Mailing: P.O. Box 51 • Dayton, OH 45401
513/236-8805

LABORATORY REPORT

Lab No.: 9205326 001

Xylene	6.7	mg/Kg	0.3
Acetone	BPQL	mg/Kg	4
Acrolein	BPQL	mg/Kg	0.5
Acrylonitrile	BPQL	mg/Kg	0.4
Carbon Disulfide	BPQL	mg/Kg	0.3
Dibromomethane	BPQL	mg/Kg	0.3
Dichlorodifluoromethane	BPQL	mg/Kg	0.3
Methyl Butyl Ketone	BPQL	mg/Kg	2
Methyl Ethyl Ketone	BPQL	mg/Kg	4
Methyl Isobutyl Ketone	BPQL	mg/Kg	2
Stryene	BPQL	mg/Kg	0.3
1,2,3 Trichloropropane	BPQL	mg/Kg	0.5
Vinyl Acetate	BPQL	mg/Kg	0.5

Respectfully Submitted,
BOWSER-MORNER, INC.
Analytical Sciences Division

Eric C. Wiegert, Manager
Environmental Sciences Laboratory

ECW/VTB
1 -Client
2 -File

The above analysis was performed in accordance with procedures issued in "Title 40" of the Code of Federal Regulations, Parts 136,6 and 261-Appendices II and III. In lieu of other arrangements, all samples recovered for this project will be retained at this laboratory for a period of 30 days. All reports remain the confidential property of BOWSER-MORNER, INC. and no publication or distribution may be made without our expressed written consent, except as authorized by contract.

BOWSER MORNER

BOWSER-MORNER
4518 Taylorsville Road
P.O. Box 51
Dayton, OH 45401-0836

Gau5 Jdlo - U01

CHAIN OF CUSTODY RECORD

BOWSER-MORNER, INC., DISTRICT OFFICES

2416-B Overdrive
Lexington, KY 40510

122 S. St. Clair St.
P.O. Box 836
Toledo, OH 43696

JOB NO.: 12208

PROJECT NAME: Carboline

SAMPLER'S (Signature): Stephen D. Sommer

BMI Sample No.	DATE	TIME	Composite	Grab	SAMPLE LOCATION/DESCRIPTION	NO. OF CONTAINERS	Sulfric Acid	Nitric Acid	~~Non-Preserved~~ Iced	Other	40 ml. VOA	500 ml Jar			REMARKS
3-1A	5/22			X	Boring 3 99880	1			X			1			VOC's - 8240

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Stephen D. Sommer	5/22/92 2:56 PM				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature) Julie Dolk	Date/Time 5/22/92 7:56	Cooler No.	Cooler Temp.°C	Remarks: