MEMO

FROM: Kayla Lyon, Director, Dept. of Natural Resources

Cc: Ed Tormey, Division Administrator, Environmental Services Division
Alex Moon, Deputy Director, Dept. of Natural Resources
Tammie Krausman, Legislative Liaison, Dept. of Natural Resources
Amie Davidson, Bureau Chief, Land Quality Bureau

DATE: December 23, 2020

RE: Hazardous Waste Disposal Site Registry Annual Report

Pursuant to 455B.427 the annual report of the registry listing current hazardous waste or hazardous waste disposal sites in Iowa is provided. In lieu of a printed report the Department has created and maintains a web site for the registry's annual report. The web site is updated as new information becomes available throughout the year.

The report can also be viewed at http://www.iowadnr.gov/Environmental-Protection/Land-Quality/Contaminated-Sites/Haz-Waste-Sites-Registry

If you have any questions, please contact Matt Culp at 515-725-8337 or matt.culp@dnr.iowa.gov.

HAZ WASTE SITES REGISTRY

Learn about the DNR's COVID-19 response and how the current health emergency is impacting DNR facilities, services and events.

Hazardous Substance Remedial Fund and Sites Registry

The Hazardous Substance Remedial Fund and Sites Registry fulfill obligations under Sections 455B.424, 455B.426 and 455B.427 of the Code of Iowa. These sections require a full accounting to the Legislature and the Governor regarding the Hazardous Substance Remedial Fund and a report regarding sites listed on the Registry of Hazardous Waste Disposal Sites each January. The web site is updated as new information becomes available throughout the year.

Reports for prior years are available by contacting Matt Culp at 515-725-8337 or Matt.Culp@dnr.iowa.gov .

Restriction on the Sale and Change in Use of Property

When a site is listed on the registry, a notice of listing is recorded in the county recorders office and becomes part of the chain of title. Iowa Code section 455B.430 prohibits (1) any "substantial change" in the use of the property without prior written approval by the director of the Iowa DNR; and (2) any sale, conveyance or transfer of title to the property without the director's prior approval. Property owners should submit a written request for approval to the director of the Iowa DNR explaining the planned change in use or the proposed sale of the property. The director is required to respond within thirty days. Property owners may appeal an adverse decision of the director and request an administrative hearing. See Iowa Code section 455B.430(3) .

If the director has reason to believe there has been a substantial change in use or sale without prior approval, he may file an action in Iowa District Court to enjoin the activity and assess a penalty up to $1,000 per day of violation.

Registry of Hazardous Waste Disposal Sites

The department maintains an assessment file for each site listed in the Registry. These files are available through the Iowa DNR Records Center in Des Moines, Iowa. Individual site records may also be accessed through the contaminated sites database . For most sites, these files contain a summery of comprehensive site investigations. The site information package contains a detailed review of the site and is used as the basis for listing and classifying the sites in the Registry. However, not all the known hazardous waste or contaminated sites that exist in the state are listed on the Registry. Contact Matt Culp at 515-725-8337 or Matt.Culp@dnr.iowa.gov for further information regarding specific locations or sites.

Classification Categories

All sites listed on the Registry are classified according to the relative priority listing for remedial action at the site. During the initial listing, the site must be placed in one of the first four classifications ("a", "b", "c", or "d"). While a site is listed on the Registry, its classification can be changed because of site cleanup activities or because of new information about the site. The five classification categories are specified in Section 455B.427.3 of the Code of Iowa .

- Classification Categories
- There was four (4) reclassification or delistings for 2020

Registered Sites by County with Priority Classifications

The following table shows the counties that contain registered sites along with the priority classifications, the year added to the registry, and the primary contaminant for each site. The list is in alphabetical order by the county in which the sites are located and then by the site name.

Contaminant Legend

Registry of Hazardous Waste or Hazardous Substance Disposal Sites				
County Name	Site Name	Class	Year Listed	Primary Contaminant(s)
Black Hawk	John Deere Waterloo	B	1990	PCBs / Dioxin / VOCs
Clinton	Collis Corporation	D	1984	PCBs / Metals
	Todtz Farm (Camanche Landfill)	B	1989	Metals / VOCs
Dallas	Progressive Foundry (Former Waste Disposal Site)	D	1991	Foundry Waste / Metals
Des Moines	Burlington Northern Railroad (Grease Lake)	D	1990	VOCs
	United States of America (IAAP)	B	1986	Munitions / RDX / TNT
Dubuque	John Deere Sanitary Landfill	D	1991	Metals
Floyd	LaBounty Site	D	1984	Metals / VOCs
	Shaw Avenue Dump Site	D	1990	Metals / VOCs
Franklin	United Hydraulics	D	1989	VOCs / Metals / BTEX
Hardin	Iowa Falls Coal Gas	D	1990	BTEX / PAHs
Iowa	Amana Refrigeration, Inc	D	1993	VOCs

Jasper	Newton Dump Site	D	1984	Metals
Jefferson	Fairfield Coal Gasification Plant	D	1989	PAHs
Lee	Fort Madison Landfill (Rodeo Dump / Park)	D	1989	Metals / VOCs
Linn	US Nameplate	B	1984	VOCs
	Ralston Site	D	1990	Metals / VOCs
Mahaska	Mitrisin Disposal Site (Clow Corporation)	D	1984	Foundry Waste / Metals
Marion	Rolscreen	D	1990	PCP Preservative
Montgomery	Red Oak Landfill	D	1986	VOCs
Muscatine	Brei Landfill	D	1990	VOCs
	Monsanto Company	D	1990	Pesticides
Polk	Dico Company, Inc	D	1984	VOCs
Scott	Davenport Coal Gas	D	1990	PAHs
	Hopkins, RV (Sludgemaster, Barriers, Inc)	D	1984	Metals
Sioux	Vogal Paint & Wax Company	D	1984	Metals / VOCs
Story	Ames Laboratory, Chemical Disposal Site	D	1991	Radiological
Union	Wellman Dynamics / Fansteel Corporation	C	1992	Radiological / Acids
Wapello	John Deere Ottumwa Works	D	1989	Metals / VOCs
Woodbury	Mid America Tanning	D	1989	Metals
Wright	Belmond Pesticide Disposal Site	D	1984	Chlorinated Pests

Our Mission
To conserve and enhance our natural resources in cooperation with individuals and organizations to improve the quality of life in Iowa and ensure a legacy for future generations.

DNR Home
Contact Us
Site Policy
Adobe Reader
Employee Signin.

Customer Service: 515-725-8200 | Iowa DNR Headquarters Wallace State Office Building | 502 East 9th Street, 4th Floor | Des Moines, IA 50319-0034

Hazardous Waste Registry Contaminant Legend

BTEX:	Benzene, toluene, ethyl-benzene, xylenes (constituents of gasoline)
Metals:	General term for heavy metals (i.e. lead)
PAHs:	Poly-aromatic hydrocarbons
PCBs:	Polychlorinated bi-phenols
PCP:	Pentachloro-phenol (preservative)
Pesticides:	May include herbicides, insecticides, banned products (i.e. DDT)
Radiological:	Radioactive waste
VOCs:	Volatile Organic Compounds

Registry of Hazardous Waste or Hazardous Substance Disposal Sites

Registry Classification

All sites listed on the Registry are classified according to the relative priority listing for remedial action at the site. The five classification categories are specified in Section 455B.427.3 of the Code of Iowa. During the initial listing, the site must be placed in one of the first four classifications ("a", "b", "c", or "d"). The action priorities for the five classifications are shown in the following table.

While a site is listed on the Registry, its classification can be changed because of site cleanup activities or because of new information about the site.

Registry Priority Classifications		
Class	**Action Required**	**Site Condition**
"a"	Immediate Action Required	Causing or presenting an imminent danger of irreversible or irreparable damage to the public health or environment.
"b"	Action Required	Significant threat to the environment.
"c"	Action May Be Deferred	Not a significant threat to the environment.
"d"	Requires Continued Management	Site properly closed.
"e"	No Further Action Required	Site properly closed no evidence of present or potential adverse impact.

Registry of Hazardous Waste or Hazardous Substance Disposal Sites

Site(s) reclassified or removed in 2020:

Reclassified:

None

Removed:

Belle Plaine Coal Gas located in Belle Plaine, Iowa
McGraw – Edison located in Centerville, Iowa
Sheller Globe / United Technologies (Grimes Property) located in Keokuk, Iowa
Square D Company located in Cedar Rapids

WHIRLPOOL CORP. AMANA APPLIANCE DIVISION, INC
(Middle Amana, Iowa)

GENERAL DESCRIPTION

The site has two separately identified disposal areas within the property owned by Maytag Corporation located immediately south of Middle Amana, Iowa. The 16.5-acre **Middle Amana Dump** (MAD) site is on the east-end of the Amana property, and the 14-acre **Process Well Field** (PWF) site is generally located from the central to the southern boundary of the Amana property. Both areas are in the SE 1/4 of Section 28, T81N, R9W, Iowa County, Iowa. The southern tip of the PWF site is in the NE 1/4 of Section 33, T81N, R9W.

SITE CLASSIFICATION

The site is classified "d" in accordance with 455B.427.3. The site is properly closed, but requires continued management. The site entered the Registry in 1993.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- **Chlorinated Hydrocarbons: trichloroethylene (TCE) and 1,1,1-trichloroethane (TCE,) 1,1,1-trichloroethane, trans-1,2-dichloroethylene, 1,1-dichloroethane, and 1,1-dichloroethylene**

The Amana Refrigeration manufacturing facility has been operating at the site since 1934. The facility manufactures refrigerators and other appliances. The manufacturing operation has included plating, painting, and degreasing activities. The degreasing solvents include trichloroethylene (TCE) and 1,1,1-trichloroethane. TCE was used as a degreasing solvent from 1956 to 1968.

The site contains an abandoned tailrace channel, which was used by Middle Amana as a municipal dump. Amana Refrigeration also used the dump for the disposal of hazardous wastes from 1956 until the dump was closed in 1970. The closed dump was covered with about three feet of dirt. An estimated 500 cubic yards of municipal and hazardous wastes were disposed in the dump. The hazardous wastes included TCE degreaser sludge, methylene chloride foam flush waste, paint wastes, and foam wastes**.** The site also contained a (former) ditch from which an undetermined volume of TCE or TCE waste may have been discharged from the plant, and is now covered by a plant building addition.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **An environmental concern exists for the protection of the surface waters and related flora and fauna of the Iowa River.**

- **A public health concern exists for the potential exposure to contaminated drinking water**.

Environmental Concern

The Amana Refrigeration facility is located within the flood plain of the Iowa River. The river is approximately 1/4 mile south of the facility. The river is within the headwaters of the Coralville Reservoir and is used for recreational and fishing activities. Two outflow ditches from the facility (#002 and #003) are monitored for total toxic organic compounds that are regulated by federal effluent guidelines that require TTO monitoring and effluent limits. The IDNR regulates the release of contaminants in the ditch through an NPDES permit.

Public Health Concern

In September 1982, a composite groundwater sample was taken from the seven wells used by Amana Refrigeration for process water and drinking water. The results showed TCE contamination at 135 ug/L. During a subsequent investigation by the USEPA TCE contamination was detected as high as 4,100 ug/L. Since that time the facility has obtained its drinking water from the city , while its own wells have been used exclusively for process water. In response to the apparent contamination, Amana Refrigeration initiated a series of groundwater investigations in 1983. These have included monthly to biannual monitoring of several process wells and monitoring wells. Currently the monitoring wells are sampled biannually.

The community of Middle Amana is one of several Amana colonies that receive drinking water from a system of several wells that blend water. The well nearest the site (#8) was abandoned on June 29, 2015. Amana Refrigeration also receives drinking water from the city. An Amana process well (#4) that had demonstrated the highest TCE contamination was shut down in July 1991. The level of contamination in this well varied from below detection limits to 1,800 PPB with the average contaminant level of approximately 500 PPB with no apparent trend.

Results from a monitoring well (WF-14S) located up-gradient from process well #4 indicates the former ditch (TCE degreaser location) may be another source area. Groundwater results from monitoring well (WF-14S) through 2017 continue to detect elevated levels of TCE.

Most production wells at the facility utilize the upper sand and gravel aquifer for water supply. The general direction of groundwater movement in the alluvial aquifer is south towards the nearby Iowa River. The TCE contamination plume appears to be captured by the draw down of the process wells. Monitoring wells south of the process wells indicate little or no contamination is leaving the site. Prior to its abandonment, samples have been collected from the Middle Amana municipal well #8 for volatile organic analyses. The results were below detection limits for all compounds, including the contaminants in the process well field.

STATUS OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The state is the lead agency for the site.

Amana Refrigeration proposed remedial actions for the MAD site in August 1987. The department reviewed and approved the remedial plan in September 1989. The remedial actions were completed in July 1990. Afterwards the surface was black topped for use as a parking lot. The remedial actions included the following:

- Construction of slurry barrier walls on the east and west ends of the dump to prevent the migration along the former tailrace channel.

- Construction of an impervious cap to prevent infiltration into the waste materials.

- Installation and operation of a monitoring system to ensure the integrity of the containment system.

Amana has been conducting groundwater monitoring at the site since April 1984. The plant process wells are capturing most of the contaminated groundwater, which is discharged at surface water (outfall # 001).

Groundwater Response Action Plan submitted to IDNR to address commingled BTEX and chlorinated hydrocarbon plume. The former solid waste dumpsite located on the Amana property was formerly closed with concurrence with Solid Waste Section of IDNR and no further assessment actions or remediation of the waste dump is required.

Biannual groundwater monitoring is conducted to assure the continued effectiveness of the groundwater contamination plume containment and the progress of natural attenuation. The facility conducted sub-slab vapor and indoor air sampling in both November 2018 and February 2019. The Iowa DNR received a potential vapor intrusion evaluation on March 20, 2019. Upon review, no further vapor intrusion investigation is required at this time. The most current groundwater monitoring report was received March 16, 2020 and was reviewed by the Iowa DNR. In general, groundwater sampling and plume evaluation will continue through biannual monitoring. However, due to the Covid-19 pandemic, the May 2020 sampling event was cancelled. The October 2020 sampling event went forward with the addition of those wells typically sampled in May. In August 2020, Whirlpool notified the Iowa DNR that this site would be changing ownership but the site work will continue to be managed by Whirlpool.

Well Sampled May 2009

Well Sampled May and October 2009

Well Not Sampled

c-VOC Groundwater Exceedances

c-VOC Groundwater Detections

Feet

100 0 100 200

Meters

50 0 50 100

Figure 12

Groundwater Quality Data
Chlorinated VOCs
May and October 2009
Amana Refrigeration
Middle Amana, Iowa

Well Sampled May 2009

Well Sampled May and October 2009

Well Not Sampled

BTEX Groundwater Exceedances

BTEX Groundwater Detections

Feet

100 0 100 200

Meters

50 0 50 100

Figure 13

Groundwater Quality Data
BTEX
May and October 2009
Amana Refrigeration
Middle Amana, Iowa

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AMES LABORATORY, CHEMICAL DISPOSAL SITE
(Ames, Iowa)

GENERAL DESCRIPTION

The Ames Laboratory Chemical Disposal (CDS) site is located north of Ontario Street on Scholl Road, Ames, Iowa. The site occupies 2 acres in the Southeast 1/4 of the Northeast 1/4 and in the Northeast 1/4 of the Southeast 1/4 of Section 32, T84N, R24W, Story County, Iowa. The site is owned by Iowa State University and was entered on the Registry in July 1991.

SITE CLASSIFICATION

The site is classified "d" Site Properly Closed Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- **The types of hazardous was at this site are radioactive materials, volatile organic compounds and heavy metals**

Ames Laboratory operated by the Iowa State University (ISU) Institute for Physical Research and Technology, for the U.S. Department of Energy (DOE). Starting in the early 1950s the site was used as an uncontrolled disposal area for the laboratory equipment and chemicals from ISU researchers. The quantities and types of materials disposed of during that period are unknown.

In the late 1950s, ISU erected a fence around the area of the chemical disposal site. From 1957 to 1966 the site was used for the disposal of radioactive materials and hazardous chemicals. Nine unlined pits, used to bury radiological and hazardous chemicals contained in steel pails, drums and plywood boxes, were located at the southeast corner of the CDS site. Substances identified as buried at the site include thorium waste, uranium waste, beryllium oxide, yttrium, asbestos, lithium, mercury, thallium salts, cyanide, and zirconium.

Another location within the fenced area (west of the pits) was used to burn uranium metal shavings and other debris directly on to the ground surface. Remediation of the burn area was conducted in 1980 and again in 1987. Surface contamination was also discovered in 1987 and was partially remediated. A soil investigation conducted in 1990 revealed elevated levels of thorium and uranium in several areas of the CDS.

Assessment activities at the site include groundwater monitoring and soil sampling. In 1993, groundwater contamination with radioactive isotopes was found in the on-site alluvial aquifer. Further assessment of the extent of groundwater contamination was completed in 1998. The groundwater remains contaminated with radioactive materials, volatile organic compounds and heavy metals. The heavy metal concentration of uranium is as high as 7,500 ug/L, while the Gross Alpha and Beta measurements of radionuclides in groundwater are as high as 2,600 pCi/L. The safe drinking water standard (MCL) for Gross Alpha is 15 pCi/L.

SUMMARY OF HEALTH AND ENVIRONMENTAL IMPACTS

- **The primary environmental and public health concern is exposure to radioactive waste.**

The Ames Laboratory Chemical Disposal site is located within the city of Ames, Iowa. The site is situated at the head of a ravine that drains to Squaw Creek approximately 1,800 feet west of the site. The creek flows five miles to the southeast into the South Skunk River. The Ames water wells are located approximately three miles east and southeast of the site.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIATION

The U.S. Department of Energy provided funding to Ames Laboratory and Iowa State University to conduct a site assessment to fully characterize the contamination at the site. An Interim Removal Action (IRA) was proposed by Ames Laboratory and approved by the department in April 1993. The IRA was conducted in 1994. As part of the removal action, the area of the nine burial pits was excavated to an average depth of nine feet. Approximately 2,000 cubic yards of contaminated soil and debris were removed to a disposal facility. A walkover survey was conducted in September 1995, which revealed radiation hotspots. Contaminated soil was removed from two of the hotspots until radiation levels were below twice background.

Monitoring wells at the site were removed prior to the 1994 excavation. New monitoring wells were installed in 1995 as part of a final Phase II Remedial Investigation. The report of the investigation was submitted in August 1996 along with a Focused Feasibility Study/Proposed Plan. The report concluded the groundwater contamination exceeded acceptable risk-based criteria. The EPA, Iowa DNR, Iowa Department of Health, and Iowa State University all expressed concerns over the residual soil contamination and level of groundwater pollution at the site. All the regulatory agencies requested additional site investigation and expanded groundwater monitoring.

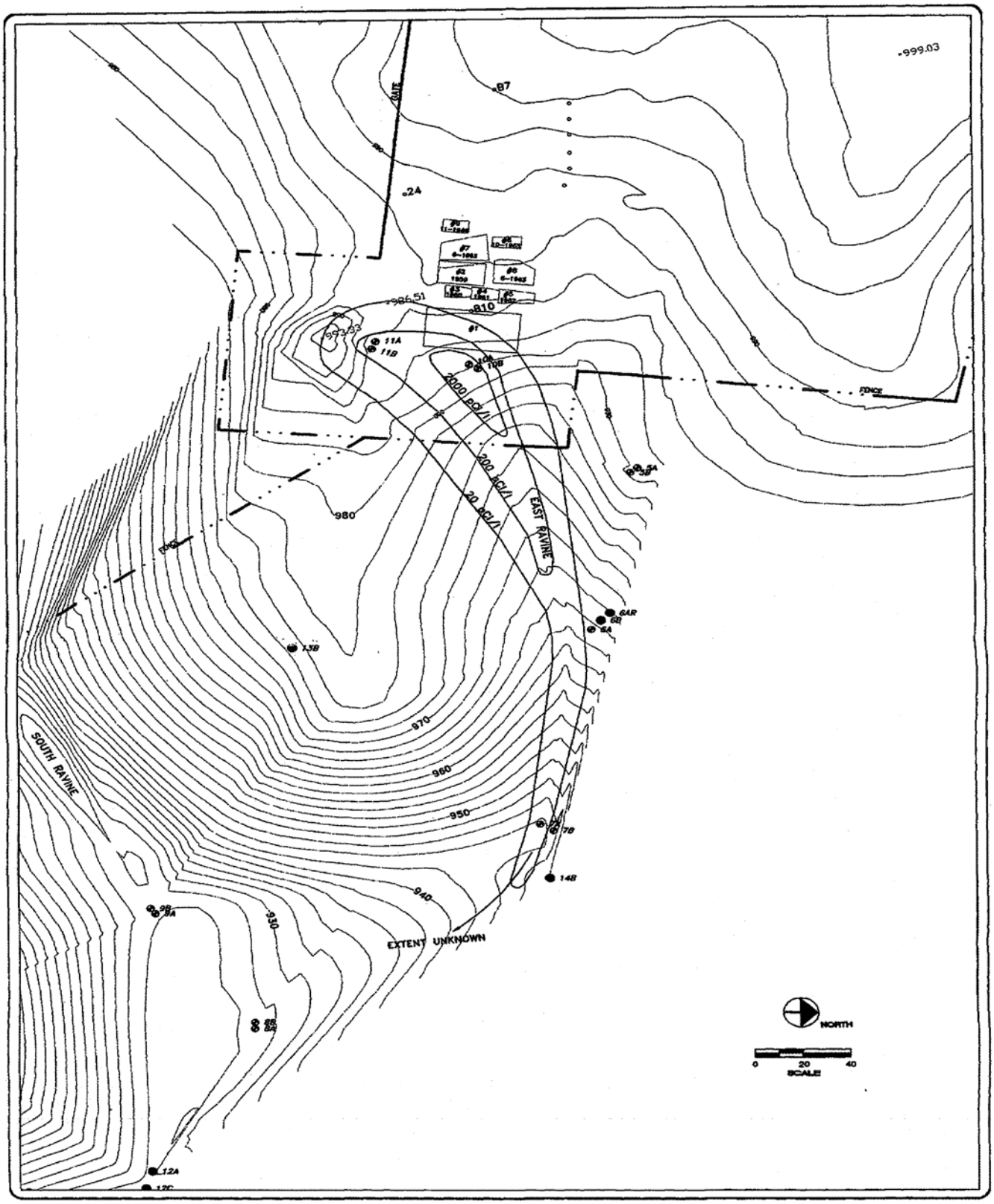
Additional assessment work was initiated in the spring of 1997, including an investigation into the bedrock. Surface and sub-surface soil samples were collected to further identify the extent of soil contamination. This assessment was completed in 1998 and the information obtained from this investigation was used to determine what further remedial action is required at the site.

Surface soils with radiation levels more than twice background were removed in August 1998 (six 55-gallon drums). The area was resurveyed for compliance in September 1998. The groundwater plume was determined to be in a steady state at the site and was not expected to be a threat to Squaw Creek or the public water supply. The Iowa Department of Public Health determined no further action was necessary other than annual groundwater monitoring.

Annual ground water monitoring was conducted from 2002 through 2007 for gross alpha and gross beta, thorium and uranium. Analytical results indicated that there is no migration of residual contamination beyond the defined plume (see map). The IDNR as granted approval to terminate ground water monitoring at the site but it will remain listed on the Registry due to existing residual radiological ground water contamination.

2017: A letter was sent from the Iowa DNR to the responsible party pursuant to Iowa Code (IC) §455I allowing sites listed on the Registry of Hazardous Waste Disposal sites to self “de-list” with the implementation of an Environmental Covenant.

202: No action taken in 2020 the site remains on the Registry of Hazardous Waste Disposal Sites



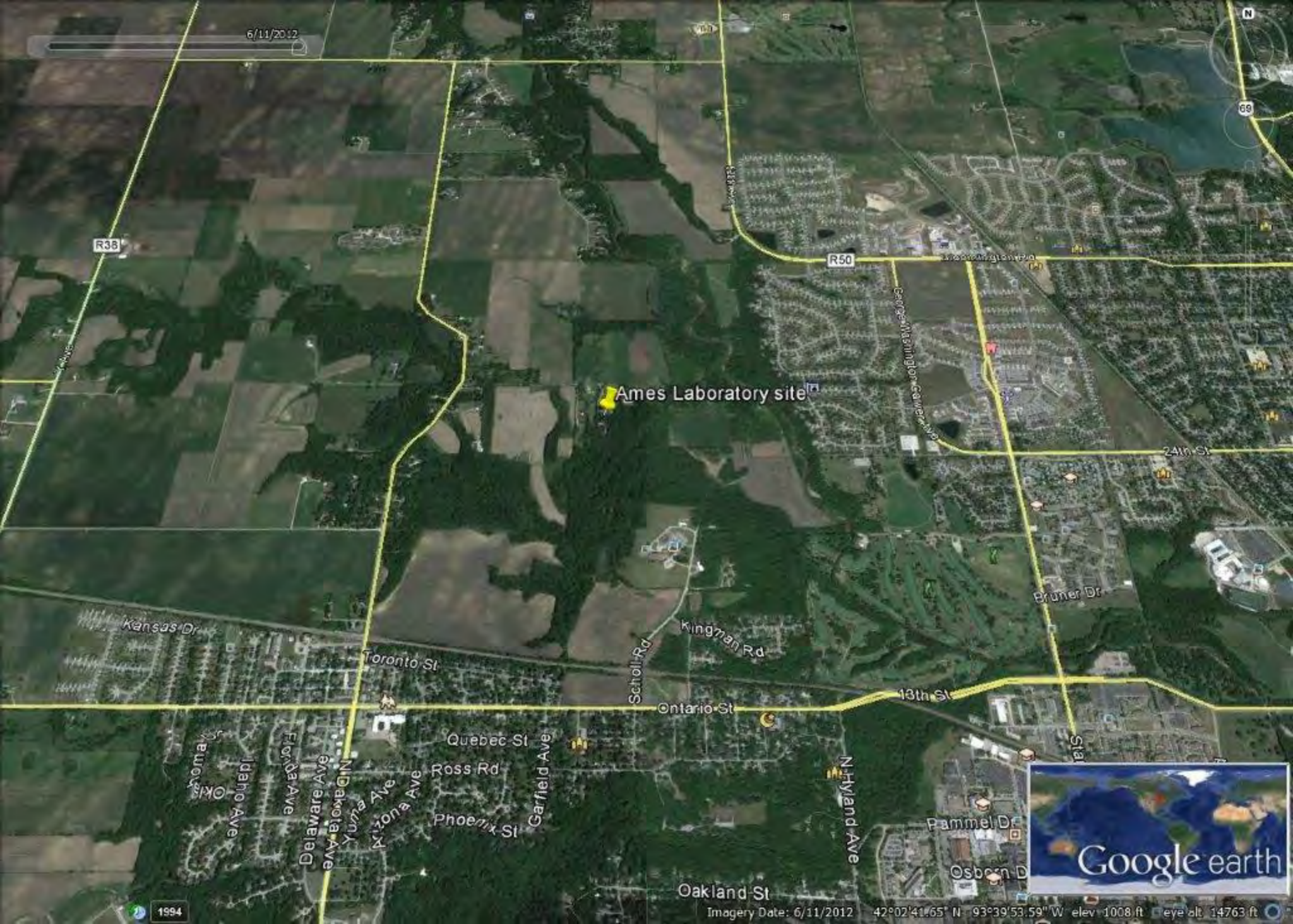
FOX ENGINEERING AMES, IOWA

FOX Engineering Associates, Inc.
1531 Airport Road
Ames, Iowa 50010
Phone: 515 233-0000
FAX: 515 233-0103

CHEMICAL DISPOSAL SITE
ESTIMATED GROUNDWATER PLUME
GROSS ALPHA CONTAMINATION
AMES LABORATORY
AMES, IOWA

FIGURE: 7

REVISION	NO.	DATE
DRAWN JAK	PROJECT NO. 2609-94A	DATE 4/1/98


6/11/2012
R38
R50
Ames Laboratory site
24th St
Bruner Dr
Kansas Dr
Toronto St
Kingman Rd
Scholl Rd
13th St
Ontario St
Quebec St
Ross Rd
Garfield Ave
Phoenix St
Arizona Ave
Yuma Ave
Delaware Ave
Idaho Ave
Florida Ave
N Hyland Ave
Pammel Dr
Osborn Dr
Oakland St
Google earth
1994
Imagery Date: 6/11/2012 42°02'41.65" N 93°39'53.59" W elev 1008 ft eye alt 14763 ft

BELMOND PESTICIDE DISPOSAL SITE

(*Formerly Simpson Property*)
(Belmond, Iowa)

GENERAL DESCRIPTION

The site is located adjacent to the Iowa River on the north side of Belmond, Iowa. It is on land generally described as the SE 1/4 of the NW 1/4 of the NW 1/4 of Section 19, T92N, R23W Wright County, Iowa. The land was previously owned by the city of Belmond and used as a city dump. The site was entered on the Registry in 1984.

SITE CLASSIFICATION

In 2001 the classification of this site is revised to "d". Site Properly Closed, Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

In October 1966 a tornado caused extensive damage to the city of Belmond. As part of the town cleanup, about 80 tons of pesticides, all in granular or powdered form, were disposed at the site.

This disposal was conducted by Armour Agriculture Chemical Company, under the supervision of the Iowa Department of Agriculture. A trench was excavated about eight feet below existing grade for the pesticide wastes. The trench was about four feet wide at the bottom and twelve feet wide at the top. The site was used until 1976 for the disposal of solid waste. The site soils are generally sands and gravels with localized clay units. Under a search warrant in October 1983, soil samples were obtained from the site. Dieldrin, aldrin, and parathion were detected in all samples. Knox weed, 2,4-D, EPTAM, DDT, and heptachlor were identified in some of the soil samples.

The groundwater is between 10 and 20 feet below the surface. This surficial aquifer appears to be hydraulically connected to the Iowa River. In 1983 several private and public wells around the site were tested for contaminants. The results were negative for all contaminants expected at the site. Some of these wells were sampled again in 1985 and all results were normal. However, trans-1,2-dichloroethene was observed at low levels in spring water south of the site. The relationship of this contaminant to the site is unknown.

An emergency administrative order was issued to the site owners and the city of Belmond in August 1984. The order required submission of a plan of study to determine the extent of contamination, identify groundwater movement, and propose a plan of remedial action. This order was appealed and the hearing officer's decision ruled in favor of the appellants.

During September 1986 the EPA performed a Site Investigation. Four monitoring wells were installed and five soil borings were drilled around or on the site. Surface water and surface sediment samples were collected upgradient and downgradient from the site. Groundwater samples were collected from nearby shallow drinking water wells and from the four monitoring wells. The water samples showed no contamination above background levels. Several soil/sediment samples contained contaminants above background values. The pesticides aldrin (31 ppb) and dieldrin (12 ppb) were found in the soil sample 8.5 feet north of the pesticide disposal trench.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

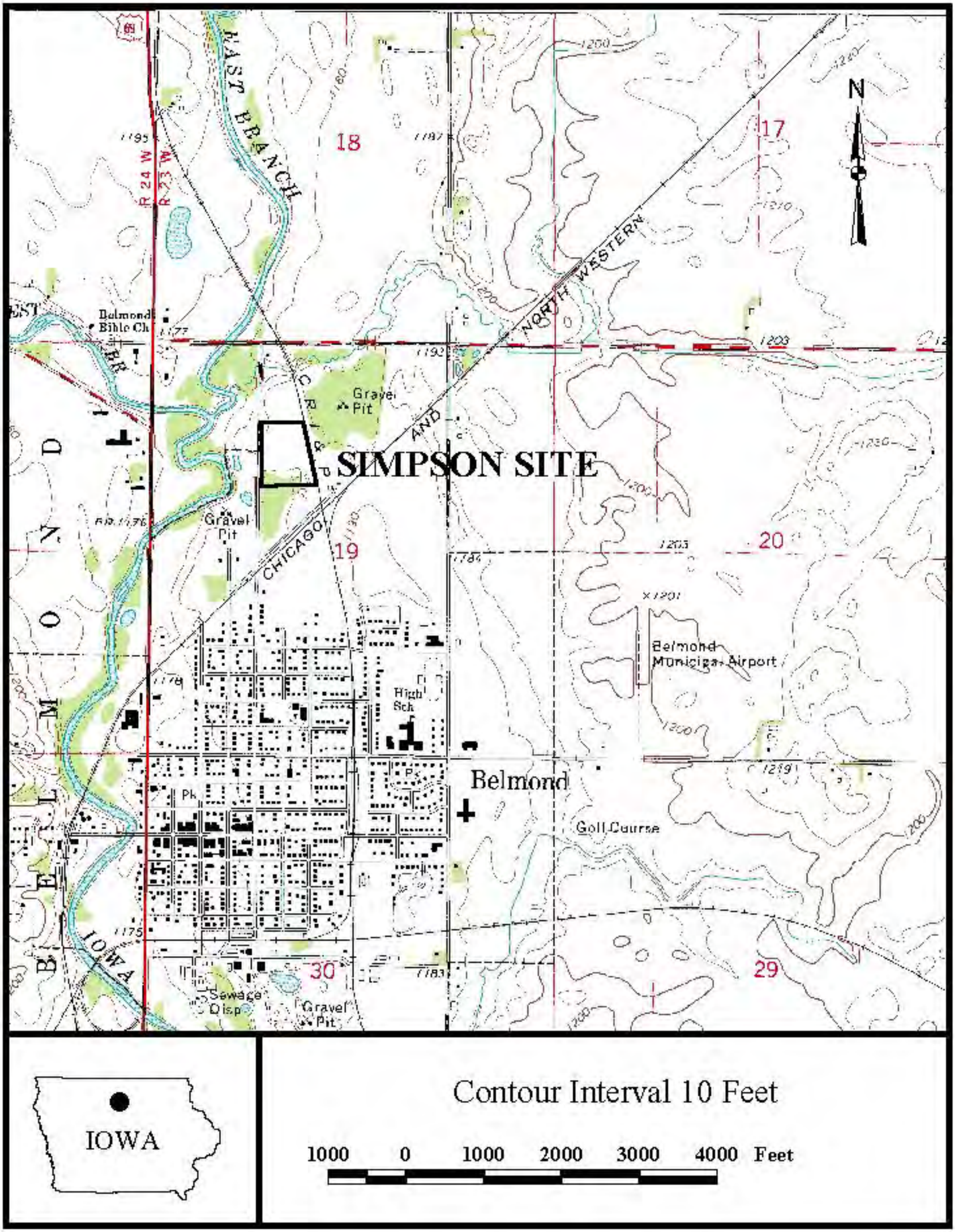
The Final Health Assessment for the site was completed in November 1991. The results of that assessment were that no evidence was observed that human exposure is occurring from the site. The site could pose a future health concern if human activity disrupts the integrity of the disposal area or if there is migration of pesticides through groundwater to potable water wells.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA was the lead agency from the 1986 investigation through the Final Health Assessment in 1991. The health assessment recommended periodically sampling on-site groundwater monitoring wells for pesticides and verifying the direction of groundwater flow at the waste site. The EPA has referred the site back to state authority for further action. An assessment was conducted by EPA and it was determined that a removal action was not warranted.

2020:
The site is closed but receives periodic field inspection by Iowa DNR and will remain on Registry as the institutional control until replacement by Environmental Covenant.

(Simpson, Mr. & Mrs. George)



BREI LANDFILL
(Muscatine, Iowa)

GENERAL DESCRIPTION

The Brei Landfill is located on a farm about 5 1/2 miles east of the corporate limits of Muscatine, Iowa. The site occupies approximately 21 acres in the SW 1/4 of the SE 1/4 of Section 24, T77N, R1W, Muscatine County, Iowa. The site was entered on the Registry in August 1990.

SITE CLASSIFICATION

The site is classified "d" in accordance with 455B.427.3. The site is properly closed but requires continued management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- **Vinyl chloride, trans-1-2-dichloroethene, 1,2-dichloropropane, ethylbenzene, 1,1,1-trichloroethane, methylene chloride, toluene, and xylenes**

- **Industrial waste included an estimated 802,000 pounds of paint sludge and 10,000 tons of tannery sludge**.

The city of Muscatine operated a non-permitted dump at the site from August 1968 through December 1975 before the implementation of the state's program of industrial waste tracking. Municipal and industrial wastes were dumped into ravines 30 to 50 feet deep. The trash and commercial wastes were not covered and generally not burned.

In April 1985 the Iowa Department of Water, Air, and Waste Management (IDWAWM) collected a water sample from the intermittent creek leading away from the landfill and from a residential well after the owner expressed concern over the quality of the water. Water samples collected contained vinyl chloride, trans-1-2-dichloroethene, 1,2-dichloropropane, ethylbenzene, 1,1,1-trichloroethane, methylene chloride, toluene, and xylenes.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The primary public health concern is exposure to contaminated drinking water in surrounding private wells**

- **The primary environmental concern(s) are leachate from site to surface water and general groundwater quality**

The only source of drinking water within a four-mile radius of the site is private wells. The Iowa Department of Natural Resources fish hatchery is also approximately a mile south-southeast of the site.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIATION

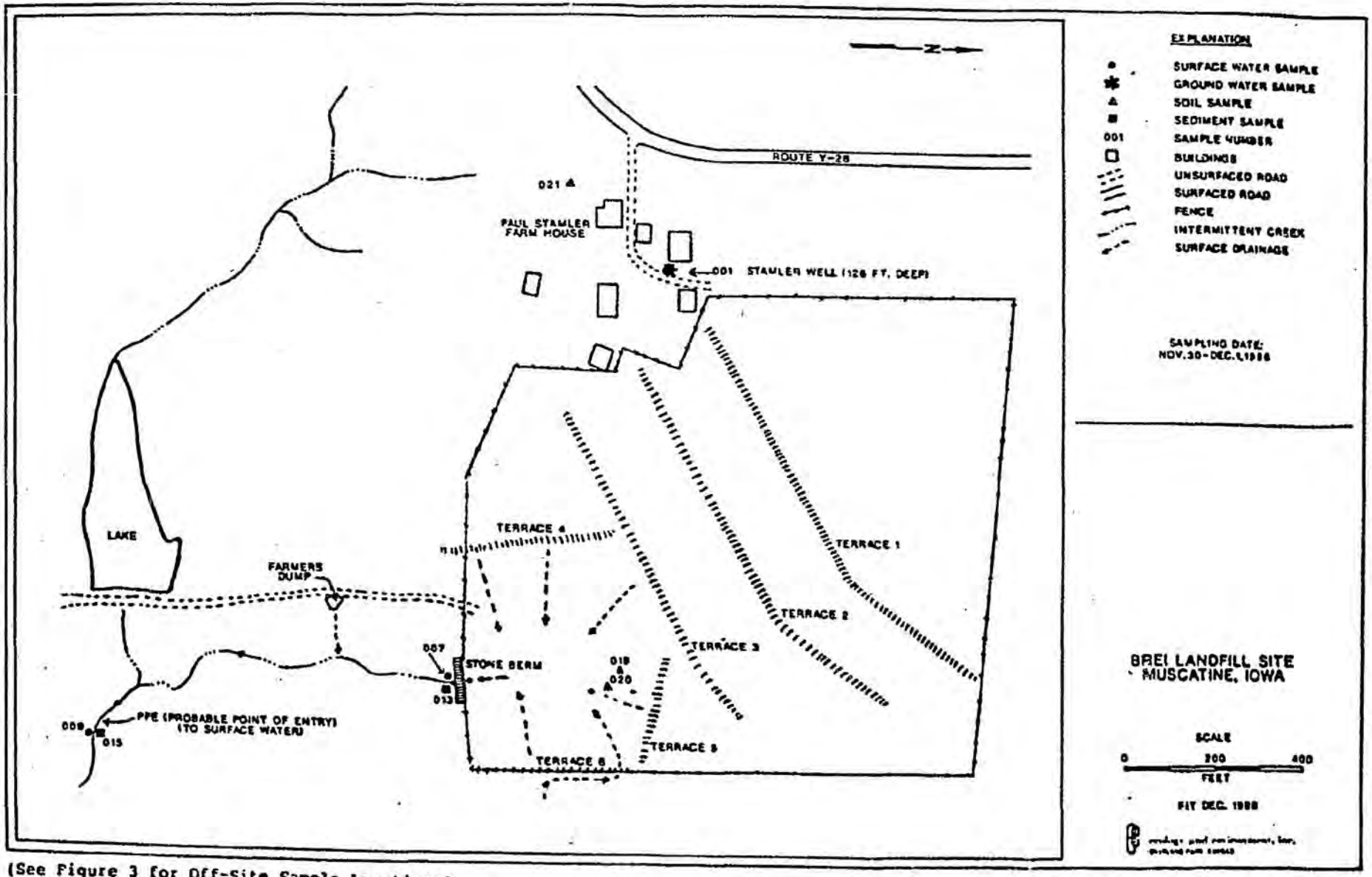
The EPA has referred the site back to state authority with a recommendation for further surface water and groundwater monitoring. There are no monitoring wells on-site. The absence of a liner beneath the landfill increases the potential for the release of contaminants to surface and groundwater. Periodic inspection of the land fill cover is conducted by IDNR. The IDNR conducts periodic site inspections of surface cover and sample surface water and local private well. The most recent sampling event was conducted in March of 2009. A water sample was collected from the Stamler private well and was analyzed for volatile organic compounds (VOCs) and metals. The only constituent detected in the water sample was barium at a concentration of 0.48 mg/L which is below the drinking water standard of 2 mg/L.

2018: Additional sampling will need to be conducted in the summer of 2019 to meet the need for periodic site inspections and sampling.

2019: No environmental activities occurred in 2019.

2020: No environmental activities occurred in 2020.

Site Photo 2014



(See Figure 3 for Off-Site Sample Locations)

SAMPLE LOCATION MAP

(Brei Landfill)

Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 6000 7000 Feet

BNSF (*GREASE LAKE*)
(West Burlington, Iowa)

GENERAL DESCRIPTION

BNSF operated a locomotive repair installation south of the site. The repair work included wreck repair, major overhauls, and painting. The site is located in the West 1/2 of Section 25, Township 70 N, Range 3 W, Des Moines County, Iowa. The site includes a small landfill and drainage channel leading to Grease Lake, Grease Lake itself and a small portion of Honey Creek north of the lake. The site covers approximately 12 acres and is owned by BNSF. Grease Lake was used as a disposal site for shop and sanitary waste from 1927 until 1976. Part of the site was leased to City of Burlington for use as a landfill until 1992. The site was entered on the Registry in March 1990. Since the site was entered on the Registry, further investigations have shown soil, sediment, groundwater, and surface water contamination south and west of the boundaries of the Registry Site Grease Lake.

SITE CLASSIFICATION

In 2004 BNSF discontinued maintenance operations, and 2006, discontinued materials storage activities. This site is re-classified to “d”, Site Closed, Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- Waste lubrication and hydraulic oils, tetrachloroethylene and other halogenated degreasing solvents, waste diesel fuel, mineral spirits, paint thinners, other spent non-halogenated solvents, waste sodium hydroxide, and sanitary wastes.

The facility used Lyxol, mineral spirits, and a chlorinated solvent blend for parts cleaning. These spent solvents are hazardous wastes based on the characteristic of ignitability. Tetrachloroethylene (PCE) was used as a degreasing solvent until 1983. Painting waste is hazardous based on the characteristics of ignitability and EP toxicity for lead and chromium. Industrial wastewater (which includes paint stripping waste) is pre-treated (oil and grit removal and then dissolved air flotation) prior to discharge to the sanitary sewer.

Volatile organic compounds found at elevated concentrations in Grease Lake include tetrachloroethylene (PCE), trichloroethylene (TCE), and 1,2-trans-dichloroethylene. Analysis of shallow sediment samples identified PCB-1260, 2-methylnaphthalene, chloro-benzene, xylenes, lead and arsenic are present above background levels. To reduce access to Grease Lake, BNSF has fenced the most accessible route to the lake and posted No Trespassing/Fishing signs along the fence. Sampling of the unnamed stream to the west of the site found intermittent and low levels of PCE in the stream. Monitoring of the stream indicates these concentrations are decreasing with time.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

PCE contamination has been found in fractured bedrock at depths up to 160 feet. However, the deeper Maple Mill Shale formation forms a substantial boundary to contaminant movement, thus protecting the underlying aquifer used by the city of West Burlington for water supply, however off-site groundwater contamination does not appear to be a problem. The city of West Burlington, Iowa obtains its municipal water primarily from the City of Burlington, a Surface Water source treatment facility. West Burlington also maintains two emergency wells located southwest of the site.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

EPA is the lead agency at the site. Since 1994, BNSF has been conducting routine groundwater and surface water monitoring and is conducting an ongoing (phased) investigation of PCE in groundwater and in the unnamed stream to the northwest of the source area. Information provided in these investigations indicates surface waters of unnamed creek are impacted by contaminated groundwater discharging to the creek.

2002: In April 2002 BNSF signed an Administrative Order on Consent (AOC) with USEPA. The AOC prescribed the development of an Interim Measure Work Plan (IMWP) to address potential groundwater contamination discharging to Unnamed Creek. The IMWP was submitted to EPA in July of 2002 and was approved in September **2002**. Subsequent to the approval of the IMWP it was determined that a Human Health and Ecological Risk Assessment (HHERA) would also be conducted to determine if (remedial) measures would be required for Unnamed Creek.

2003: A first Quarter Groundwater and Surface Water Monitoring report and a revised Interim Measures Work Plan (IMWP) Incorporating the (HHERA) were submitted for EPA review and comment in June 2003. In August, a Preliminary Human Health and Ecological Conceptual Site Model was submitted for EPA approval. In September a Second Quarter Ground Water and Surface Water Monitoring report was submitted for EPA approval.

2004

- July 2004: Semi-annual Ground Water and Surface Water Monitoring Report, and work plan for Final RCRA Facility Investigation (RFI) were submitted.

- September 2004: Human Health and Ecological Risk Assessment Work Plan for Final RFI submitted.

- November 2004: Human Health Risk Assessment report for Unnamed Creek. Conclusion of the report is that the discharge of ground water to Unnamed Creek does not present significant risk to public health.

- December 2004: Screening Level Ecological Risk Assessment and Biological Assessment (**SLERA**) report. Results of report that no evidence of adverse impacts to aquatic receptors.
- Indoor Air Evaluation Work Plan was submitted to assess the potential vapor intrusion to buildings on site.

2005

- Submittal of Final Indoor Air Evaluation Work Plan for EPA approval.
- Submittal of Semiannual Groundwater and Surface water Monitoring Report for DNR review.
- Submittal of Phase I RCRA Facility Investigation (RFI).
- Submittal of Final Addendum for Ambient and Indoor Air Sampling report for the Phase I RCRA Facility Investigation QA plan.
- Submittal of Summary report for Industrial Sewer cleaning and Inspection

2006

- Submittal of (Fall) 2005 Semiannual Groundwater and Surface water Monitoring Report
- Submittal of Spring 2006 Semiannual groundwater and surface water report
- Indoor Air Evaluation Report submitted 9/14/06
- Submittal of Phase II RCRA Facility Investigation Work Plan

2008

- Semi-annual monitoring reports received.

2009

- Revised Facility-Wide Ground Water Investigation
- Treatability Study Work Plan

2010

- Implementation of supplemental investigation field work including treatability studies
- 2009 Annual surface and groundwater monitoring report
- Spring 2010 semi-annual surface and groundwater monitoring report
- Site Assessment Work Plan

2011

- Quarterly site progress reports submitted for review and comment
- Site Assessment Work Plan (Addendum #1) to 2010 work plan.

2012

- Submittal of revised RCRA Facility Investigation Report
- EPA commented on revised RCRA Facility Investigation Report
- Soil vapor sampling performed

- Submitted, for EPA approval, additional investigations conducted to support the RFI as follows:
- *Deep Bedrock Drilling Report, March 23, 2012*
- *Southern Property Boundary Well Pumping Test Report, March 26, 2012*
- *Facility-Wide Groundwater Investigation Report, Update III*, April 12, 2012

2013

- Submitted *2012 Annual Groundwater Monitoring Report*, February 22, 2013
- Submitted *Revised RCRA Facility Investigation, (RFI) Report*, *June 28, 2013*, to address comments prepared by the EPA in 2012.
- Submitted revised Ecological and Human Health Risk Assessments, as sections within the RFI, to address comments prepared by the EPA in 2012.
- *Submitted Spring 2013 Groundwater Monitoring Report, August 8, 2013*
- EPA approved the *Vapor Investigation Report*, *August 29, 2013*, that concluded: VOCs are not present in near surface groundwater along the southern property boundary in the area investigated, PCE detected in ambient air samples was not associated with the site, and does not present an unacceptable risk to residents adjacent to the site
- EPA approved the *2012 Deep Bedrock Drilling Report* with modifications

2014

- Submitted *2013 Annual Groundwater Monitoring Report*, February 23, 2014
- Submitted *RCRA Facility Investigation Report,* March 2014
- Submitted *Spring 2014 Groundwater Monitoring Report,* August 18, 2014
- EPA approved the document *RCRA Facility Investigation Report, March 2014* in a letter dated July 23, 2014
- Submitted routine Quarterly Progress Reports 47, 48, 49 and 50

2015

- Submitted *2014 Annual Groundwater Monitoring Report*, February 23, 2015
- Submitted *Spring 2015 Groundwater Monitoring Report,* August 21, 2015
- Submitted routine Quarterly Progress Reports 51, 52, 53 and 54

2016

- Submitted *2015 Annual Groundwater and Surface Water Monitoring Report* to EPA on February 29, 2016
- Submitted *Draft Technical Memorandum to Support Plume Containment Remedy AOC-7 (Facility-wide Groundwater)on June 16, 2016*
- Submitted *Spring 2016 Semi-Annual Groundwater and Surface Water Monitoring Report* to EPA on August 15, 2016
- Submitted routine Quarterly Progress Reports 55, 56, 57, and 58
- EPA has proposed to conduct a Preliminary Assessment at a neighboring property

2017

- Submitted 2016 Annual Groundwater and Surface Water Monitoring Report to EPA on February 23, 2017.
- Submitted Spring 2017 Semi-Annual Groundwater and Surface Water Monitoring Report to EPA on August 29,2017
- Submitted routine Quarterly Progress Reports 59, 60, 61and 62.
- Submitted preliminary draft IC and soil management plan to EPA on June 30,2017
- Submitted draft Groundwater Capture Zone Modeling Work Plan to EPA on June 30, 2017
- Submitted draft Monitored Natural Attenuation Work Plan on September 30, 2017
- Submitted draft Setback Area – Soil Sampling Work Plan on September 28, 2017

2018

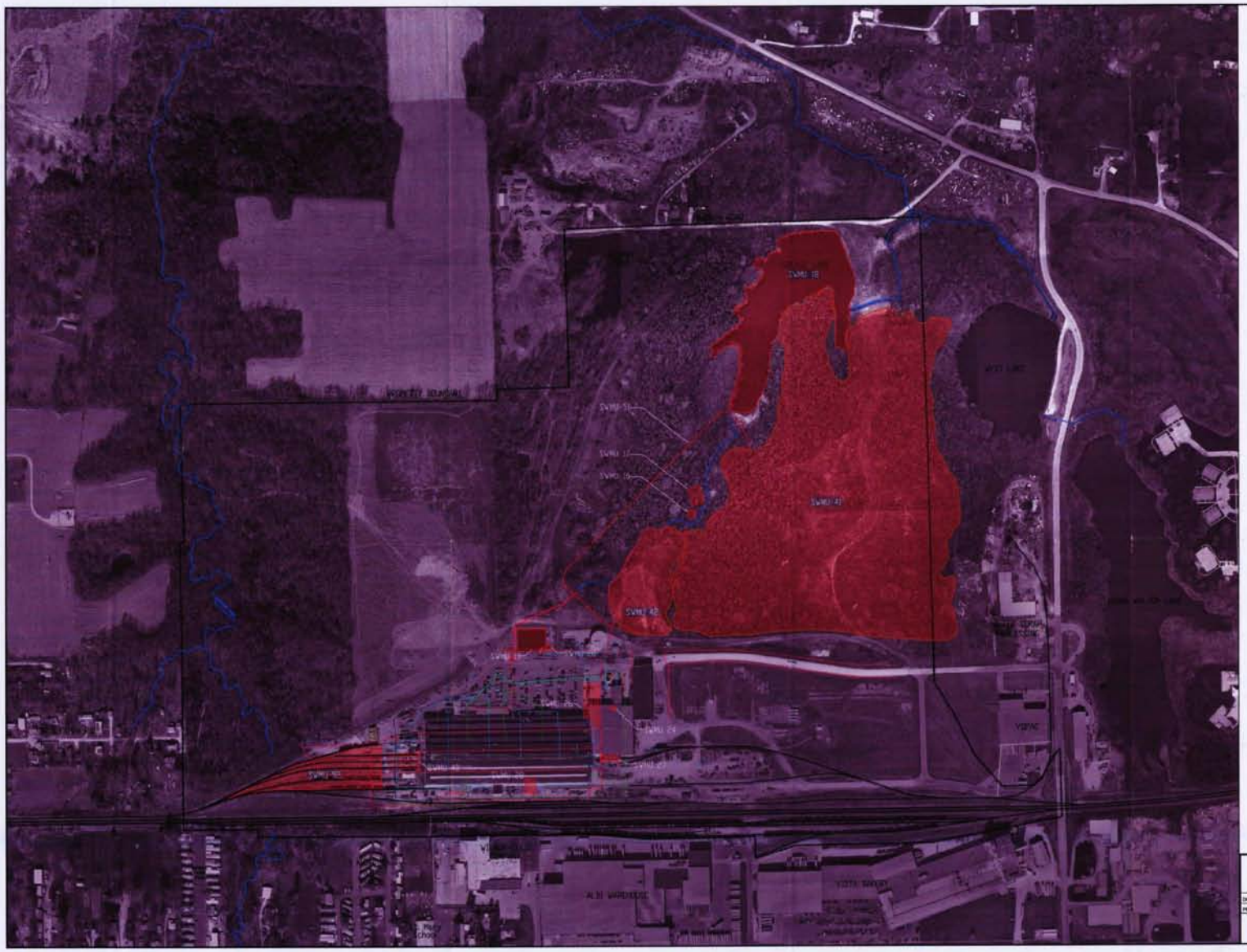
- Implemented Setback Area Sampling Plan – soil sampling conducted on December 19, 2017
- Submitted 2017 Annual Groundwater and Surface Water Monitoring Report to EPA on March 12, 2018
- Submitted revised draft Groundwater Modeling Work Plan to EPA on April 19, 2018
- Collected Spring 2018 groundwater and surface water samples June 11-15, 2018
- Submitted revised draft Monitored Natural Attenuation Work Plan on July 6, 2018
- Submitted routine Quarterly Progress Reports 63, 64, 65 and 66
- Goals for the coming months include working on the draft environmental covenant, submitting aquifer pumping test work plan and submitting setback area sampling results

2019

- Initiated drilling program to complete aquifer pumping test on September 30, 2019, and completed the field work for the pumping test in November 2019.
- Submitted Spring 2019 Semi-Annual Groundwater and Surface Water Monitoring Report
- Submitted routine Quarterly Progress Reports 67, 68, 69 and 70
- The EPA's Statement Of Basis will be on public notice from November 29, 2019 through January 29, 2019
- Goals for coming months include working on the draft environmental covenant, complete the fall 2019 semi-annual groundwater and surface water monitoring, and complete drilling program and aquifer pumping test

2020

- Submitted Draft 2019 Aquifer Pumping Test Report on July 20, 2020.
- Submitted 2019 Annual Surface and Groundwater Sampling Report February 25, 2020.
- Submitted routine Quarterly Progress Reports 71, 72, 73 and 74.
- Conducted spring surface and groundwater sampling week of June 15, 2020.



N

LEGEND

- Property Boundary
- Railroad Tracks
- SWMU 15
- SWMUs
- SWMU 51

SWMU No.	SWMU Name
SWMU 15	Wastewater Collection System
SWMU 16	Septic Vault
SWMU 17	Septic Vault Sludge Basin
SWMU 18	Greene Lake Surface Impoundment
SWMU 19	Former Wastewater Treatment Plant Lagoon
SWMU 23	Former Shop Waste Drying Bed
SWMU 24	Two Former Wastewater Sludge Drying Beds
SWMU 26	Former Lye Vat Facility
SWMU 27	Paint Stripping Building and Former Drying Bed
SWMU 28	Former Hydrocarbon/Paint Facility
SWMU 40	Locomotive Testing Area
SWMU 41	Municipal Landfill
SWMU 42	BNSF Company Construction Landfill
SWMU 43	Greene Lake Drainage Basin
SWMU 52	Rear Holding Track Area

Note: The actual boundaries of SWMU 51 are currently undefined. The boundaries shown on this figure are approximate. The area is not shaded to avoid visual obstruction of other map features.

CON 12-15
Doc #14926

0 100 200 400
SCALE IN FEET
1" = 200' 0"

AERIAL PHOTOGRAPH TAKEN 1998

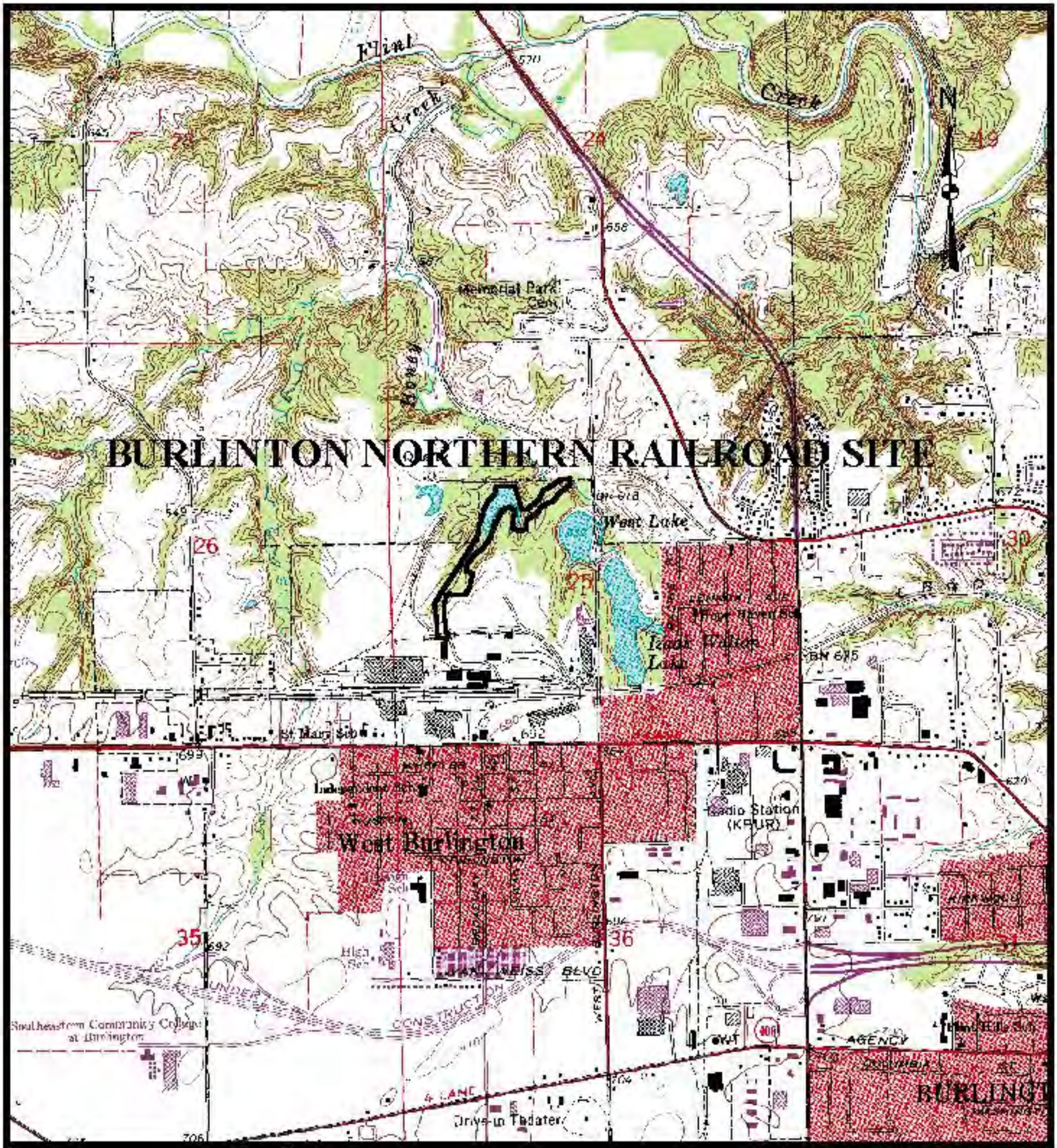
Facility Setting and Location of Solid Waste Management Units
BNSF WEST BURLINGTON FACILITY
BURLINGTON, IOWA

DRAWN BY:	SFA	DATE:	03/16/2007
PROJECT NO:	27432	DWG FILE:	39-07-27432

TRC
10 SOUTH RIVERSIDE PLAZA
SUITE 1770
CHICAGO, IL 60606-3907
312-879-0191

FIGURE
PLATE 1

(Burlington Northern Railroad)



Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 6000 Feet

COLLIS CORPORATION
(Clinton, Iowa)

GENERAL DESCRIPTION

The Collis Corporation is located within the limits of the city of Clinton, Iowa and is generally described as the SE 1/4 of the NW 1/4 of Section 14, T81N, R6E, Clinton County, Iowa. **Southern Steel and Wire Holding Co**. currently owns and operates Collis a manufacturing facility, which produces shelving, baskets, and accessories for refrigeration equipment. The facility was previously owned by Chamberlain Manufacturing Corporation. Steel wire is used to fabricate products and several metal finishing techniques are employed. These techniques include zinc plating followed by chromium conversion coating, lacquer dip and baking, and epoxy coating. The site is about 12.5 acres. The site was entered on the Registry in December 1984.

SITE CLASSIFICATION

In 2019 the site is re-classified to "d" in accordance with 455B.427.3.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- **Groundwater monitoring has identified elevated levels of chromium, cyanide, nickel, lead, trichloroethylene, arsenic, trans-1,2-dichloroethylene, dichlorofluoromethane, zinc, and total organic halides.**
- **Soil sampling has identified elevated levels of TCE, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, naphthalene, PCB-1254, PCB-1260, arsenic, hexavalent chromium, lead, and amendable cyanide.**

From 1970 to 1979, chrome plating wastewater treatment sludge was placed in six lagoons located on plant property. An estimated total of 1,090 cubic yards of sludge were disposed of in these lagoons. The lagoons were constructed without any type of liner or leachate collection system. The estimated depth of the sludge is approximately five feet. Also, before 1980, site contamination occurred through numerous spills and leaks from containers and equipment and overflows.

EPA regulates the lagoons under the RCRA program. All of the sludge surface impoundments/lagoons were addressed during remedial efforts from 1986 to 1989 by excavating soil and transporting it off-site for disposal. The area containing the original five-six sludge surface impoundments/lagoons is about 150 feet wide by 300 feet long and is located near the northernmost corner of the plant site. The excavated areas of the sludge surface impoundments/lagoons have been filled and the containment embankment graded level with surrounding ground. The sludge surface impoundments/lagoons also contained water-soluble oil that leached from metal shavings deposited about 50 yards from the sludge surface impoundments/lagoons in the late 1970s.

Eleven soil samples collected in the area of the lagoons showed PCBs and elevated levels of several metals in most of the samples. The PCB-Aroclor 1260 was found as high as 53 ppm. The metals included chromium (670 ppm), Copper (4,000 ppm), lead (878 ppm), and zinc (3020 ppm).

The EPA received a closure plan from Collis to remove all contaminated sludge and soil in the lagoon area. Collis began to remove the hazardous waste sludge in November 1986 and continued until February 1987. About 11,000 tons of sludge were removed and transported off-site as a hazardous waste. Prior to sludge removal, about 270,000 gallons of liquid were removed from the impoundments and treated for cyanide destruction in temporary treatment tank structures. The treated liquid was discharged to the sanitary sewer. After sludge removal, another 90,000 gallons of liquids were pumped from the area and removed for off-site treatment. **SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS**

The Collis facility is located on the Mississippi River floodplain. The soils consist of alternating layers of clay and silts with varying layers of fine to coarse sand or silty sand. Depths to the limestone bedrock range from 6 to 118 feet. Past discharges of wastewater and sludge have caused water quality violations in Mill Creek. Surface water

samples indicate there is a significant increase in copper, zinc, and cyanide downstream of the plant's wastewater discharge point. Collis and EPA agree this contamination was caused by the plant's wastewater discharge rather than groundwater flow. Concern over this contamination has decreased due to a revision of the Collis NPDES permit.

STATUS OF ASSESSMENT, MONITORING OR REMEDIAL ACTION

A plan to close the surface lagoons was developed in 1998 through a Consent Agreement and Consent Order for sludge removal, back filling, and site grading. The EPA is regulating this site under RCRA authority. The state will continue to coordinate with EPA to assure proper cleanup. Collis is also conducting a RCRA Facility Investigation under an EPA order (VII-94-H-0001).

In 1998 the RCRA Facility Investigation (RFI) Report addressing soil, groundwater and sediment and surface water Manufacturer's Ditch was completed. In 2000 the Additional Investigation Activities: Interim Report (an additional assessment) of the extent of ground water contamination within bedrock and off site contamination was completed. In October 2002, a RCRA Facility Investigation: Interim Measures Work Plan (Aquifer Test) was submitted for aquifer characterization for purpose of evaluating corrective action alternatives. Also, RCRA Facility Investigation: Corrective Measures Work Plan Addendum submitted for the purpose of further characterization of extent of soil and ground water contamination.

2003: The U.S. Environmental Protection Agency (USEPA) provided technical review comments on a Draft RFI/CMS work plan. The purpose of the work plan was to provide a strategy for completing the investigation of soil and groundwater contamination at the facility. Facility representatives and USEPA are planning to meet early in 2004 to discuss USEPA comments on the draft work plan and the revisions that will be required in order for the work plan to be approved.

2004: The EPA met with Collis representatives in February 2004 to discuss the technical review comments prepared by the EPA after the EPA reviewed the RFI/CMS Work Plan. Collis subsequently submitted a revised RFI/CMS Work Plan in August 2004, which is currently being evaluated by EPA. The EPA anticipates having an approved RFI/CMS Work Plan in place in early 2005.

2005: An RFI/CMS work plan was reviewed and approved by the EPA in April 2005. Environmental fieldwork consisting of soil sampling and the installation and sampling of additional new monitoring wells was completed during the summer of 2005. As of December 2005 Collis is in the process of preparing a report on the results of this fieldwork. Upon receipt of this report, the EPA will review it to determine whether the extent of soil and groundwater contamination has been characterized sufficiently to support performing a baseline risk assessment, which is the next step in the corrective action process.

2007: An RFI site assessment report was completed and reviewed by EPA. EPA identified deficiencies in the RFI report, and requested that Collis conduct additional sampling to determine vertical and lateral extent of contamination in soil and groundwater. This additional sampling work will occur in 2008.

2008: Collis submitted a Draft Supplemental Remedial Facility Investigation Work Plan and Quality Assurance Project Plan (QAPP) in February 2008. A Revised Supplemental RFI Work Plan and QAPP submitted in May. The EPA met with Collis representatives in October 2008 to discuss completion of the RFI.

2009: EPA granted a 6-month extension for initiation of RFI field activities. Collis submitted Final RFI Supplemental Work Plan in March 2009. EPA met with Collis representative to discuss comments on Final RFI Work Plan.

2010: RCRA Facility Investigation was conducted and received EPA review and comment

2011: Corrective Measures Work Plan, Groundwater Sampling Plan and Vapor Intrusion work plan were approved by EPA.

2012: Quarterly monitoring of groundwater, surface water sampling, and soil vapor sampling were conducted. This information was submitted to EPA in Quarterly Groundwater Monitoring Reports.

2013: A Consent Agreement and Final Order (CAFO) filed on March 27, 2013 (EPA Docket No. RCRA-07-2012-0014) required a Focused Soil Sampling (FSS) project in two areas where hazardous waste storage occurred to determine whether there were releases and to determine whether any further remedial action was warranted. The CAFO also required Collis, Inc. to perform supplemental Environmental Projects (SEP) to conform to RCRA requirements. As a result of the enforcement action, Collis, Inc. has reduced its RCRA generator status from a large quantity generator (LQG) to a conditionally exempt small quantity generator (CESQG). The EPA is currently reviewing the Focused Soil Sampling Final Report and SEP Completion Report.

A site visit was conducted by EPA personnel in July, 2013. The purpose of the site visit was to observe field soil sampling activities being performed under the Consent Agreement and Final Order (CAFO) in the matter of Collis, Inc. – Docket No. RCRA-07-2012-0014. Other activities included meeting facility personnel, conducting meetings at the beginning and end of the visit; touring the buildings, observing the manufacturing processes, touring the property, locating the solid waste management areas (SWMUs), and locating the groundwater monitoring wells.

2014: the following actions were completed this year.

- EPA review and comment of Quality Assurance Project Plan.
- EPA terminated Consent Agreement upon full implementation of required actions in the agreement.
- EPA completed review of Draft 2012 Sampling Summary Report.
- EPA conditional approval of RCRA Corrective Action Report
- EPA approval of Final 2012 Sampling Summary Report
- Conditional approval of Phase II Groundwater Monitoring Work Plan

2015: The following actions were completed this year.

- Approval of Corrective Measures Activities October-December 2014 - Phase II Groundwater Monitoring Report (1st Quarter Phase II GMP Report)
- Approval of Final Corrective Measures Study Work Plan Final Vapor Intrusion Work Plan

2016: The following actions were completed this year

- EPA approval of Addendum to Final Sampling and Analysis Plan for Filter Building & Retention Basin (SWMU #3) Demolition Confirmation Soil Sampling dated December 7, 2015.
- EPA approval with comments on Collis, Inc. - Corrective Measures Study Phase III Long Term Monitoring Work Plan (Phase III LTM WP) dated July 13,2016
- The Revised Corrective Measures Study Work Plan Final 2014-2015 Groundwater Sampling Summary Report dated May 4, 2016
- The Revised Corrective Measures Study Work Plan Final Phase III Groundwater Monitoring Work Plan dated August 17,2016
- EPA approval-Collis Early Implementation Request-SWMU#3-SAP 10-15-15
- EPA approval of Collis deviations from SAP-SWMU#3 10-27-15
- EPA conducted a Data Review meeting with Collis on September 8, 2016.

2017: The following actions were completed this year

In 2015-2016, Solid Waste Management Unit (SWMU) 3 – Sludge Management Area was investigated as documented and approved by EPA in the "*Filter Building & Retention Basin (SWMU #3) Final Demolition Confirmation Soil Sampling Report*" (BB&E, 2017).

EPA approval of the Collis Revised PCB work plan for Manufacturer's Ditch, SWMU#8.

An investigation was conducted in December 2016 at SWMU 8 – Manufacturer's Ditch Area for PCBs in soil, sediment, and surface water, and is documented and approved by EPA dated 3/7/17 in the "*Final Manufacturer's Ditch PCB Sampling Report*" (BB&E 2017).

EPA approval dated 4/26/17 of Collis's Revised PCB Delineation and Removal Work Plan for SWMU#4-Surface Impoundment Area.

In April 2017, an investigation was completed to determine the extent of PCBs above 25 mg/kg in SWMU #4-Surface Impoundment Area.

In May 2017, soils with PCB concentrations in SWMU#4 above 25 mg/kg were excavated and disposed of as documented and approved by EPA in the "*Collis, Inc. – PCB Removal Action – SWMU No. 4 Summary Report*" (BB&E 2017).

EPA approval of Collis's Zinc Electroplating Solution Release Investigation work plan; 6/9/17

Collis completed an onsite and offsite investigation of Zinc Electroplating Solution Release.

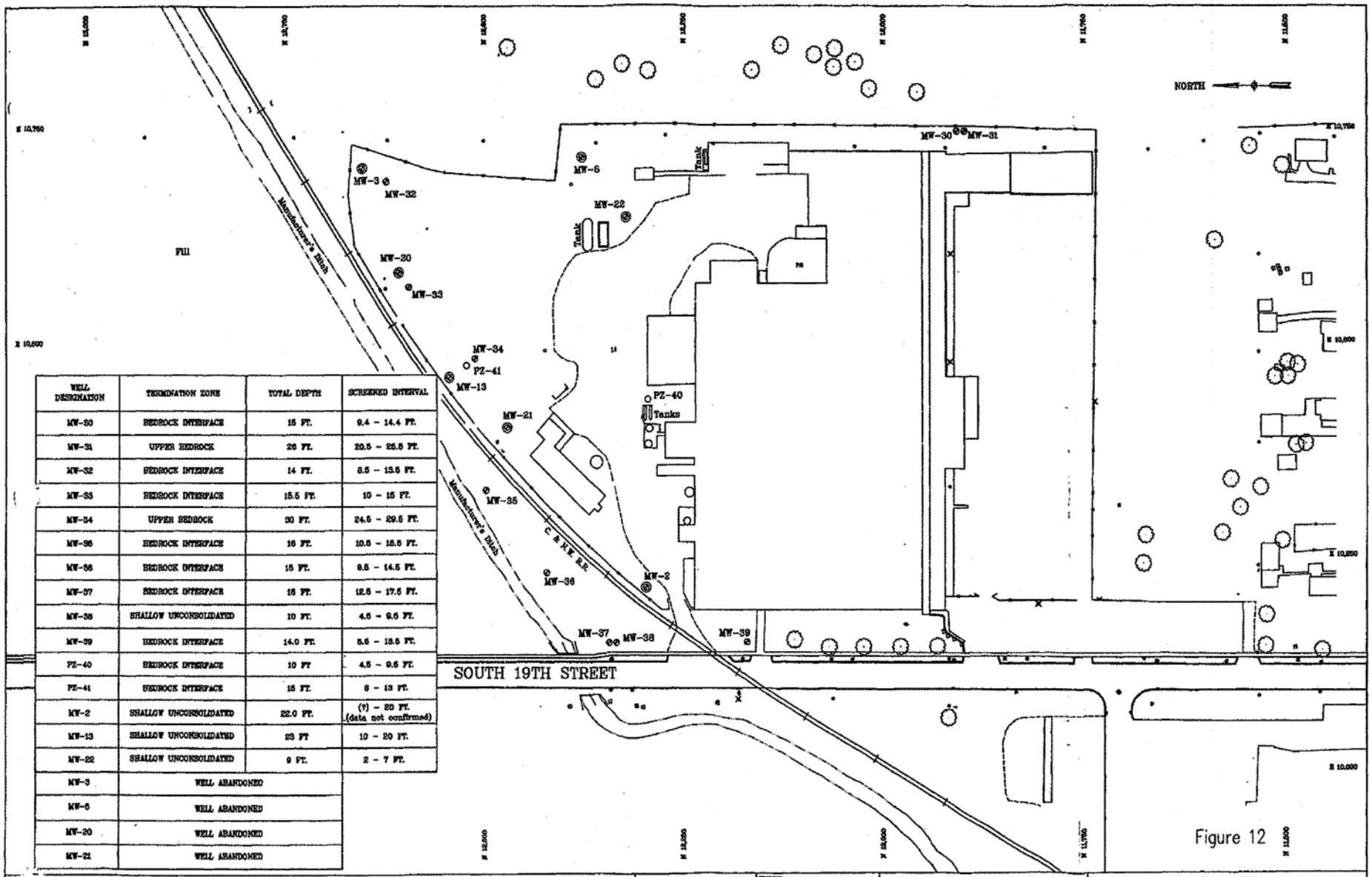
Interim measures were implemented to neutralize the zinc plating solution onsite.

- EPA approval 9/8/17 of Collis's Zinc Electroplating Solution Release Removal work plan
- Collis completed a removal action on offsite property to the east of the Collis property on the site of a former golf course. The investigation and removal action are documented and approved by EPA 11/13/17 in the "*Collis, Inc. – Zinc Electroplating Solution Release Summary Report – Final.*"
- EPA approval 9/14/17 of Collis's 2016-2017 Groundwater Monitoring Sampling Summary Report.
- EPA review of the Collis onsite Deep Well Report.
- EPA approval letter dated 9/19/17 on Collis final LTM GWM WP.
- EPA review and comment on Corrective Measures Study.
- EPA review and comment on Environmental Covenants for Collis onsite property and offsite City-owned property.
- EPA will be public noticing the Statement of Basis for the proposed final remedy and the Corrective Measures Study for public comment in the near future.

2018: The Following significant activities were completed

A Final Remedy Public Notice Fact sheet was produced

2019: The site was reclassified to Properly Closed (D) with monitoring.



WELL DESIGNATION	TERMINATION ZONE	TOTAL DEPTH	SCREENED INTERVAL
MW-30	BEDROCK INTERFACE	15 FT.	9.4 - 14.4 FT.
MW-31	UPPER BEDROCK	26 FT.	20.5 - 25.5 FT.
MW-32	BEDROCK INTERFACE	14 FT.	8.5 - 13.5 FT.
MW-33	BEDROCK INTERFACE	15.5 FT.	10 - 15 FT.
MW-34	UPPER BEDROCK	30 FT.	24.5 - 29.5 FT.
MW-35	BEDROCK INTERFACE	16 FT.	10.5 - 15.5 FT.
MW-36	BEDROCK INTERFACE	15 FT.	9.5 - 14.5 FT.
MW-37	BEDROCK INTERFACE	18 FT.	12.5 - 17.5 FT.
MW-38	SHALLOW UNCONSOLIDATED	10 FT.	4.5 - 9.5 FT.
MW-39	BEDROCK INTERFACE	14.0 FT.	5.5 - 13.5 FT.
PZ-40	BEDROCK INTERFACE	10 FT	4.5 - 9.5 FT.
PZ-41	BEDROCK INTERFACE	15 FT.	8 - 13 FT.
MW-2	SHALLOW UNCONSOLIDATED	22.0 FT.	(?) - 20 FT. (data not confirmed)
MW-13	SHALLOW UNCONSOLIDATED	23 FT	10 - 20 FT.
MW-22	SHALLOW UNCONSOLIDATED	9 FT.	2 - 7 FT.
MW-3	WELL ABANDONED		
MW-5	WELL ABANDONED		
MW-20	WELL ABANDONED		
MW-21	WELL ABANDONED		

DRAWING FROM:

LEGEND
MW-35 ⊗ MONITORING WELLS INSTALLED IN APRIL 1996 ○ PIEZOMETERS INSTALLED IN APRIL 1996
MW-20 ⊗ EXISTING MONITORING WELL LOCATION

SCALE 1" = 50'

REVISIONS

HERITAGE
HERITAGE ENVIRONMENTAL SERVICES, INC.
LOMBARD, ILLINOIS

CLINTON FACILITY
CLINTON, IOWA

SITE PLAN
ABANDONED WELL AND MONITORING WELL LOCATIONS

DRAWN BY: STAFF | DATE: 3-27-96 | PROJ. NO. 6194 | DWG. NO. 6194F12.DWG
APPROVED BY: RJH | SCALE: 1" = 50'

(Collis Corporation)

Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 6000 Feet

DAVENPORT COAL GAS (Davenport, Iowa)

GENERAL DESCRIPTION

The Davenport Coal Gas site is a 1.8-acres located in Section 36, T78N, R3E, Scott County, Iowa. The site is north of 3rd Street, between LeClaire Street and East River Drive, Davenport, Iowa. The site originally included 6.2 acres until the remediation of the property in 1988. From 1855 to 1907, a coal gasification plant operated at the site. Subsequently, the site was used by French and Hecht, a manufacturer of metals and wheels. In 1987 the site was sold to Rejuvenate Davenport Inc., a nonprofit organization that prepared the site for construction of the new Quad-City Times building. The site is owned by **Lee Enterprises, Inc. and Rejuvenate Davenport**, Inc. The site was entered on the Registry in November 1990.

SITE CLASSIFICATION

The site is classified "d" properly closed, requires continued management.

TYPE AND QUANITY OF HAZARDOUS WASTE

During site investigations in 1987 and 1988, extensive coal tar contamination was found in the soil and groundwater. Much of the contaminated soil was excavated during remedial activities from July 1988 to October 1988. During the removal of the soil, the bedrock beneath the site was found to be contaminated with coal tar. Additional remedial work was also needed for an area where soil removal was not implemented, which is located in the southern portion of the site. Further sampling is needed to determine the level of contamination in this area. In November 1988 Rejuvenate Davenport retained ownership of the un-excavated, contaminated property and sold the remainder of the site to Lee Enterprises.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

The site is located within the Quad Cities, which includes the cities of Davenport and Bettendorf, Iowa, and Rock Island and Moline, Illinois. The main channel of the Mississippi River is located about 350 feet southeast of the site. Directly across the main channel of the Mississippi River from the site is Arsenal Island. Parts of the island and Sylvan Slough form an important wildlife habitat. Additional wildlife habitats are located downstream of the site near Pelican Island, Credit Island, Pettifer Island, Nahant Marsh, and confluence of the Mississippi and Rock Rivers.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The state is the lead agency for the site. The Iowa Department of Natural Resources (IDNR) required sampling of the down gradient monitoring wells to be analyzed for coal tar constituents: benzene, ethylbenzene, toluene, xylenes, and 16 polynuclear aromatic hydrocarbons.

In March 1990 the portion of the site owned by Lee Enterprises was cleaned to the bedrock. A groundwater remediation system (completed in 1992) has been discontinued. This included carving a de-watering trench through bedrock and installing drainage pipes. Three additional down gradient monitoring wells were installed south and southwest of the site giving a total of five down gradient wells. The results from samples collected in February 1996 showed groundwater from one of the wells is contaminated with petroleum hydrocarbons and polynuclear aromatic hydrocarbons above state action levels. On site soil remediation is complete. Ground water contamination that extends (off site) to the south under 3rd Street has been fully characterized.

2006: Five ground water monitoring wells were closed and properly abandoned.

2008: As required in rule, the Iowa DNR received and approved a request to sell the site

2014-16: No significant actions required

2017: A letter was sent from the Iowa DNR to the responsible party pursuant to Iowa Code (IC) §455I allowing sites listed on the Registry of Hazardous Waste Disposal sites to self “de-list” with the implementation of an Environmental Covenant.

2020: No action taken this year

Figure A.

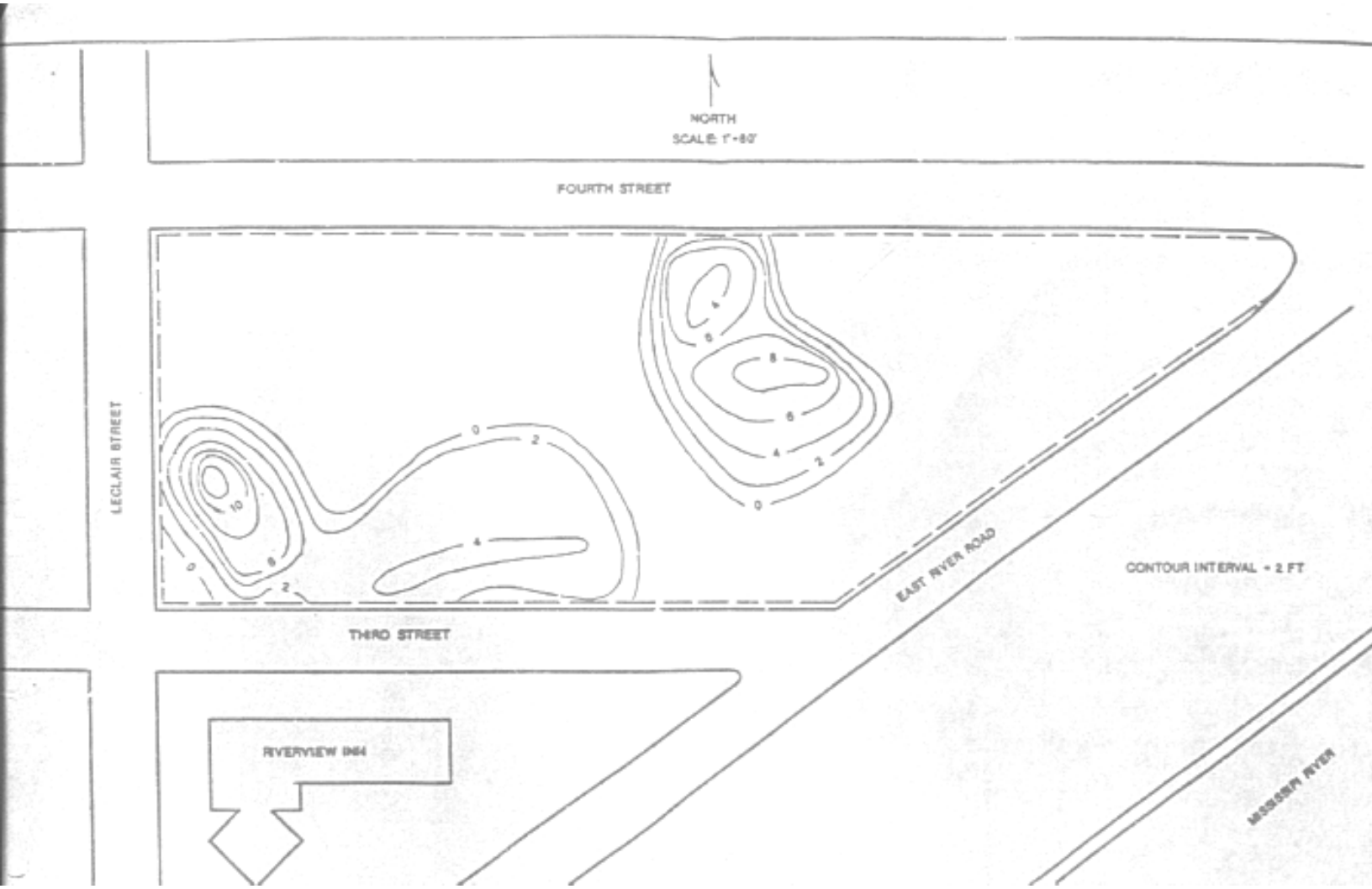
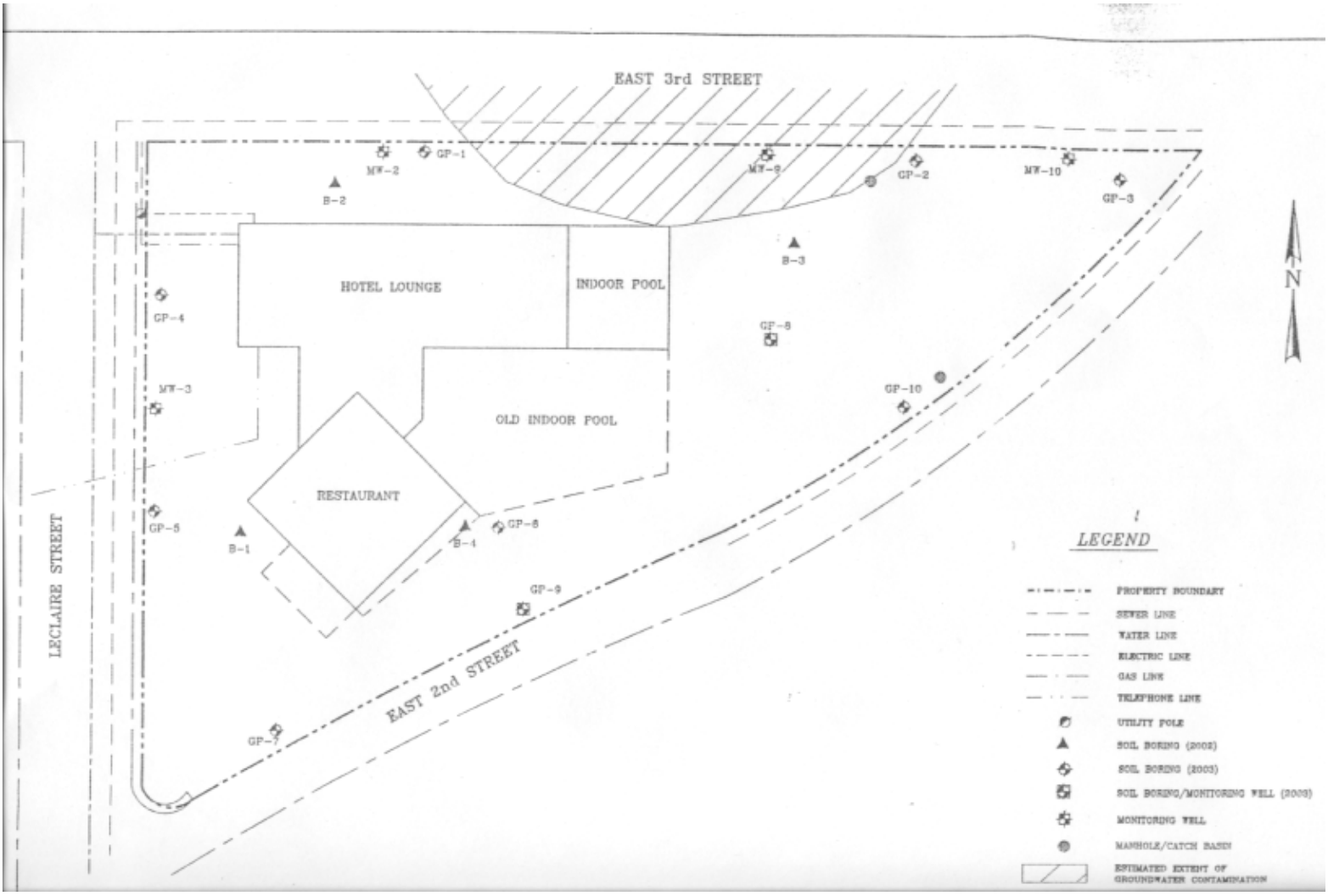
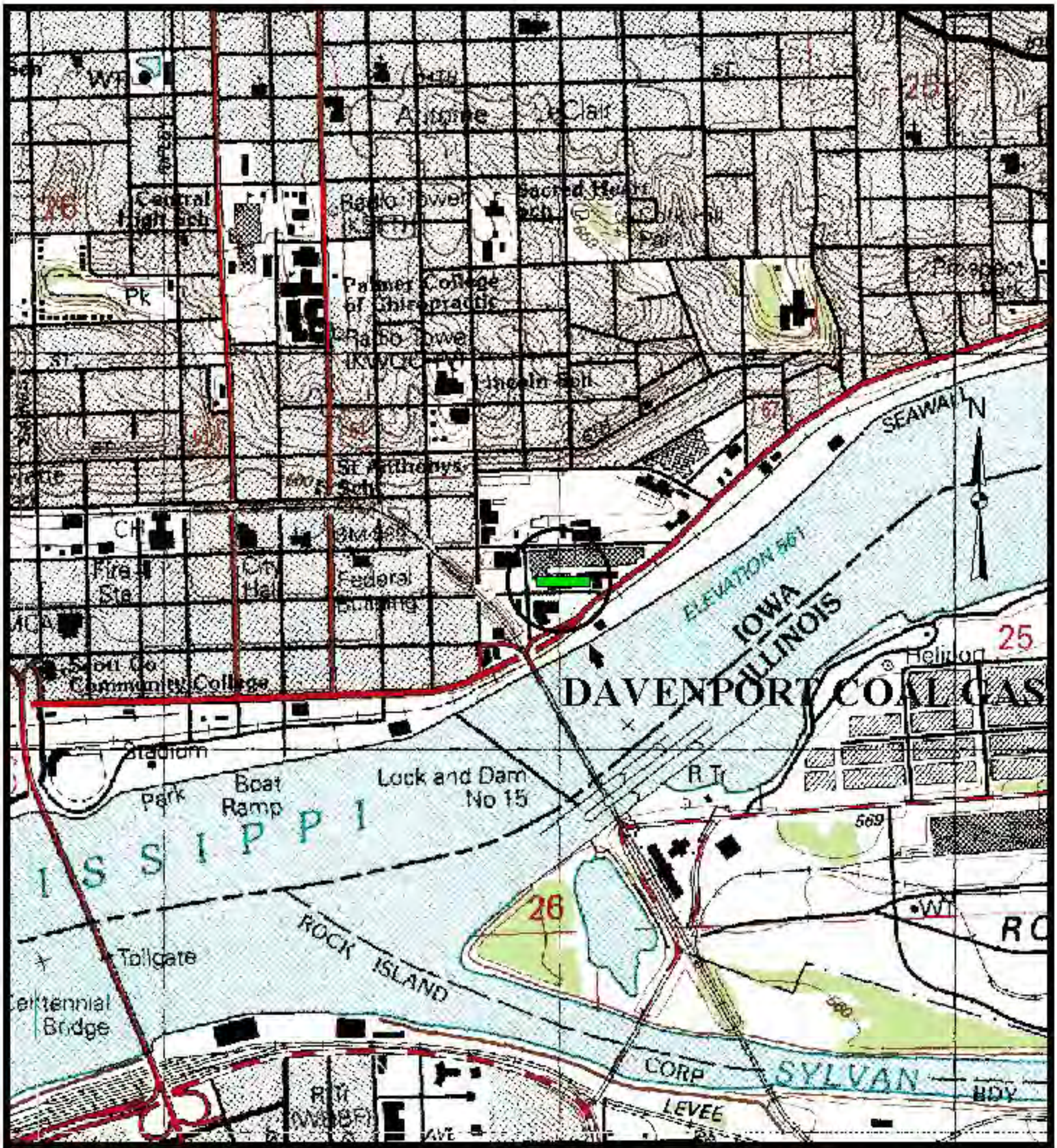

NORTH
SCALE: 1"=60'
FOURTH STREET
LECLAIR STREET
THIRD STREET
EAST RIVER ROAD
CONTOUR INTERVAL = 2 FT
RIVERVIEW INN
MISSISSIPPI RIVER

Figure B.


EAST 3rd STREET
EAST 2nd STREET
LECLAIRE STREET
HOTEL LOUNGE
INDOOR POOL
OLD INDOOR POOL
RESTAURANT
MW-2
GP-1
B-2
MW-9
GP-2
MW-10
GP-3
B-3
GP-4
GP-8
MW-3
GP-10
GP-5
B-1
B-4
GP-6
GP-9
GP-7
N
LEGEND
PROPERTY BOUNDARY
SEWER LINE
WATER LINE
ELECTRIC LINE
GAS LINE
TELEPHONE LINE
UTILITY POLE
SOIL BORING (2002)
SOIL BORING (2003)
SOIL BORING/MONITORING WELL (2003)
MONITORING WELL
MANHOLE/CATCH BASIN
ESTIMATED EXTENT OF GROUNDWATER CONTAMINATION

(Davenport Coal Gas)



Contour Interval 10 Feet

1000 0 1000 2000 3000 Feet

DICO COMPANY, INC.
(Des Moines, Iowa)

GENERAL DESCRIPTION

The site is located within the city of Des Moines on land described as the East 1/2 of Section 8, T78N, R24W, Polk County, Iowa and Pt. Lot 1, Tax Parcel 926-2-3. The property is owned by Titan Wheel International, Inc. The site was entered on the Registry in 1984. The EPA placed the site on the National Priorities List (NPL) in September 1983. The EPA and the IDNR initially discovered trichloroethylene (TCE) in the Des Moines water supply in 1975 during a national survey of water supplies, it was determined that TCE was released on the Dico property.

Pesticide-contaminated soils were discovered in at Dico in 1987 during the construction of the groundwater treatment system. These soils were excavated and stored on-site, then land-farmed on-site, and capped. Subsequent investigations found pesticides in buildings and shallow soils throughout the site. These are primarily banned pesticides including aldrin, dieldrin and DDT.

SITE CLASSIFICATION

In 2001 the classification of this site was revised to "d" Site properly closed, requires continued management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- **TCE, vinyl chloride, and cis-1,2-dichloroethylene are the major contaminants which have been observed in the groundwater at the facility.**

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

The Dico site is located on the floodplain of the Raccoon River just west of downtown Des Moines in an industrial and business area of the city. The Des Moines Water Works plant is located about 2,500 feet southwest of the Dico plant. The northernmost portion of the water works infiltration gallery is about 900 feet from the Dico plant. The Des Moines Water Works serves a population of about 300,000. In September 1983 TCE was measured at 94 ppb in the Des Moines water supply. The amount of TCE in the drinking water was greatly decreased by closing an additional valve in the North Gallery in October 1983. Presently, the Des Moines Water Works tests the water each day for a variety of chemicals, including TCE, to assure safe levels in the drinking water. No significant contamination has been found in water from the North Gallery since the groundwater remediation system was put into operation in 1987.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

An administrative order was issued to Dico in 1986 requiring response actions at the site. These response actions consist of:

- Isolating the northernmost portion of the North Gallery from the remainder of the gallery system with a physical barrier to restrict groundwater flow into the North Gallery.

- Groundwater collection and removal systems to collect the contaminated groundwater and to control groundwater movement.

- Treatment and discharge of the extracted groundwater and release to the Raccoon River until the water in the aquifer is cleaned to below drinking water standards.

In December 1987, groundwater recovery system became operational. This system consists of seven recovery wells, which pump ground water to an air stripper for treatment prior to discharge to the Raccoon River. The system continues to effectively control the contaminant plume and prevent contaminants from entering the Des Moines Water Works infiltration gallery**.** The system has removed about 3,000 gallons of TCE since its startup in 1987. Levels of TCE entering the air stripper have decreased from about 2,500 ppb initially to about 200-300 ppb currently. Continued operation of the groundwater recovery system and monitoring of groundwater is planned.

Remedial action to address the residual pesticide contamination in the plant buildings and soils around the site were completed in 1994. These actions included cleaning and sealing of interior building surfaces and placing an asphalt cap over soils with residual contamination. Additional remedial investigations to better define the contaminant source and address residual pesticide contamination were finalized in 1996. A Record of Decision (ROD) incorporating both investigations was completed in 1996. The ROD acknowledged the work done to clean the site buildings and the placement of the asphalt cap over soils with contaminants as final actions. In addition, the ROD requires routine maintenance of the building and cap, periodic sampling of sediments in the "South Pond Area", and land use restrictions to prevent inappropriate use of the site. Dico ceased manufacturing operations at the site in 1995.

Buildings #4 and 5 were demolished in 2007. In April 2013 the fifth Superfund five-year review was released which concluded that the remedy remains protective in the short term, but recommends additional actions to ensure protection in the long-term..

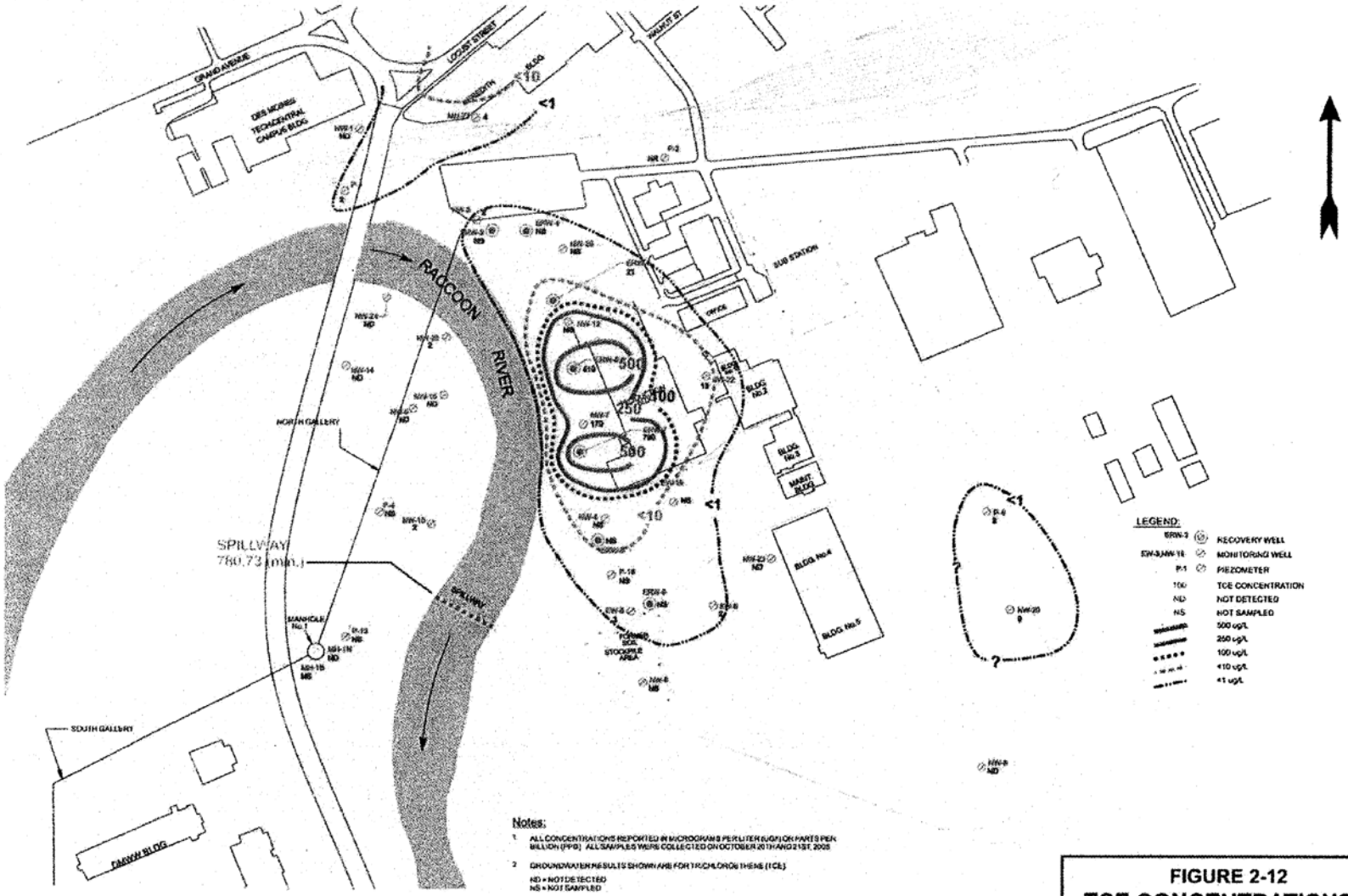
Actions in **2013** included continued operation of the groundwater pump-and-treat system and groundwater monitoring.

Actions in **2017**; The operation of the groundwater pump-and-treat system and groundwater monitoring continues. Recent soil and building materials sampling have been analyzed and negotiations concerning building demolition and disposal are ongoing. Several options for site redevelopment are being discussed. Unresolved legal issues are being debated but remain unresolved. The 6th Five Year Review has been initiated.

2018: The Five-Year Review was completed to evaluate the implementation and performance of the remedy to determine if the remedy is or will be protective of human health and the environment. The Remedial Alternative Cost Estimates for the South Pond Area Technical Memorandum was completed. The Preliminary Monitored Natural Attenuation (MNA) Evaluation Report was completed. The Building Decommissioning Assessment (BDA) was conducted for eight structures, designated as Building 1, Building 2, Building 3, Slab 4, Slab 5, Maintenance Slab, Former Office Building and Production Building.

2019: DOJ judgment against DICO has been upheld. Negotiations between the City of Des Moines, Titan Tire and EPA are ongoing

2020: Agreement between DOJ and DICO (Titan) has been reached. Negotiations between the City of Des Moines, Titan Tire and EPA are settled (if not signed) and City of Des Moines will take possession. EPA will demolish and remove on-site building that are included in OU-2



Notes:

1. ALL CONCENTRATIONS REPORTED IN MICROGRAMS PER LITER (UG/L) OR PARTS PER BILLION (PPB). ALL SAMPLES WERE COLLECTED ON OCTOBER 20TH AND 21ST, 2005
2. GROUNDWATER RESULTS SHOWN ARE FOR TRICHLOROETHENE (TCE).

ND = NOT DETECTED
NS = NOT SAMPLED

FIGURE 2-12
TCE CONCENTRATIONS IN GROUNDWATER (OCT 2005)

DES MOINES TCE SITE
DES MOINES, IOWA

DICO

(Dico Company)

Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 6000 Feet

FAIRFIELD COAL GASIFICATION PLANT
(Fairfield, Iowa)

GENERAL DESCRIPTION

The site is located in the center of the SE 1/4 of Section 26, T72N, R10W, Jefferson County, Iowa. The 0.5-acre site occupies all of Lot 5 in Block 1 of the Southwestern Addition to Fairfield and that part of South Seventh Street between Burlington and Washington Avenues and is owned by Alliant Energy Corporation. The site was entered on the Registry in August 1989. The EPA placed the site on the National Priorities List in August 1990.

SITE CLASSIFICATION

In 2000 this site was reclassified "d" Site Properly Closed, Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

A coal gasification plant was operated at the site from 1878 until 1950, when the plant was closed and the equipment removed. During its operation, coal tar, iron oxide wastes, and associated coal gasification wastes were generated at the plant. Unknown quantities of these wastes were disposed of at the site, contaminating the soil and the surficial aquifer. Iowa Electric contracted a field investigation of the site during 1985-1986. The EPA began investigating the site in 1986. Groundwater samples collected from monitoring wells at the site indicate the presence of several hazardous substances. The contaminants identified in groundwater include Benzene, Toluene, Xylenes, Styrene, Ethylbenzene, 2,4-Dimethylphenol, Phenanthrene, Anthracene, Pyrene, Chrysene, Benzo(a)anthracen,, Benzo(a)pyrene, Naphthalene, Fluorene.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERS

The site is located within Fairfield, Iowa. Most city residents obtain their drinking water from a municipal system that has deep wells and storage lakes located northeast of the city. An unnamed stream accepts the surface runoff from the site. It discharges into Cedar Creek 2.9 miles southwest of the site.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA is the lead agency at the site.

In 1990 the EPA issued a Record of Decision that included excavation of coal tar and contaminated soil and for treatment of contaminated ground water. A ground water treatment pilot study was completed in 1992. And remedial action began in 1993.

Alliant Energy conducted source (coal tar) and contaminated soil removal at the Fairfield Coal Gasification site from 1993 to 1995. Ground water treatment has been conducted from 1990 to 2001. Monitoring has determined that contaminated groundwater has not migrated beyond the property boundary. The ground water treatment system was shut down in 2001 to conduct a one-year monitored natural attenuation (MNA) study. Two additional monitoring wells were installed to track the results of the study and will be sampled quarterly.

Institutional controls will be implemented to prevent the use of groundwater in the affected area that include deed restrictions and environmental easements to be administered by IDNR. The department will continue to coordinate with the EPA to assure proper cleanup.

2003: The Monitored Natural Attenuation study was extended for two more years, with quarterly ground water monitoring conducted in February, May and August of 2003.

2004: An annual report will be submitted to EPA, a Monitoring Natural Attenuation report will be prepared to document and evaluate this remedial approach for the period between September 2002 and August 2003. Four quarterly MNA ground water sampling events were conducted.

2005: A Monitoring/Natural Attenuation report was submitted that documents and evaluates the effectiveness of this remedial approach for the period from November 2003 to August 2004. The report recommended additional five-year MNA study, which is under review by EPA. One monitoring event was conducted. Based on the data collected to date, a revised approach to ground water management will be developed and proposed in 2006.

2006: A Technical Impracticability Evaluation Report was submitted for the site and to propose that EPA invoke a TI waiver for the site. This report also recommended that the ROD be amended to incorporate this waiver and that the ground water remedy be modified. EPA and IDNR are reviewing the report to determine if the conclusions are valid and that the recommendations will continue to protect human health and the environment. The site will be undergoing its next 5-year review in 2007.

2007: Completion of EPA Five Year Review. Vapor Intrusion Investigation Work Plan and Annual Report were approved.

2008: Vapor Intrusion Report submitted for EPA review and approval and the annual ground water monitoring was completed.

2009: Annual ground water monitoring report completed and draft environmental covenant prepared

In 2010, the following activities were completed in association with the Fairfield MGP site:

- Annual ground water monitoring was conducted in August 2010, and the annual ground water monitoring report was prepared.
- Quarterly monitoring of dense non-aqueous phase liquid levels in site monitoring and extraction wells was conducted.
- Monthly status reports were prepared for Region 7 EPA.
- Additional documentation support was provided to Region 7 EPA in support of a technical impracticability waiver.
- The draft environmental covenant was prepared.

In 2011 the following activities were completed in association with the Fairfield MGP site

- Quarterly DNAPL monitoring was conducted.
- Annual ground water monitoring was conducted.
- The revised technical impracticability evaluation report was transmitted to IDNR and EPA.
- The annual ground water monitoring report was prepared.
- The environmental covenant was drafted.

In 2012 the following activities were completed in association with the Fairfield MGP site

- The 2011 Annual site ground water monitoring report

- Completion of the fourth Five Year Review Report
- Site Optimization Review Study was completed. An Optimization Review Study is a systematic site review by a team of independent technical experts, to identify opportunities to improve remedy protectiveness, effectiveness and cost efficiency, and to facilitate progress toward completion of site work. Installation of deep wells recommended in optimization study (these wells will be installed and sampled in December 2012)
- Continued Quarterly DNAPL monitoring that may be revised to annual DNAPL monitoring going forward based on the conclusions of the optimization study

2013: the following activities were completed in association with the Fairfield MGP site

- The 2012 annual site groundwater monitoring report was prepared.
- Two deep monitoring wells were installed based on the recommendations of the 2012 Optimization Study.
- Annual groundwater and DNAPL monitoring was conducted.
- Preparation of the 2013 annual site groundwater monitoring report began.
- The environmental covenant was drafted.

2014: the following activities were completed.

- 2013 Annual Groundwater Monitoring Report was completed
- Waste Management Technical memorandum for Substation improvements
- An Environmental Covenant is being prepared for site use restrictions

2015: the following activities were completed

- The 2014 Groundwater Monitoring Report was prepared.
- Deep monitoring well MW-18 was abandoned and replaced.
- Annual groundwater and DNAPL monitoring was conducted.

2016: The following activities were completed

- The 2015 Groundwater Monitoring Report was prepared and submitted for EPA approval.

2017: The following site management activities were completed

- Phase I and Phase II Soil Management Plans and Directional Drilling plan were developed for soil during a major remodeling of the substation that is located on the north side of the site
- The 2016 Groundwater Monitoring Report was submitted to EPA for approval
- The Five Year Review was completed in September 2017
- Supporting documentation for the development of an Environmental Covenant was received

2018: The following activities were completed

- The Five Year Review Report was submitted and approved and the remedy determined to be protective
- The 2017 Annual Monitoring Report was approved by EPA
- The Vapor Intrusion Investigation Work Plan was submitted for approval by EPA

2019:

- The Vapor Intrusion Investigation Work Plan was completed and approved by EPA
- Summary Report of Remedial Activities, conceptual site model, hydrogeology and soil contamination was completed
- Monthly Status reports were submitted tracking site progress
- The 2018 Groundwater Monitoring Report was prepared and submitted.
- The 1st of 4 quarterly vapor intrusion field sampling events were conducted.

2020:

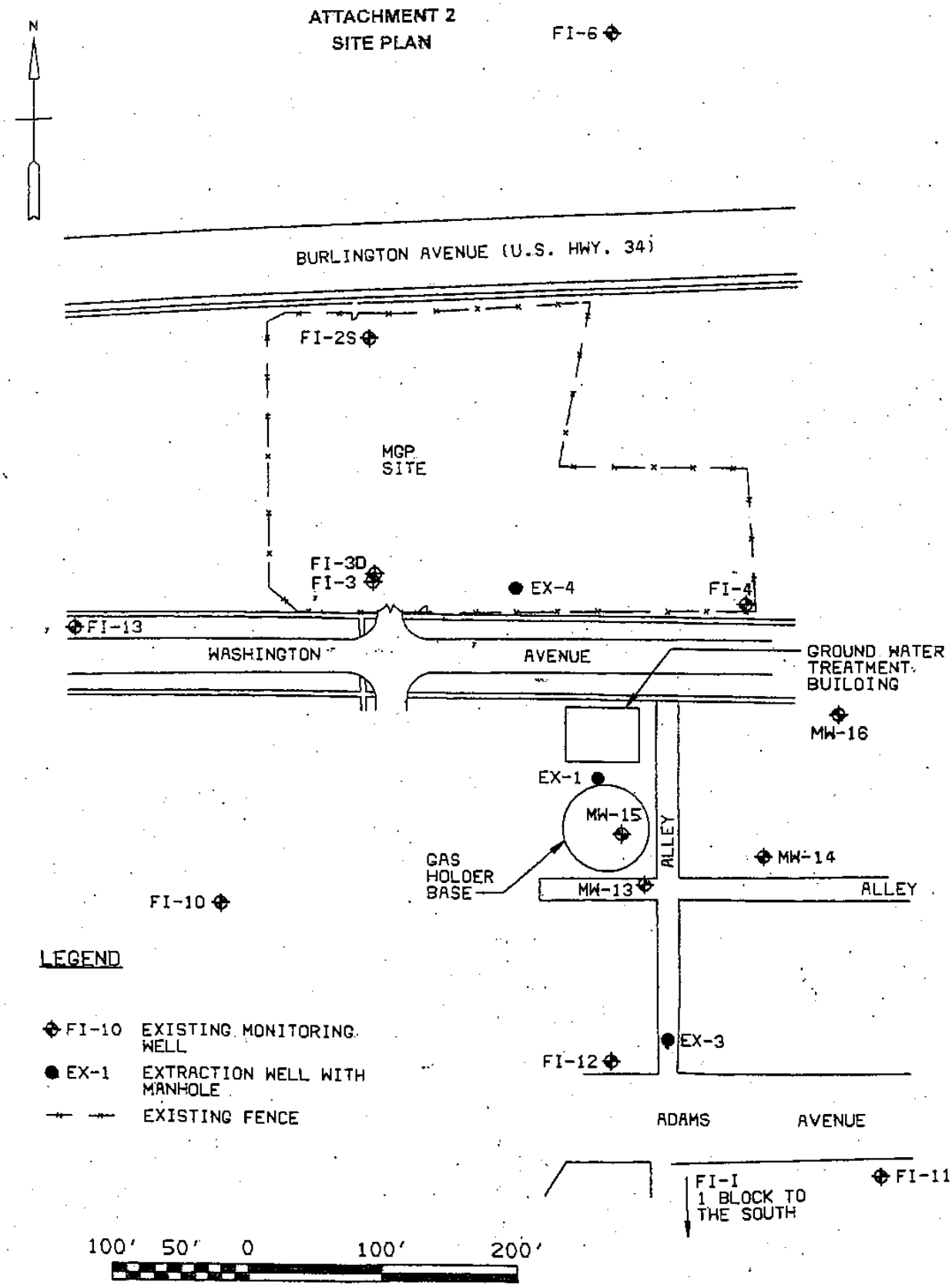
- Prepared Technical Memo #1 through 4 regarding results of risk assessment for VI to surrounding residential and commercial buildings.

- Prepared annual monitoring report summarizing the results of the 2019 groundwater sampling event

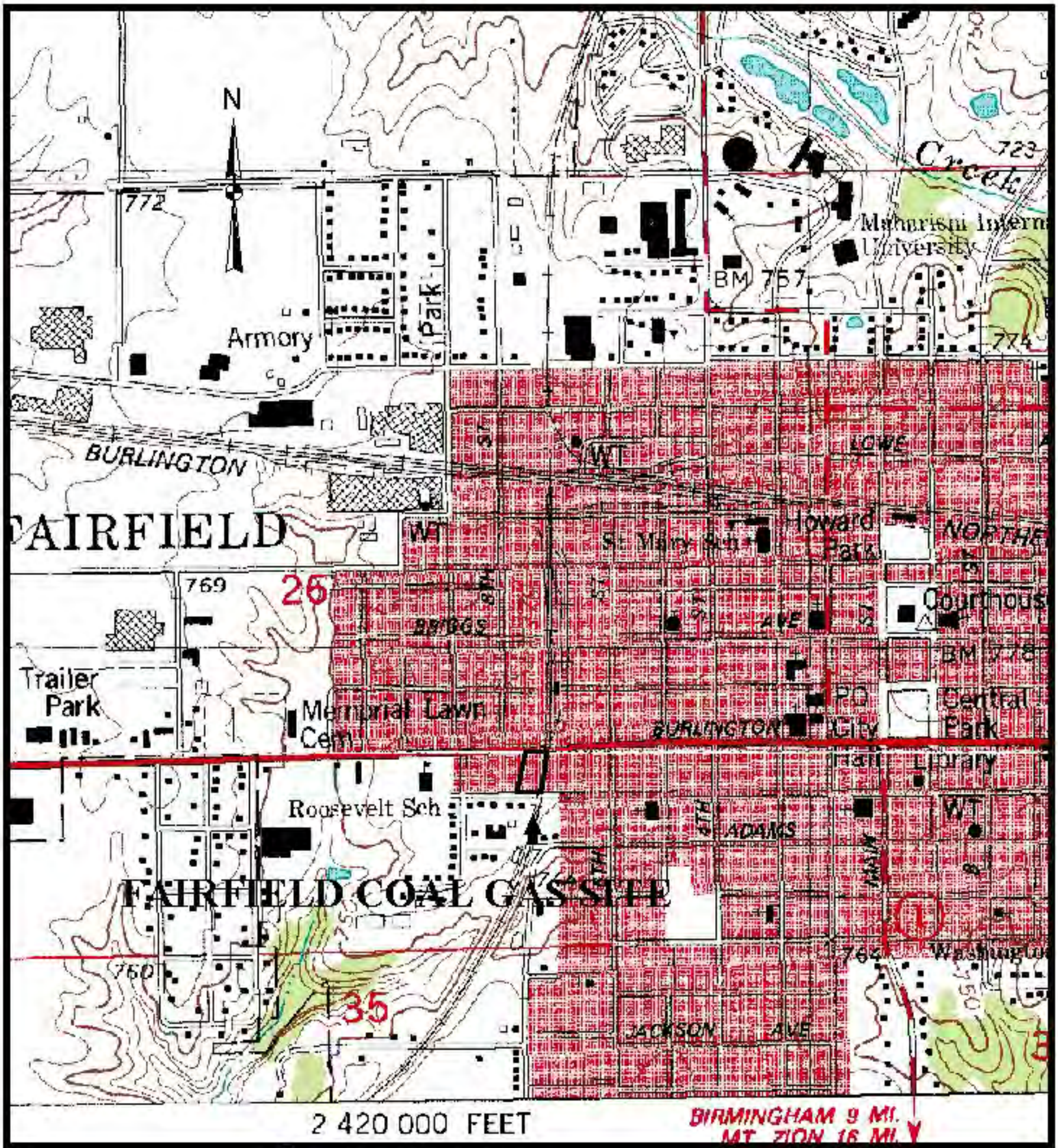
- Resolved property legal descriptions to facilitate the environmental covenant and submitted draft environmental covenant to EPA and responded to EPA comments on the covenant

- Conducted 2020 annual groundwater monitoring

ATTACHMENT 2
SITE PLAN



(Fairfield Coal Gas)



Contour Interval 10 Feet

1000 0 1000 2000 3000 Feet

FORT MADISON LANDFILL
(Rodeo Park Dump)

(Fort Madison, Iowa)

GENERAL DESCRIPTION

The site is located in the SW 1/4 of Section 27, the SE 1/4 of Section 28, the NE 1/4 of Section 33, and the NW 1/4 of Section 34, all in T68N, R4W. The site is on the north side of the city of Fort Madison, Lee County, Iowa. The 105-acre site consists of two former landfills owned by the city of Fort Madison (solid waste permit #56-SDP-05-88). The site was entered on the Registry in November 1989. The west part of the site is the old Rodeo Park Dump. Its two disposal cells were used from an unknown date until 1972. The east part of the site is the Old Fort Madison Landfill. Its two disposal cells were used from mid-1970 until November 1980. Both landfills received municipal wastes and large quantities of industrial wastes containing various hazardous substances.

SITE CLASSIFICATION

The site is classified "d" in accordance with 455B.427.3 upon completion of closure activities in 1994.

TYPE AND QUANTITY OF HAZARDOUS WASTE

Landfill records indicate hazardous substances have been disposed of at the site including 120 drums of sulfur-contaminated soil, 1,100 lbs of 75% DDT, 15 drums of methylene chloride/polyurethane, 104 drums of 50% xylenes and 20% dimethyl-formamide, 5,000 lbs. cellulose nitrate, 6,000 gallons of spent sulfuric acid, drums of chromate destruction sludge, 3,800 gallons of distillation sludge, over 500,000 gallons of liquid paint waste, and unknown volume of potassium cyanide and chlorinated hydrocarbons.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

Many rural residents in the area rely on private wells that draw water from the lower Pleistocene aquifer. Fort Madison also has two municipal wells that use the same aquifer. The wells are located two miles southeast of the site but are not considered at risk. The site is located near two surface streams; French Creek and Fork Creek. Both creeks flow through the city of Fort Madison and discharge into the Mississippi River. The Rodeo Park Landfill is part of a larger municipal park and is the site of an annual rodeo.

SUUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The site's owner has completed various investigative and remedial actions required by the 1989 Administrative Order. These activities include:

- Implement grading and drainage improvements:

This activity began in April 1991 and final grading and capping were completed in the summer of 1994.

- A groundwater investigation report:

The report was submitted in April 1991 and approved in November 1992.

- Complete installation of leachate wells and gas venting and submit a report of well installation:

Four leachate piezometers have been installed. The piezometers are used to evaluate the effectiveness of the toe drain, installed as part of the Leachate Control Plan.

- Submit a Leachate Control Plan (LCP) and construct the system:

The LCP was submitted in July 1992. The final LCP was approved in May 1994 and construction was completed in 1994. Phase I of the LCP required installation of a toe drain in each fill area to an elevation below the surface seeps.

The leachate from the Rodeo Park Dump is pumped to a storage tank at the top of the ravine. Leachate collected from the city of Ft. Madison landfills is pumped and stored in the Lee County leachate storage lagoon. The leachate from both sites is hauled to the city of Fort Madison wastewater treatment facility.

- A leachate treatability report was submitted in April 1991 and reviewed in November 1992. As recommended in the report, the leachate is hauled to the Fort Madison Publicly Owned Treatment Works (POTW).

- A Final closure plan with a Hydrogeologic Monitoring System Plan (HMSP) was submitted as part of the April 1991 groundwater investigation. It was reviewed and conditionally approved in November 1992. Baseline groundwater and surface water monitoring was initiated in January 1993 and completed in 1994. Semi-annual monitoring continues to date.

- A Final closure/post closure plan (C/PCP) was submitted on January 24, 1994 and supplemented on May 23, 1994. The C/PCP was approved as part of the Closure Permit (#56-SDP-88C) which was issued May 26, 1994. Certification of the completion of closure regrading, capping, and revegetation was submitted on June 29, 1994. The Closure Permit requires routine inspections, maintenance, and monitoring for 30 years.

- Remedial Action Performance Reports:
  Since implementation of the LCP, annual surface water and groundwater quality monitoring at the sites has indicated general compliance with the water quality standards.

- Six new vadose-zone gas monitoring wells were installed in 2017 to better assess the movement of landfill gas in the subsurface.

2020:
Semiannual inspections are performed and an annual reporting of site conditions submitted to Solid Waste Section of IDNR. This report includes summary of general conditions, as well as groundwater quality, surface water quality, leachate removal volumes, and methane gas monitoring data. These semiannual reports may be found at the web link below.

https://programs.iowadnr.gov/solidwaste/reports/DocumentDNA
Sort by -Permit Number
Select Permit No. – 56-SDP-05-88

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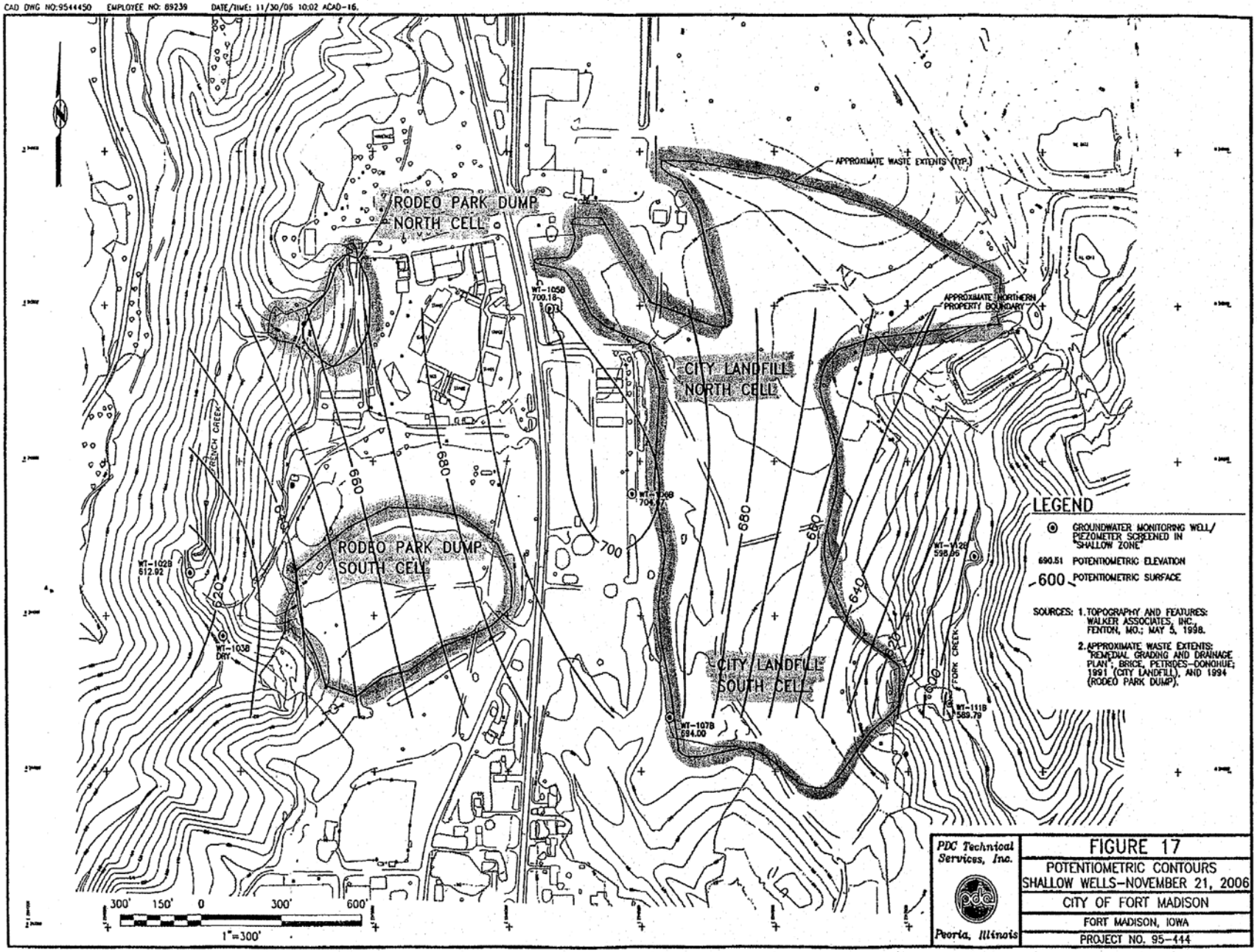


FIGURE 17

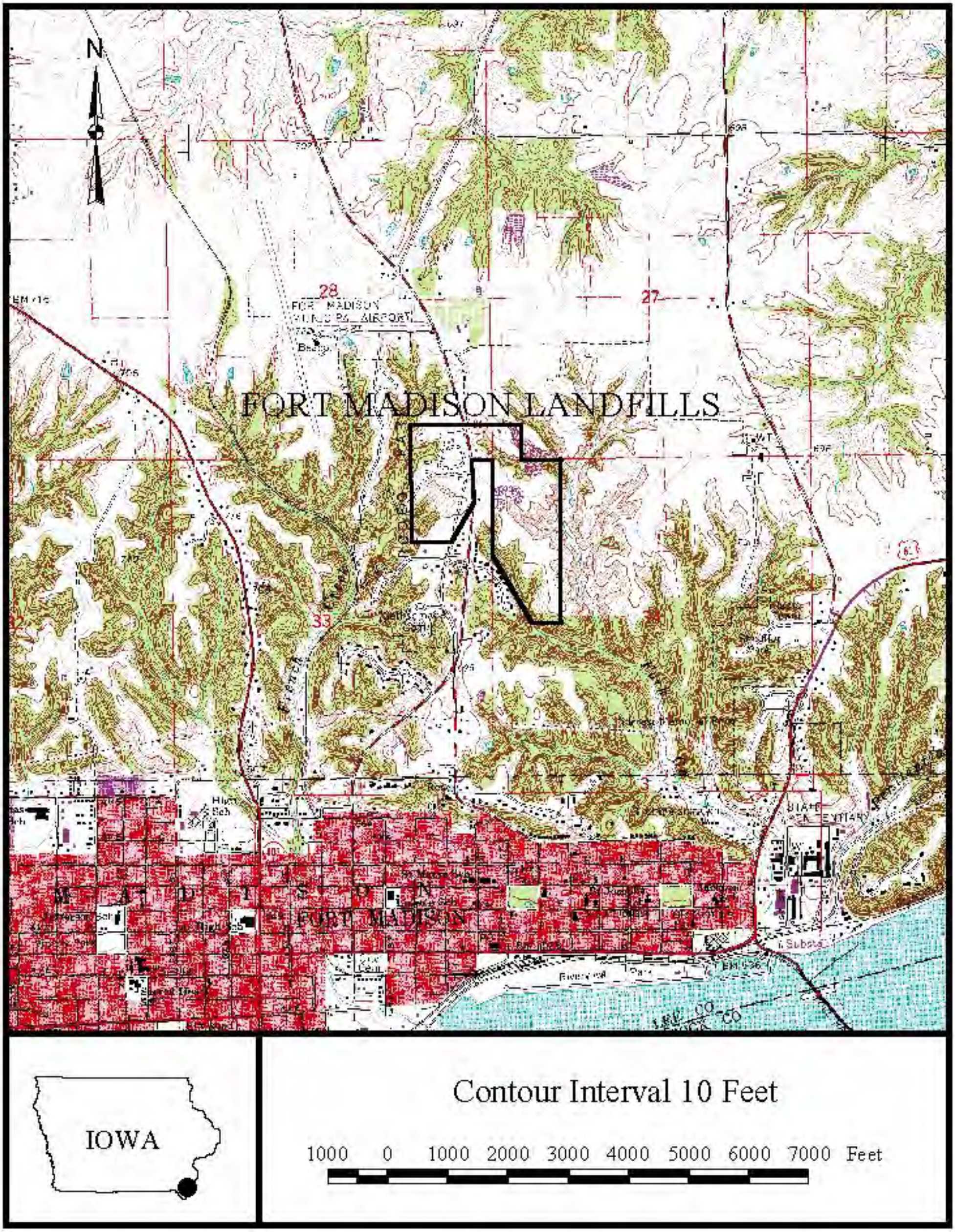
POTENTIOMETRIC CONTOURS SHALLOW WELLS–NOVEMBER 21, 2006

CITY OF FORT MADISON

FORT MADISON, IOWA

PROJECT NO. 95-444

(Fort Madison Landfills)



HOPKINS, R.V., INC.
(*SLUDGEMASTER, BARRIERS, INC.*)
(Davenport, Iowa)

GENERAL DESCRIPTION

The site is located in Davenport, Iowa, in an industrial area next to the Mississippi River. The 6.7-acre site is in the SW 1/4, Section 34, T78N, R3E, Scott County, Iowa. The site is owned by R.V. Hopkins, Inc., and was entered on the Registry in 1984.

Industrial activities have been conducted in the vicinity of the site since the mid-1800s. A stone quarry occupied most of the site at the turn of the century. The former quarry, which was initially 40 to 60 feet deep, was used as a landfill from 1935 until 1975. Wastes disposed in the area may have included caustic sludge, acids, metals, waste oil, paint sludge, batteries, and paint pigments. The landfill has been covered with a dirt cap. In addition to the landfill, part of the site was used by a battery company, which cracked lead batteries at the site.

R.V. Hopkins (RVH) began operating as a drum reconditioner in 1951, across the street from its present location. In 1964, the facility moved to its present location. RVH reconditions approximately 10,000 metal drums per month at the site. During the reconditioning process, RVH generates several hazardous waste streams.

SITE CLASSIFICATION

This site is classified “d” Site Properly Closed, Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- An estimated 400,000 cubic yards of lead contaminated soil are located in the old landfill.

- The hazardous waste generated by RVH includes burner ash, paint waste, baghouse dust, and caustic wash sludge. These wastes exhibit one or more hazardous characteristic, or are listed hazardous waste. Most commonly the wastes show the EP toxicity characteristic for lead (D007). Other classifications are for ignitability (D001), corrosivity (D002), and EP toxicity for chromium (D008). The listed wastes are spent non-halogenated solvents (F003 & F005).

- A total of 3,610 drums of hazardous removed and properly disposed off-site in 1994. As of 1996, a total of 337 drums of burner ash and 338 drums of bag house dust.

- In May 1997, 1,313 drums of various types of waste were on site.

- In addition to drum storage, there was also a waste pile of "Sludgemaster" treated paint waste. The waste pile was a hazardous waste by characteristic of EP toxicity for D007 (lead) and D008 (chromium). Approximately 385 cubic yards of waste were in the waste pile in 1985. The pile was removed and properly disposed off-site in 1994.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

The site is located in an industrial-commercial section of Davenport, Iowa. It is adjacent to the Mississippi River at river mile 481. Internal drainage to a ditch discharges directly to a side channel of the Mississippi River without treatment. The site is in the ten-year floodplain. The river reach is an important spawning area and commercial fishing area. It also is an access area for recreational uses. A water sample from the site's drainage ditch was taken in August 1981. The test results showed several metal concentrations above Class "C" Water Quality Standards as summarized in Table 1 on the following page.

Surface soils appear to be contaminated throughout the site with a variety of compounds. The most common contaminant is lead, but also included are other heavy metals, PCBs, pesticides, volatile organic compounds, and

semi-volatile compounds. The more contaminated surface soils have lead levels at about 10,000 ppm. Lead contamination is as high as 60,000 ppm, and some soils samples have shown EP toxicity for lead (D007). In the area of the former landfill, sub-surface soils have shown lead contamination down to twenty feet.

The soils at the site, outside the boundary of the old landfill, are classified as sands and gravel. As in many floodplains, this area has an extensive alluvial aquifer, which serves as a source of water for private wells. Uses include drinking, bottling, and processing. The static water level of this alluvial aquifer is estimated as less than 15 feet below the surface. The Silurian/Devonian bedrock aquifer is immediately below and hydraulically connected with the alluvial aquifer. Normal groundwater flow is expected to go from the bedrock to the alluvial aquifer. However, local drawdown could reverse this situation, allowing contamination of the bedrock aquifer.

Shallow groundwater samples were collected in the area of R.V. Hopkins in May 1985. The levels of chromium and mercury were 7 and 1.9 times the background levels. Lead was as much as 2.5 times above the Primary Drinking Water Standard. The five groundwater monitoring wells were sampled again in December 1985. At all five wells, total metals exceeded at least one of the Drinking Water Standards for cadmium, chromium, or lead. For filtered samples, the Drinking Water Standard was exceeded only for cadmium.

STATUS OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA (RCRA) is the lead agency and will continue the management and remediation of this site under the RCRA program. The EPA completed a RCRA Facility Assessment (RFA) at the site on June 8-11, 1993. The RFA provided a detailed review of the site's current and past solid waste management units. The assessment documented the continued violation of the RCRA regulations and the widespread contamination at the site.

On September 30, 1997, the EPA issued a Unilateral Administrative Order to the facility requiring the removal and proper off-site disposal of the waste piles and drums of hazardous waste and to comply with the RCRA hazardous waste regulatory requirements.

EPA has approved a closure plan for disposal areas and waste piles, drum storage areas in compliance with RCRA hazardous waste regulatory requirements. The plan, which is being implemented over the next four year calls for covering landfill area with additional soil and vegetation, and paving other areas. With EPA approval of the closure plan the site is being reclassified as “d” Site Properly Closed Requires Continued Management.

2004: The facility is continuing to implement the approved closure plan that includes concrete paving as an institutional control. In 2004 concrete paving was reported as being installed over 100,000 square feet. The facility continues to provide a hazardous waste compliance audit once each year.

2007: EPA denies release of credit and disputing RP’s projected post-closure cost estimate.
The department will coordinate with the EPA to assure continued proper management of site.

2010 No database entries since 9/24/2007 – EPA refusal to release letter of credit

2012 EPA (in 6/14/2012 letter) is maintaining their requirement for letter of credit in lieu of established post-closure costs

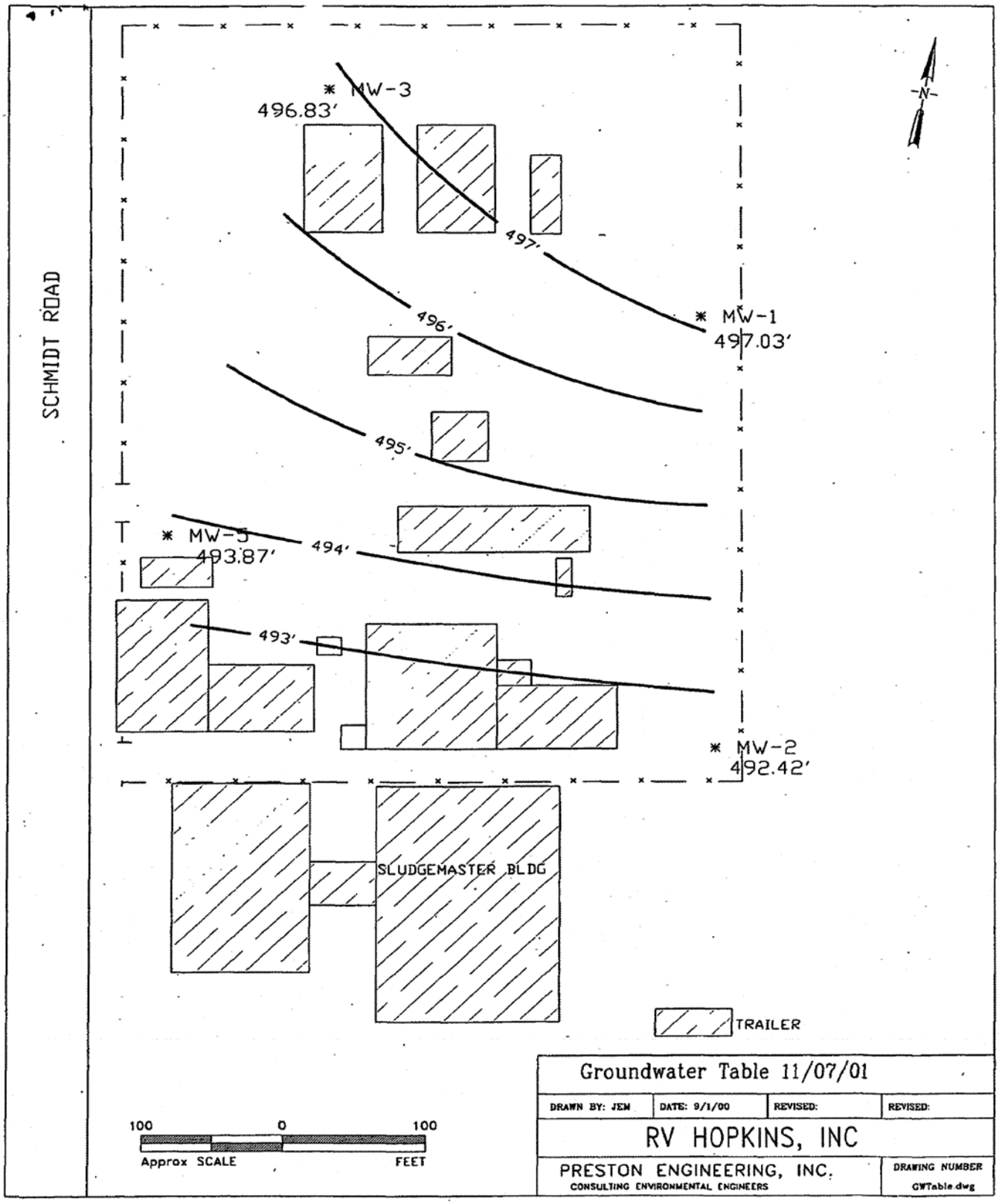
2013 EPA (in 6/14/2012 letter) notified RP that proposed closure plan is incomplete. Required waste removal, building decontamination, and soil capping

2014 EPA No actions in 2014

2017 IDNR Registry EC letter sent 8/21/2017

2019: No activity in 2019

2020: No activity in 2020


SCHMIDT ROAD
* MW-3
496.83'
497'
496'
495'
494'
493'
* MW-1
497.03'
* MW-5
493.87'
* MW-2
492.42'
SLUDGEMASTER BLDG
TRAILER
N
100
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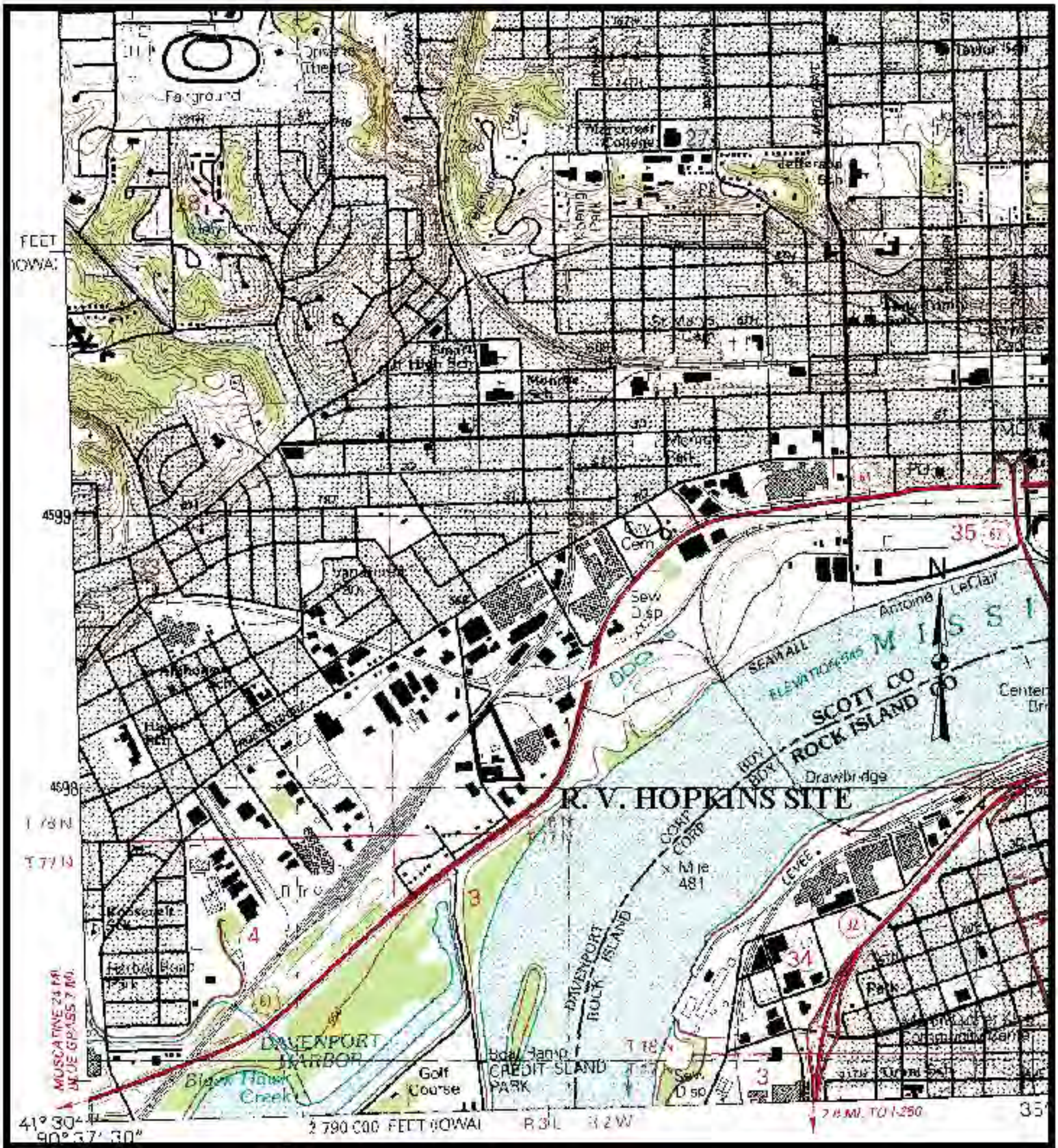
Approx SCALE
FEET
Groundwater Table 11/07/01
DRAWN BY: JEM
DATE: 9/1/00
REVISED:
REVISED:
RV HOPKINS, INC
PRESTON ENGINEERING, INC.
CONSULTING ENVIRONMENTAL ENGINEERS
DRAWING NUMBER
GWTable.dwg

(Hopkins, R. V. Inc. - Sludgemaster, Barriers, Inc.)



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IOWA FALLS COAL GAS SITE
(Iowa Falls, Iowa)

GENERAL DESCRIPTION

The Iowa Falls Coal Gas Site occupies 0.35 acre in the SE 1/4 of the NW 1/4 of Section 18, T89N, R20W, Hardin County, Iowa Falls, Iowa. The property is owned by IES Utilities (formerly Iowa Electric Light and Power Company). The site was entered on the Registry in May 1990.

SITE CLASSIFICATION

In 2017: This site is being re-classified to the status of "d" closed requires continued management in accordance with 455B.427.3.

TYPE AND QUANTITY OF HAZRADOUS WASTE

A coal gasification plant was operated at the site from 1909 to 1949. During its operation, coal tar, iron oxide waste, and associated coal gasification wastes were generated at the plant. Unknown quantities of these wastes have been disposed of at the site. During December 1986 constituents of coal tar waste were found in a storm sewer and in an unnamed creek south of the site. An analysis of the waste sludge identified twelve polynuclear aromatic hydrocarbons (PAHs) for a combined total concentration of PAHs of 106,690 ug/l. A groundwater investigation was conducted during October 1988. Analytical results of on-site monitoring wells showed a total PAH concentration of 3,061 ug/l, benzene at 1,200 ug/l, xylenes at 1,300 ug/l, ethylbenzene at 1,600 ug/l, arsenic at 28 ug/l, and total cyanide at 490 ug/l.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

The site is located within the city limits of Iowa Falls, Iowa. The city obtains its water from six municipal wells located northwest of the site. The nearest city well is located approximately 3,000 feet from the site.

Surface drainage from the site is from the north to the south, with discharge into a small unnamed creek just south of the site. This unnamed creek begins at a storm sewer that crosses beneath the site. The creek flows south approximately 1,000 feet and discharges into the Iowa River. The Iowa River flows west to east through Iowa Falls. Local fishermen have reported that fish taken in the Iowa River below the site's storm sewer outfall have a creosote taste and odor.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The state is the lead agency at the site. A Feasibility Study (FS) was submitted to the department that outlined the completed and planned activities for the site.

Coal tar waste has been excavated and removed from the tar separator, septic tank, and storm sewer. Contaminated sediment has been removed from the creek bed on the south side of the site. The remedial action plan for contaminated soil removal and groundwater treatment was submitted to the department in 1994.

Other activities included the excavation of shallow contaminated soil and the placement of a cap over the site to reduce surface water infiltration. Off-site groundwater monitoring and periodic surface water sampling are being conducted. There will also be periodic inspections and repairs, if required, to the storm sewer.

2007: An evaluation of the practicability of recovering dense non-aqueous phase liquids from the subsurface is currently being completed. After completion of this evaluation and any subsequent actions, it is expected that ground water monitoring in support of site closure will begin. The department will continue to work closely with the owner to ensure proper monitoring and cleanup of the site.

2010, the following site assessment activities were completed in association with the Iowa Falls MGP site:

- Monitoring wells were installed based on the 2009 ground water probing results and sampled.
- A summary report of the 2009 soil and ground water probing and 2010 ground water sampling fieldwork was prepared.
- A feasibility study to address the storm sewer was prepared.

2011 the following site activities were completed in association with the Iowa Falls MGP site.

- DNAPL monitoring was conducted semi-annually.
- The environmental covenant for the railroad property was drafted.

2012 the following site activities were completed

- Measurement and recovery of free product DNAPL, including additional monitoring wells
- Vapor intrusion assessment and site investigation was completed
- Remedial Investigation Feasibility (RI/FS) addendum report completed

2013: the following activities were completed

- Storm sewer inspection and sampling and remedial plan prepared

2014: the following activities were completed

- Implementation of remedial action for storm sewer and an Environmental Covenant will be implemented on MGP site and neighboring railroad property.

2015: the following activities were completed:

- The storm sewer remedial action (sewer cleaning and grouting) was conducted.
- A report summarizing the storm sewer remedial action was prepared.
- The storm sewer was inspected and sediment, surface, and groundwater sampling was conducted.
- A report summarizing field activities was prepared.

2016: The following activities were completed:

- A screening level Ecological Risk Assessment was conducted and an annual field work summary report prepared that included groundwater closure monitoring plan

2017: The following site activities were completed:

- The 2016-17 Groundwater Monitoring Report was received and approved by Iowa DNR
- A Soil Exposure Risk Assessment was conducted
- The Environmental Covenant Supporting Documentation was received in preparation of completing the Covenant in 2018 and de-listing the site.

2018: The following site activities were completed:

- The 2017 Storm Sewer Inspection Report was submitted and approved by Iowa DNR
- The 2017/2018 Groundwater Monitoring Report was submitted

2019: The following site activities were completed

- Completion of 2018-19 bi-annual inspection of storm water drain and technical memo report

2020: No actions taken in 2020

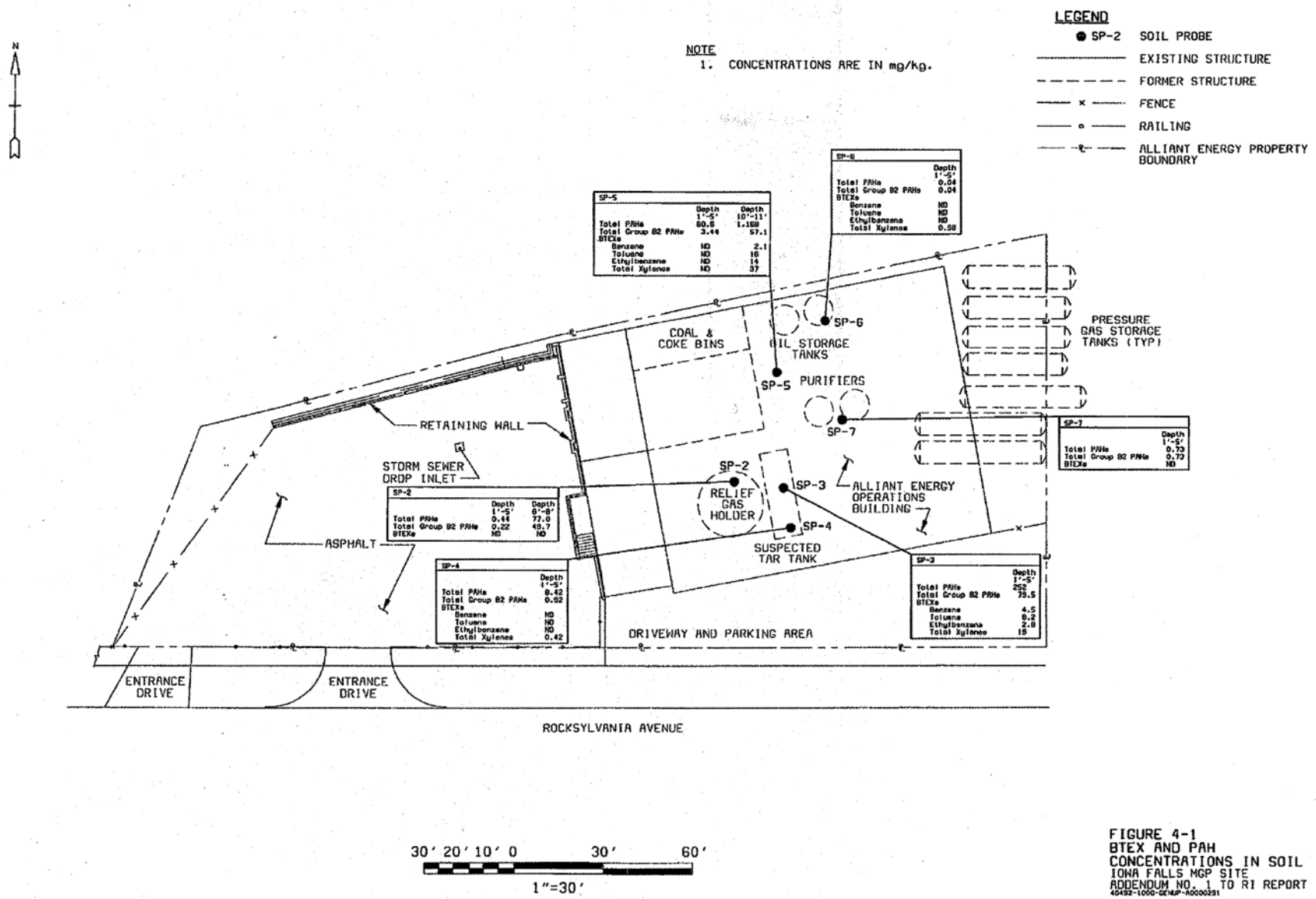
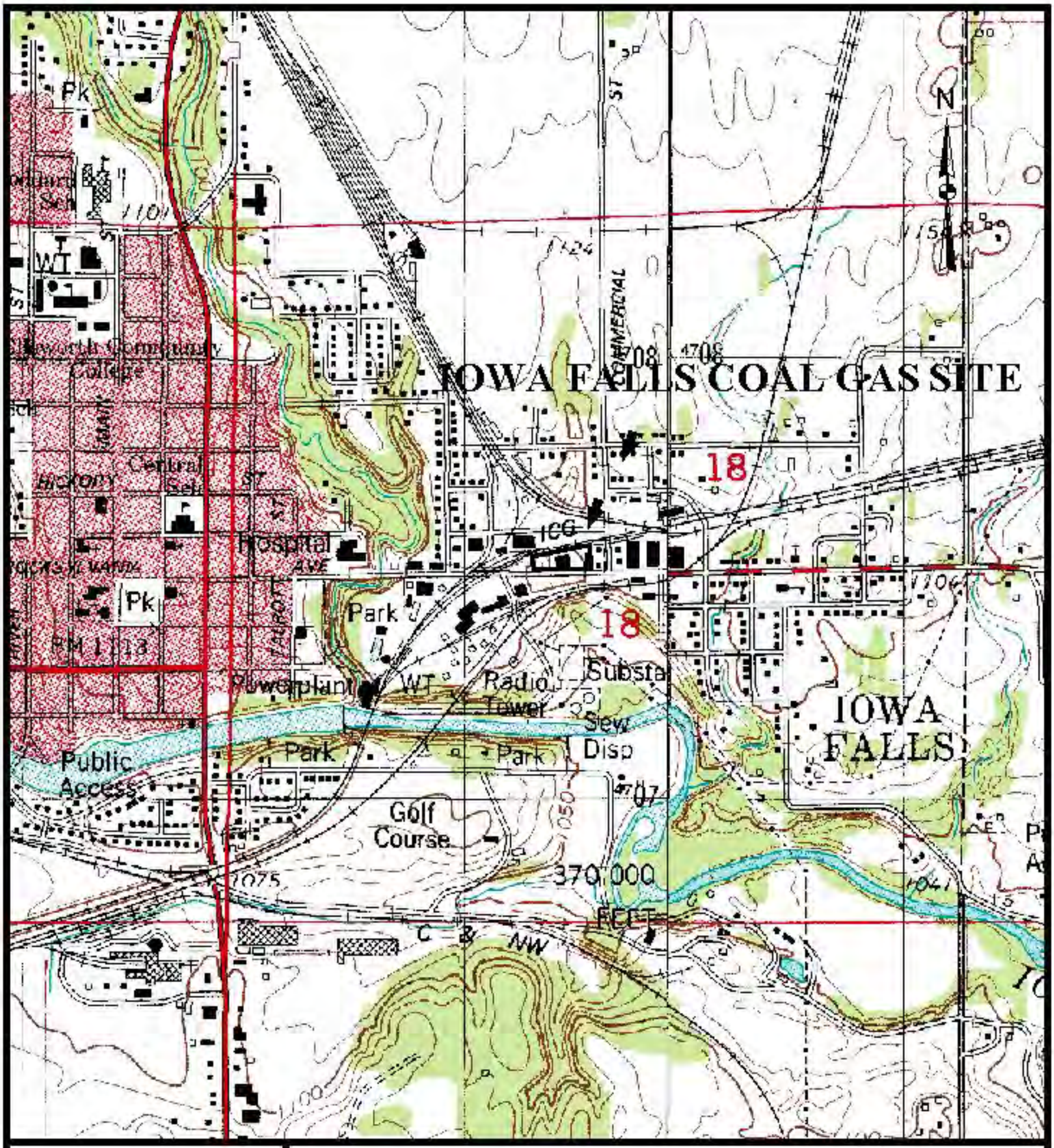


FIGURE 4-1
BTEX AND PAH CONCENTRATIONS IN SOIL
IONA FALLS MGP SITE
ADDENDUM NO. 1 TO RI REPORT
40492-1000-GENUP-A0000291

(Iowa Falls Coal Gas Site)



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JOHN DEERE OTTUMWA WORKS
(Ottumwa, Iowa)

GENERAL DESCRIPTION

The site is located on this property next to the Des Moines River. The 25-acre site lies in the corners of four sections in Wapello County, Iowa. This includes parts of the SE 1/4, Section 25 and the NE 1/4, Section 36, T72N, R14W; and parts of the SW 1/4, Section 30 and the NW 1/4, Section 30, T72N, R13W; all in Wapello County, Iowa. The site was entered on the Registry in August 1989. The EPA placed the site on the National Priorities List (NPL) in August 1990 and it was removed in 2001. September 1989 the EPA and Deere signed an Administrative Order on Consent for a Remedial Investigation/Feasibility Study (RI/FS). The RI/FS report was submitted to the EPA in July 1991. A Record of Decision (ROD) was signed in September 1991. In 1992 Deere signed a Consent Order with EPA to implement the selected remedy from the ROD.

SITE CLASSIFICATION

In 2001 the site was reclassified as "d" Site Properly Closed Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

This has been the site of a farm machinery manufacturing facility since 1900 and by Deere & Company since 1911. The site includes three unlined landfills, which were used for waste disposal from 1938 to 1977. Hazardous material disposal included paint sludge, solvents, heat-treating cyanides, and possibly the oils used in foundry sands. It is estimated approximately 850 tons of paint wastes were placed in the landfill area over the thirty-year period. These paint wastes probably contained pigment residues with zinc, lead, arsenic, mercury and chromium.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

Low levels of heavy metals from site disposal activities were detected in soil, surface water and sediment at the site. Potential risks may have existed for individuals who accidentally ingested or came in direct contact with contaminated soil and surface water.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTION

The EPA is the lead agency for the site. The Record of Decision (ROD) required continued groundwater monitoring, site perimeter fence maintenance, and deed restrictions have been put in place. Superfund five-year reviews were conducted in 1998, 2003, 2008, and 2013. The 2013 five-year review found no areas of non-compliance. However, a protectiveness statement was withheld pending sampling of Black Lake for potential ecological impacts. The only ongoing actions are maintaining the site perimeter fence, deed restrictions, and groundwater monitoring. An environmental covenant was recommended as a preferred form of institutional control in lieu of deed restrictions..

In 2015 an addendum to the 2013 Five Year Review was completed and determined the remedy was protective of human health and the environment.

Environmental Covenant: was implemented that restricts site use from children, residential, recreational, drinking wells, and required a fence around the property.

The Environmental Protection Agency (EPA) completed the fifth five year review on the site in 2018. The remedy at the site was found to be protective of human health and the environment. The Iowa DNR reviewed the five year review and had no comments of concerns in reference to State of Iowa applicable or relevant and appropriate requirements. The EPA approved the request to terminate the groundwater monitoring program and abandon all monitoring wells. The Iowa DNR will continue to coordinate with the EPA to insure proper management of the site.

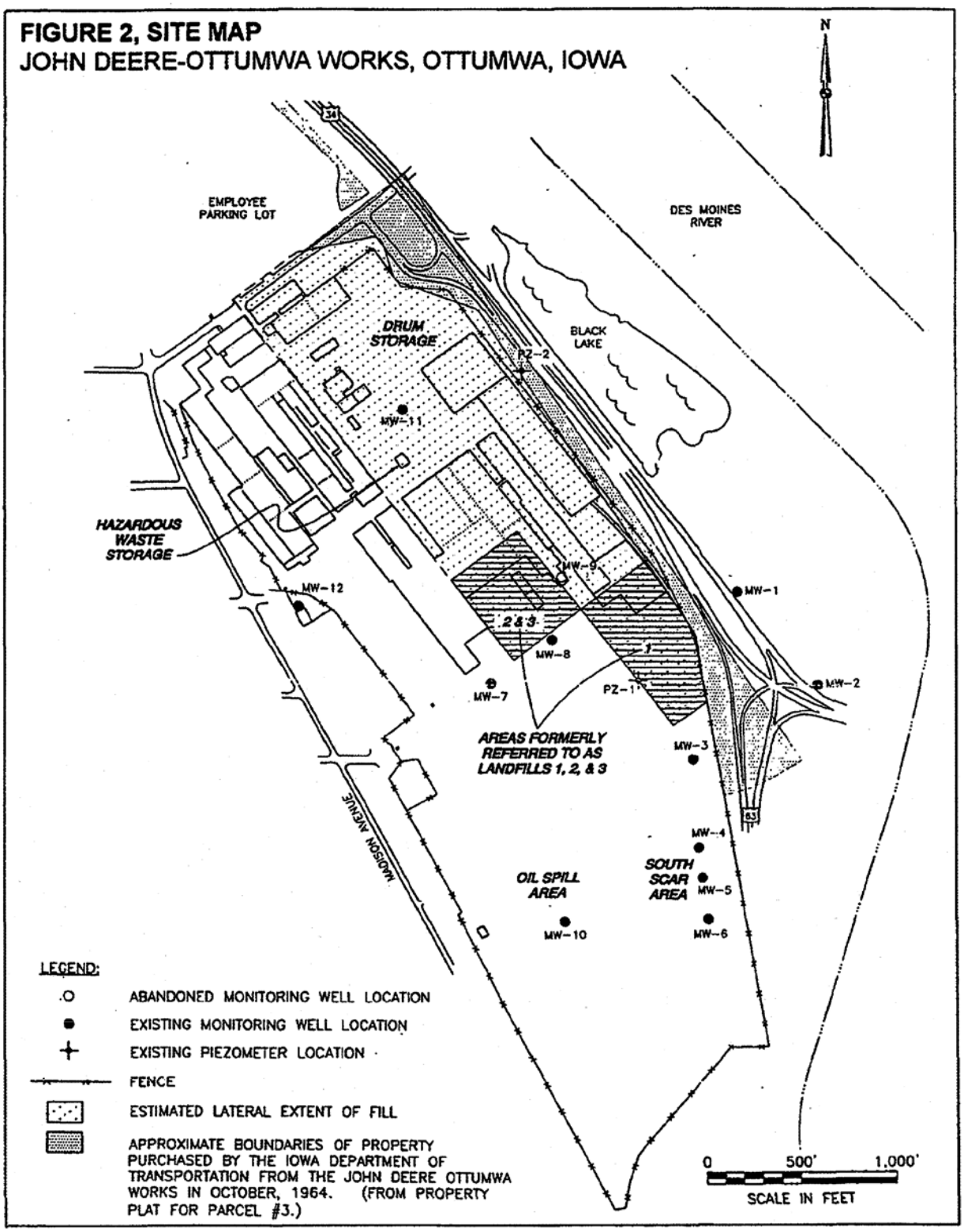
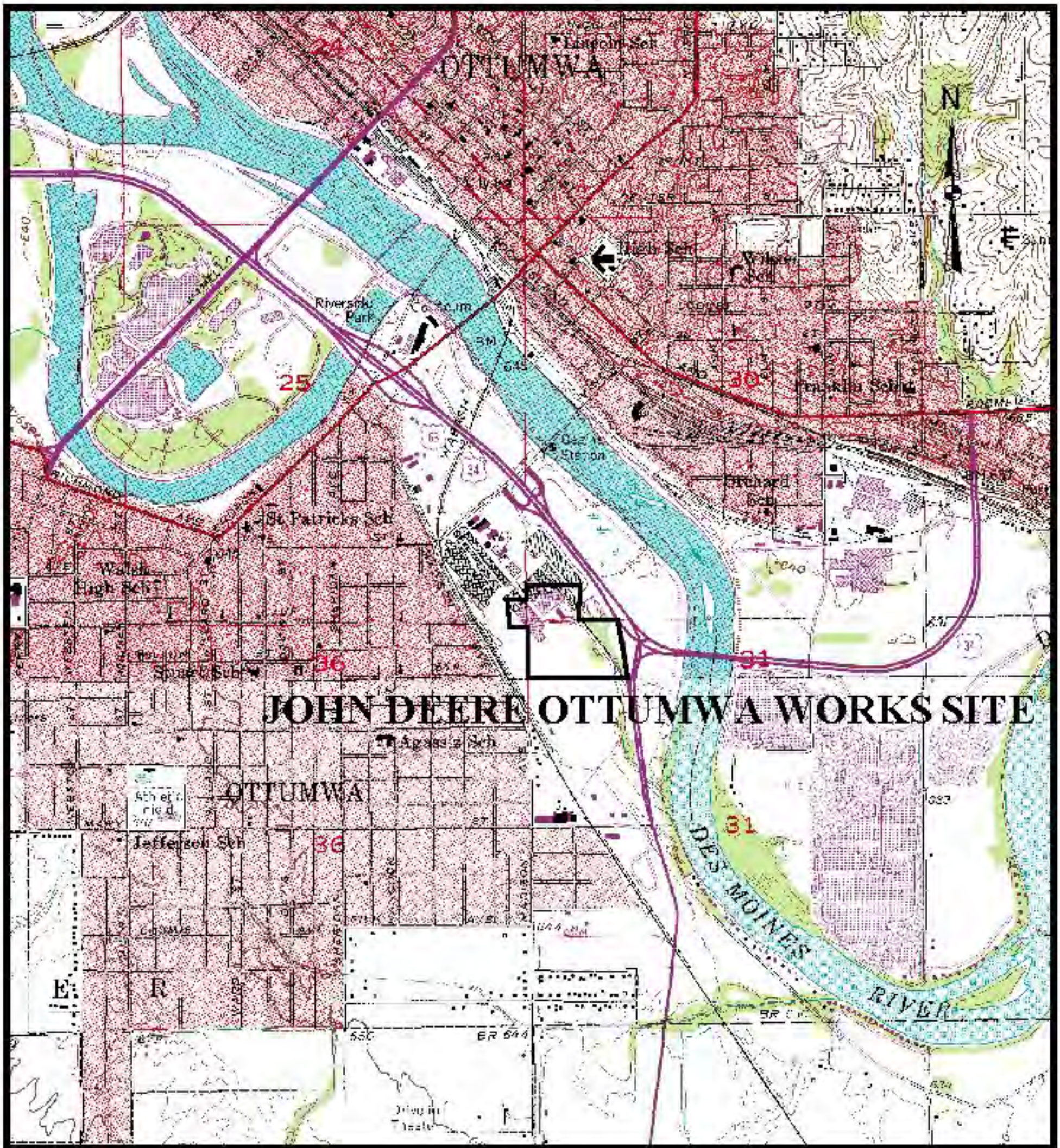


FIGURE 2, SITE MAP
JOHN DEERE-OTTUMWA WORKS, OTTUMWA, IOWA
N
EMPLOYEE PARKING LOT
DES MOINES RIVER
BLACK LAKE
DRUM STORAGE
PZ-2
MW-11
HAZARDOUS WASTE STORAGE
MW-9
MW-12
MW-1
2 & 3
MW-8
1
MW-7
PZ-1
MW-2
AREAS FORMERLY REFERRED TO AS LANDFILLS 1, 2, & 3
MW-3
MADISON AVENUE
MW-4
SOUTH SCAR AREA
MW-5
OIL SPILL AREA
MW-10
MW-6
LEGEND:
ABANDONED MONITORING WELL LOCATION
EXISTING MONITORING WELL LOCATION
EXISTING PIEZOMETER LOCATION
FENCE
ESTIMATED LATERAL EXTENT OF FILL
APPROXIMATE BOUNDARIES OF PROPERTY PURCHASED BY THE IOWA DEPARTMENT OF TRANSPORTATION FROM THE JOHN DEERE OTTUMWA WORKS IN OCTOBER, 1964. (FROM PROPERTY PLAT FOR PARCEL #3.)
0
500'
1,000'
SCALE IN FEET

(John Deere Ottumwa Works)



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JOHN DEERE SANITARY LANDFILL
(Dubuque, Iowa)

GENERAL DESCRIPTION

The Deere & Company landfill site is located about two miles north of the city of Dubuque. The 90-acre site, which includes a permitted sanitary landfill, lies in the northeast part of the SW 1/4 of Section 27, T90N, R2E, Dubuque County, Iowa. The site was entered on the Registry in June 1991.

SITE CLASSIFICATION

In 2013 this site is re-classified "d" in accordance with 455B.427.3. The site does not pose a significant threat to the environment but will required continued monitoring.

TYPE AND QUANTITY OF HAZARDOUS WASTE

John Deere has operated a permitted landfill at the site since 1975. The landfill is used almost exclusively for wastes from the John Deere Dubuque Works. The landfill has a synthetic liner, a leachate collection system, and a liner failure detection system. Control of run-off is provided by bermed waterways on both sides of the landfill and by a down gradient siltation basin. The site was used for the disposal of 4,323 tons of hazardous wastewater treatment sludge from 1980 to 1986. The sludge was a hazardous waste because of its leachable concentrations of lead, cadmium, selenium, arsenic, and chromium. Chromium electroplating waste stream was the primary source of these toxic metals.

Prior to the effective date for the new hazardous waste regulations (RCRA), Deere disposed of 1,101 tons of sludge in accordance with a Special Waste Authorization issued by the department. After November 1980 Deere was prohibited from disposing of this sludge which was designated a F006 hazardous waste.

In accordance with the RCRA regulations, Deere filed a petition with the EPA to delist the treatment sludge. The EPA granted a temporary delisting of the treatment sludge in 1981. As a result, Deere was again able to request authorization for disposal of the sludge at its landfill. From 1981 to 1986 Deere disposed of another 3,222 tons of the treatment sludge at the landfill. The department issued a Special Waste Authorization for this disposal.

During further review of the delisting petition, the EPA used an improved test for leachable heavy metals. This test showed levels of lead, cadmium, selenium, arsenic, and chromium that would require denial of the delisting petition. As a result of this review, Deere withdrew its delisting petition and the IDNR required Deere to cease disposal of the treatment sludge at the landfill.

From July 1986 through 1987 the sludge was sent to a hazardous waste facility in Illinois. Prior to 1988 Deere constructed a separate facility for the chromium electroplating waste. Without the electroplating waste stream, the industrial wastewater treatment sludge is not a hazardous waste. Therefore, starting in 1988, the department renewed the authorization for disposal of the industrial wastewater treatment sludge at the landfill.

The majority of waste disposed of at the landfill is powerhouse ash. Other non-hazardous industrial wastes include incinerator ash, floor sweepings, broken yard parts, coolant filter media, domestic wastewater treatment sludge, slag, and waste paint sludge, filters, and liners. From 1975 through June 1991 approximately 440,000 tons of non-hazardous waste was disposed of at the landfill. After disposal of foundry sand stopped in 1987, the landfill disposal rate dropped from about 30,000 tons to 17,000 tons per year.

SUMMARY OF HEALTH AND ENVIRONMENTAL IMPACTS

The northern part of Dubuque, several small communities, and numerous other dwellings are located within three miles of the site. Local communities use the groundwater. However, the landfill liner and leachate collection systems appear to have prevented any significant migration of contaminants to the groundwater.

Surface drainage from the site is to the southwest towards Bloody Run Creek. This small creek intercepts the Little Maquoketa River about 1½ miles to the south and the river flows into the impoundment of the Mississippi River about two miles to the east. However, all surface water that comes in contact with the waste is directed to the leachate collection system through the use of perimeter berms. Except during landfill start-up, the containment system appears to have been constructed and operated properly.

SUMMARY OF ASSESSMENT, MONITORING AND REMEDIAL ACTION

The IDNR Solid Waste Section is the lead agency for this site

- The site has three ground water monitoring wells that are sampled according to a June 1990 Groundwater Sampling Plan.

- Active landfill for disposal of Powerhouse Coal Ash, Paint Booth Sludge, Flood Sheet Sludge, Paint Booth Cleanout, Industrial Wastewater Treatment Sludge, Flame Cut Slag, Shot Blast Dust, and Laser Dust. Regular reporting as required for Industrial landfills. Permit renewed August 14, 2009 and will expire August 14, 2012.

In 2012 The Landfill was granted a closure permit by the IDNR Solid Waste Section that requires continued monitoring.

As of 2013, the site has been re-classified to “d” closed requires continued management in the form of monitoring.

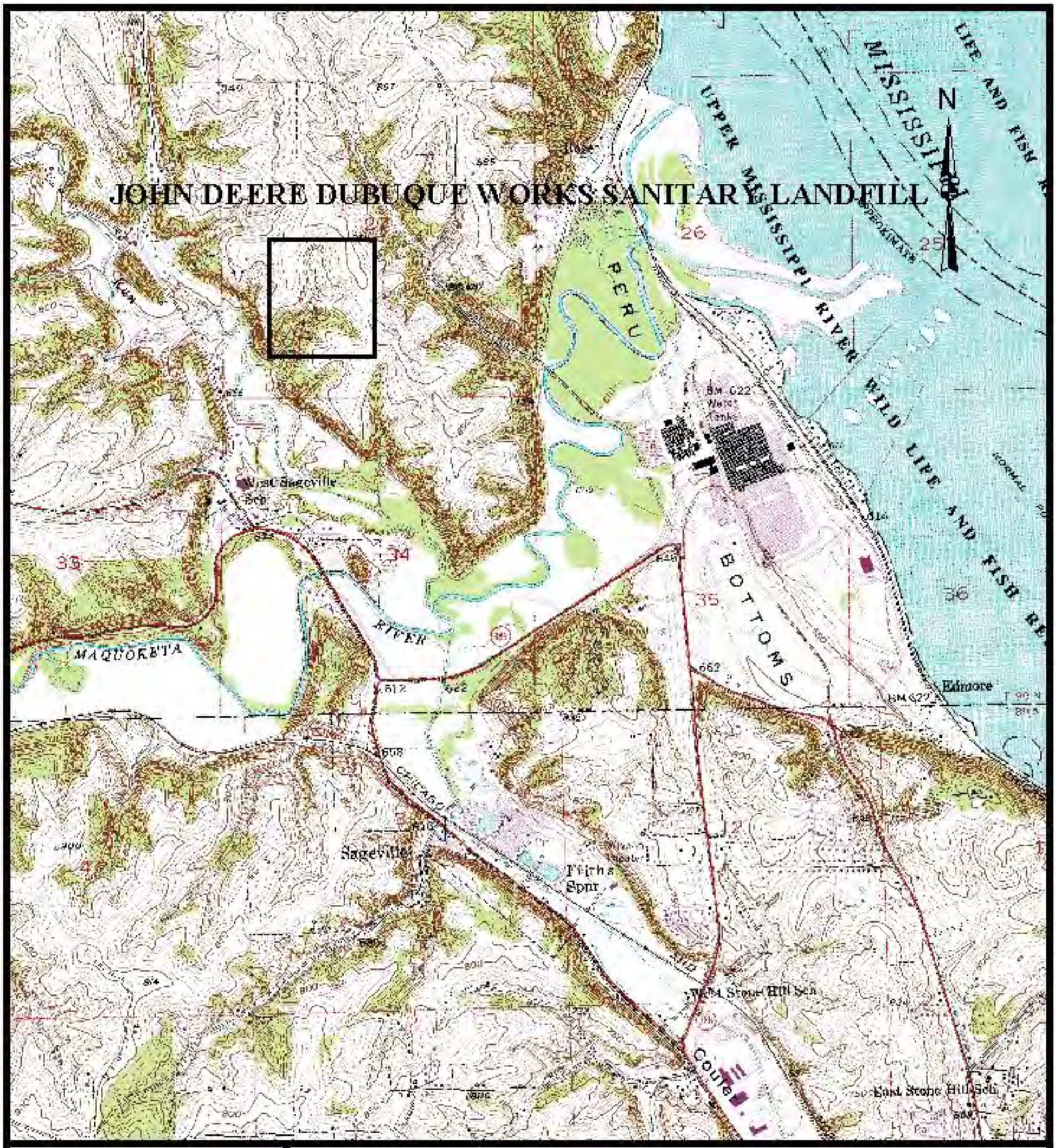
A Superfund five-year review was released in July 2013. The five-year review withheld a protectiveness determination pending evaluation of an ecological exposure pathway. Vapor intrusion was found not to be a threat at the site. An annual report will include monthly water-level monitoring data from paired monitoring wells to insure an inward gradient, i.e., groundwater moving towards site production wells and not off-site. Groundwater monitoring will be done at five-year intervals concurrent with five-year reviews. The EPA serves as the lead oversight agency with the DNR in the support role.

2017 IDNR; Registry EC letter sent 8/21/2017

2019; No site activity

2020: No site activity

(John Deere Dubuque Works Sanitary Landfill)



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Project #

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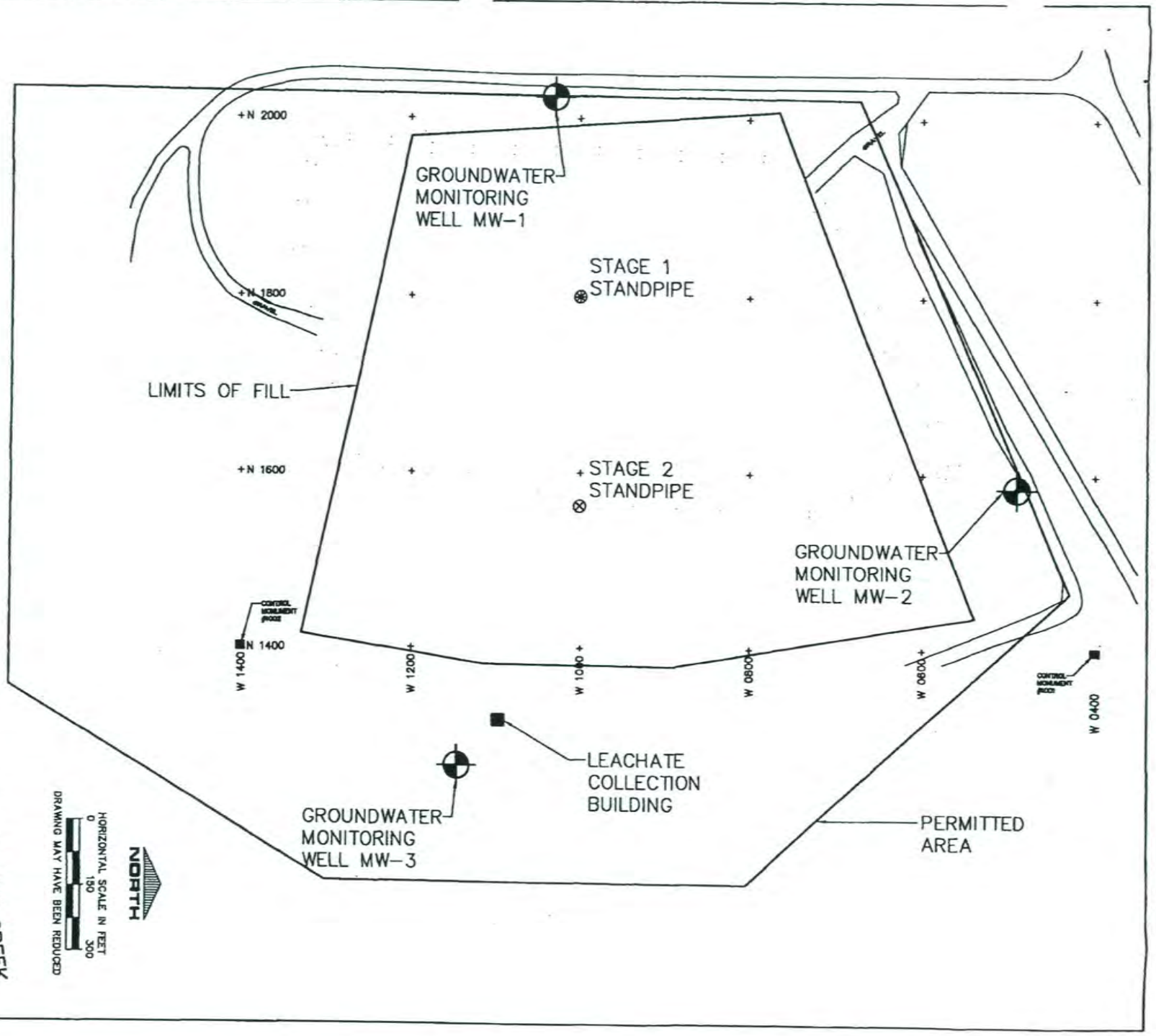
Project Description:
JOHN DEERE DUBUQUE WORKS
LANDFILL
GROUND WATER MONITORING
WELL LOCATION MAP

Rev:	Issued For:	Issued Date:	Rev By:



JOHN DEERE WATERLOO
(Waterloo, Iowa)

GENERAL DESCRIPTION

The 290-acre site is located in Sections 22 and 23, T89N, R13W, Black Hawk County, Iowa, near the center of Waterloo, Iowa. Black Hawk Creek bisects the site. The site is owned by Deere & Company and was entered on the Registry in November 1990.

SITE CLASSIFICATION

The site is classified "b" in accordance with 455B.427.3. Hazardous substances have been disposed of at the site, posing a significant threat to the environment.

TYPE AND QUANTITY OF HAZARDOUS WASTE

Manufacturing and disposal operations have been conducted on site since 1909. On-site waste disposal has occurred through landfilling, land treatment processes, drum burial. The amount of waste disposal is unknown. The types of hazardous wastes include paint sludge, electroplating wastes, baghouse dust, caustic paint stripper, solvents, cyanide and chromium plating sludge wastes, and petroleum products.

In July 1991, the EPA issued the facility a RCRA hazardous waste operating permit for the treatment and storage of hazardous wastes on the east side of the facility. As a condition of the permit, John Deere was required to conduct a RCRA Facility Investigation (RFI) of the potential impact of past and present solid waste management areas.

Groundwater monitoring has shown contamination in areas on both sides of Black Hawk Creek. The contaminants included several chlorinated solvents, petroleum hydrocarbon, PCBs, and dioxin. The PCBs (660 ug/L) and dioxin (0.036 ug/L) were found in one well on the east side of Black Hawk Creek near the Cedar River. This well also had floating free product, as motor oil that contained 670 ppm of PCBs. The highest concentrations of chlorinated solvents were found on the west side of the site. This included chloroethane (900 ug/L), 1,1-dichloroethane (840 ug/L), 1,2-dichloroethylene (420 ug/L), 1,1,1-trichloroethane (190 ug/L), and lesser amounts of trichloroethylene and tetrachloroethylene.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The primary public health concern for this site is potential contamination of surface water and public drinking water.**

The John Deere Waterloo site is located near the center of Waterloo, Iowa. The site is bordered on the north by the Cedar River and is bisected by Black Hawk Creek. Both of these surface water bodies are used for fishing and recreational purposes. There are two city parks located just north and south of the site. The city of Waterloo has five municipal well fields located within two miles of the site. The Cedar Bend wells are located in the alluvial aquifer. The other four well fields are completed in bedrock.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA is the lead agency for this site, which is being regulated under the federal RCRA program. As a condition of the hazardous waste operating permit issued in 1991, the facility was required to conduct a RCRA Facility Assessment (RFA). The purpose of the RFA was to identify past disposal activities that may require corrective action. As a result of the RFA a RCRA Facility Investigation (RFI) was initiated in June 1992 and completed in June 1994. A supplemental Corrective Measures Study (CMS) was completed in 1998 and the environmental measures identified in the study are being implemented. A Supplemental RCRA Facility Investigation (RFI) report was submitted in 2001.

2003: The U.S. Environmental Protection Agency (USEPA) is currently finalizing its review of all on site environmental data collected by the facility to date, relative to the RCRA solid waste management units (SWMUs) that have been identified at the facility. The purpose of this review is to determine whether the environmental assessments performed at the facility have characterized the nature and extent of contamination in soil and groundwater sufficiently to provide adequate information for the assessment of both human and ecological risk, and to determine the need for corrective action.

2004: The EPA completed review of all available on-site environmental data and then submitted written comments summarizing this review to John Deere representatives. Currently, John Deere is drafting a comprehensive response summary to EPA's comments. Once this response summary has been completed and submitted to the EPA, the EPA and John Deere will begin working to develop a work plan to guide data collection to complete the environmental assessment at the facility. A corrective action remedy for the facility will be determined from this assessment.

2005: John Deere - Waterloo Works (Deere) responded to the comprehensive review of existing environmental data performed by the EPA by submitting a written response summary to the EPA. While the EPA was in the process of reviewing these responses, Deere elected to proceed with redevelopment of portions of the site for Deere's own use, and also with an environmental assessment for a portion of the site for which Deere plans to transfer ownership. The EPA has been working with Deere to ensure that adequate environmental assessment has been achieved in these areas of the site slated for reuse and redevelopment. Once this has been completed, Deere and the EPA will develop a work plan to fully complete environmental contamination assessment across the remainder of the site property.

2007: Approximately 40 acres of the John Deere Waterloo site was transferred to Cedar Valley Tech Works, Inc. for redevelopment as a biotechnology education and research center.

2008: A joint EPA site visit conducted in October. An easement request was approved by IDNR and EPA for construction of service roads that did not affect the solid waste management units.

2010: John Deere and the EPA continue to work toward attaining a final remedy decision for the entire John Deere Waterloo Works site. Environmental fieldwork remaining to be done in support of a remedy decision includes John Deere will soon be performing comprehensive, facility-wide groundwater sampling and analysis in order to provide current information regarding groundwater quality.

2012: EPA/RCRA program has reviewed and commented on the Addendum to Corrective Measures Work Plan for SWMU 19A and AOC#1for property being transferred to Tech-Works

2013: John Deere, performed extensive soil sampling in an effort to complete site-wide soil assessment to support corrective action decisions. Representatives from John Deere and the U.S. Environmental Protection Agency held meeting 2013 to discuss remaining site issues, and to develop a possible final remedy in 2014. During 2014, John Deere will be developing proposals to address remaining data gaps, perform a human health baseline risk assessment, and complete a corrective measures study in order to support a final remedy decision.

2014: Data Gaps Investigation Report for Soil and Buried Waste Materials approved by EPA. Groundwater Contamination and Hydraulic Containment Assessment Work Plan" and "Quality Assurance Project Plan" were submitted in August 15, 2014 and approved with modifications by EPA.

2015: EPA approval of the Risk Assessment Work Plan Addendum and site Sampling and Analysis Plan for Supplemental Investigation of Groundwater Conditions and QAPP addendum.

2016: EPA provided conditional approval of the 2016 Groundwater Monitoring report. Based on the detections of vapor forming constituents at the facility, a Vapor Intrusion assessment work plan was developed and approved. Additionally, a Monitored Natural Attenuation evaluation was conducted to evaluate this remedial option at the facility. As part of the RCRA Facilities Investigation Remedy Selection Track (FIRST) process, an initial meeting was held to identify the level of effort needed during the Corrective Measures Study, potential remedial options and to begin development of the corrective action objectives.

2017 The following activities were completed:

A renewed hazardous waste operating permit for corrective action was issued effective October 21, 2017 and will run for 10 years.

The first phase of vapor intrusion assessment at SWMU-14 and the former C-2 building was conducted. Based on the results of the initial assessment, additional vapor intrusion assessment is necessary and is ongoing.

A work plan for additional monitoring well installation was approved in order to complete the monitoring well network for ongoing MNA sampling.

2018: The following activities were completed

EPA approved the GW-37 Groundwater Sampling report
EPA approved the October 2017 monitoring report
EPA approved the Inspection and Sampling report of Excavated Material from Building T10 Expansion
EPA approved the Focused Groundwater Investigation report
EPA approved the Vapor Intrusion Assessment Report

2019: The following activities were completed

1.) Environmental Covenant an EC was completed in May 2019 between EPA and JD with the following use limitations to address contamination on site.

a.) No Residential Land Use: The Property shall not be used for residential purposes, which for purposes of this Covenant include but are not limited to: single family homes, duplexes, multiplexes, apartments, condominiums, schools, dormitories, retirement or senior/child-care centers, or any land use where persons can be expected to reside.

b. No drinking water wells shall be installed on the John Deer Property

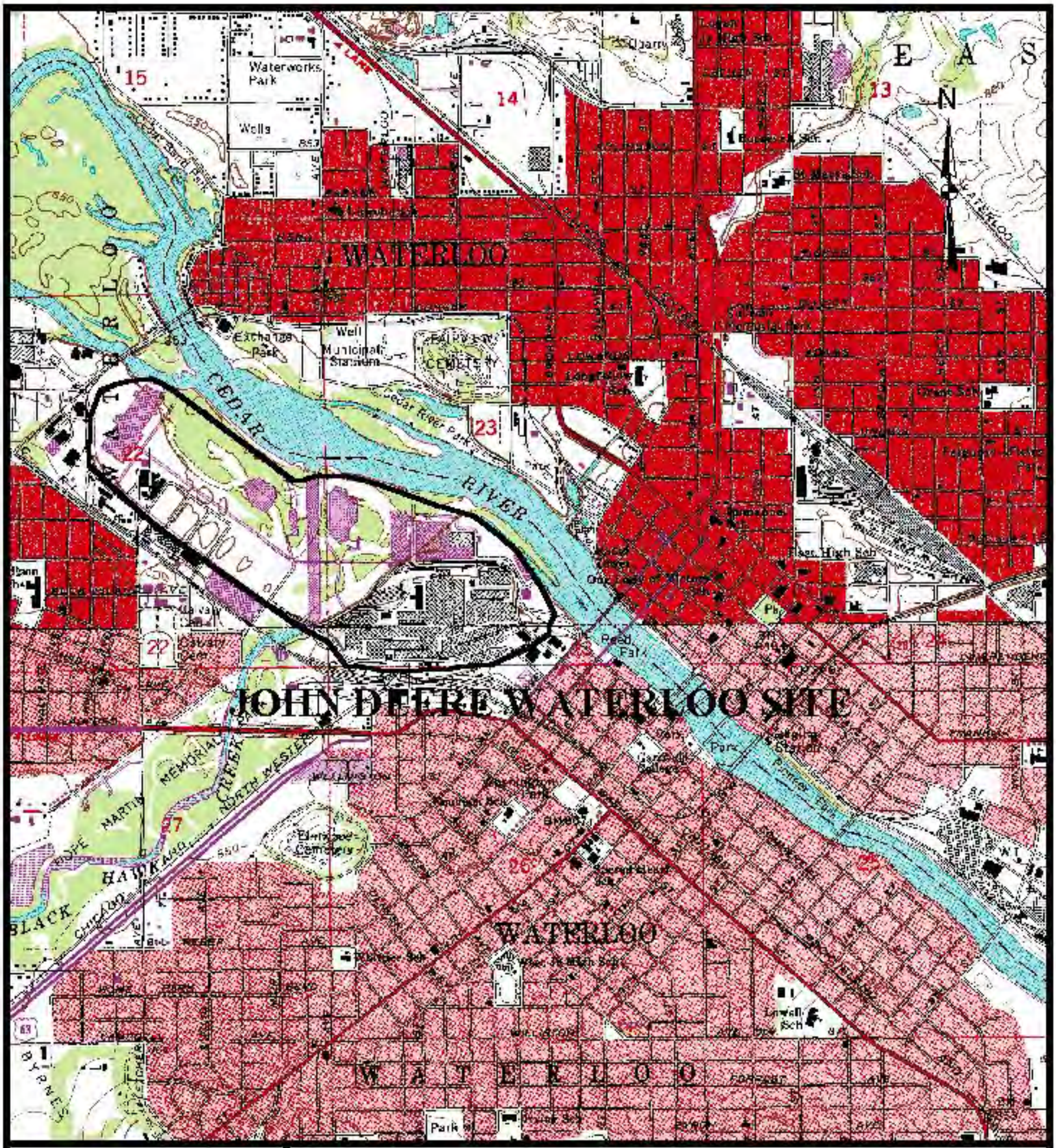
2.) Final Record of Decision:
In October, 2019, the EPA Region 7 has determined that the corrective actions being implemented at the John Deere Waterloo Works -Drivetrain Operations, Waterloo, Iowa Facility, as specified in the Statement of Basis, are appropriate and will be protective of human health and the environment.

Activities completed in 2020

- **Partial property transfer from Cedar Valley Tech Works to Lincoln Savings Bank and ongoing development for the Lincoln Savings Bank (building renovation and parking lot structure construction)**
- **Final Remedy Decision and Permit modification for SWMU-14; excavation of source mass contamination at Solid Waste Management Unit-14 and disposal**
- **Approval of the Corrective Measures Work Plan, Groundwater Remedy Implementation Plan and Soil Management Plan**
- **Ongoing vapor intrusion assessment at Buildings A, R, C-2, Z, Steel Shed**
- **Initial groundwater monitoring event scheduled for first week of December 2020**
- **EPA Long-term stewardship assessment of controls**

- **Potential partial property transfer from Cedar Valley Tech Works to City**

(John Deere Waterloo)



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La BOUNTY SITE
(Charles City, Iowa)

GENERAL DESCRIPTION

The site covers 12-acres within the corporate limits of Charles City, Iowa. It is located on the Cedar River and is generally described as the NE 1/4 of the SW 1/4 of Section 7, T95N, R15W, Floyd County, Iowa. The site was entered on the Registry in 1984. The site was put on the National Priorities List in 1983 and removed in 1993.

SITE CLASSIFICATION

In 1996 the site was re-classified to "d" Site Properly Closed Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

Between 1953 and 1977 Salsbury Laboratories disposed of about 240,000 cubic yards of waste at the site. The waste is estimated to have included 3,000 tons of arsenic, 140 tons of nitrobenzene, 35 tons of 1,1,2-trichloroethane, and 13.5 tons of phenols. Twenty-three hazardous substances have been identified from groundwater monitoring.

SUMMARY OF HEALTH AND ENVIRONMENTAL CONCERNS

Leaching of chemicals from the site has caused contamination of the Upper Cedar Valley Aquifer in the immediate area of the site. The contaminated part of the aquifer is not used as a source of drinking water. After flowing through the site, the groundwater discharges to the Cedar River. The diversion wall has reduced the amount of groundwater flow through the site in the Upper Cedar Valley Aquifer.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA is responsible for oversight. Initial investigations by the EPA and the department showed that the site was releasing arsenic, 1,1,2-trichloroethane, and other contaminants to the Cedar River. As a result of these investigations, the EPA required Salsbury to complete a two-phase remedial action and monitoring program.

Phase I of the remedial action plan (completed in 1979) initiated monitoring the Cedar River and ground water. Salsbury implemented Phase II in 1980, which included capping the site with clay and diverting surface water around the site.

A 1982 National Enforcement Investigation Center report determined additional remedial measures were necessary. The report concluded capping had not effectively reduced the leaching of contaminants during groundwater flow through the site. In 1985 a feasibility study determined a groundwater control structure would be the most appropriate remedial measure. This “wall” was designed to reduce the amount of groundwater flow through the site.

A 1985 EPA consent order required the construction of this wall, and water withdrawal from the upgradient side of the wall. The wall was completed in January 1986. Three Cedar Valley Aquifer monitoring wells and six cutoff monitoring wells also were completed in January 1986. Arsenic concentrations in the Cedar River are higher downstream of the LaBounty site that they are upstream of the site. However, downstream concentrations of arsenic have averaged less than 10 ug/L in recent years compared to the Iowa Stream Water Quality Standard of 50 ug/L. The site continues to be monitored quarterly for groundwater and monthly for surface water. Inspections are conducted quarterly to insure the integrity of monitoring wells and other site features.

Current Activities

The EPA conducts an in-depth review of the site every 5 years. The most recent 5-year review was completed in July of 2015. This fifth 5-year review concluded monitoring data results indicate that high elevated concentrations of dissolved arsenic are in downgradient monitoring wells. Currently site information does not evaluate arsenic concentrations or quantify potential exposures to aquatic life in the Cedar River.

A protectiveness determination of the site cannot be made at this time until further information is obtained. Further information will be obtained by taking the following actions: (1) characterization of interchange and effects of arsenic discharges to the Cedar River directly adjacent to the site, and (2) investigation into the vapor intrusion pathway.

2015: In addition to the five-year review in 2015, Zoetis proposed changes to the Monitoring and Maintenance Plan in 2015. The proposed changes are under review by EPA and IDNR with completion in 2016. The 5th Five Year Review was completed and initial review of proposed changes to Maintenance and Monitoring Plan is underway.

2016: The protective measures work plan was approved.

2018: The 2017 Annual Report was completed. The RP Response to the Fifth 5-Year Review was submitted.

2019: A Monitoring and Maintenance Plan which includes sampling the Cedar River was completed in February. Flood photos were requested by EPA in April and supplied by he Field Office. The 6th Five-Year Review was kicked off in July (to be completed in 2020).

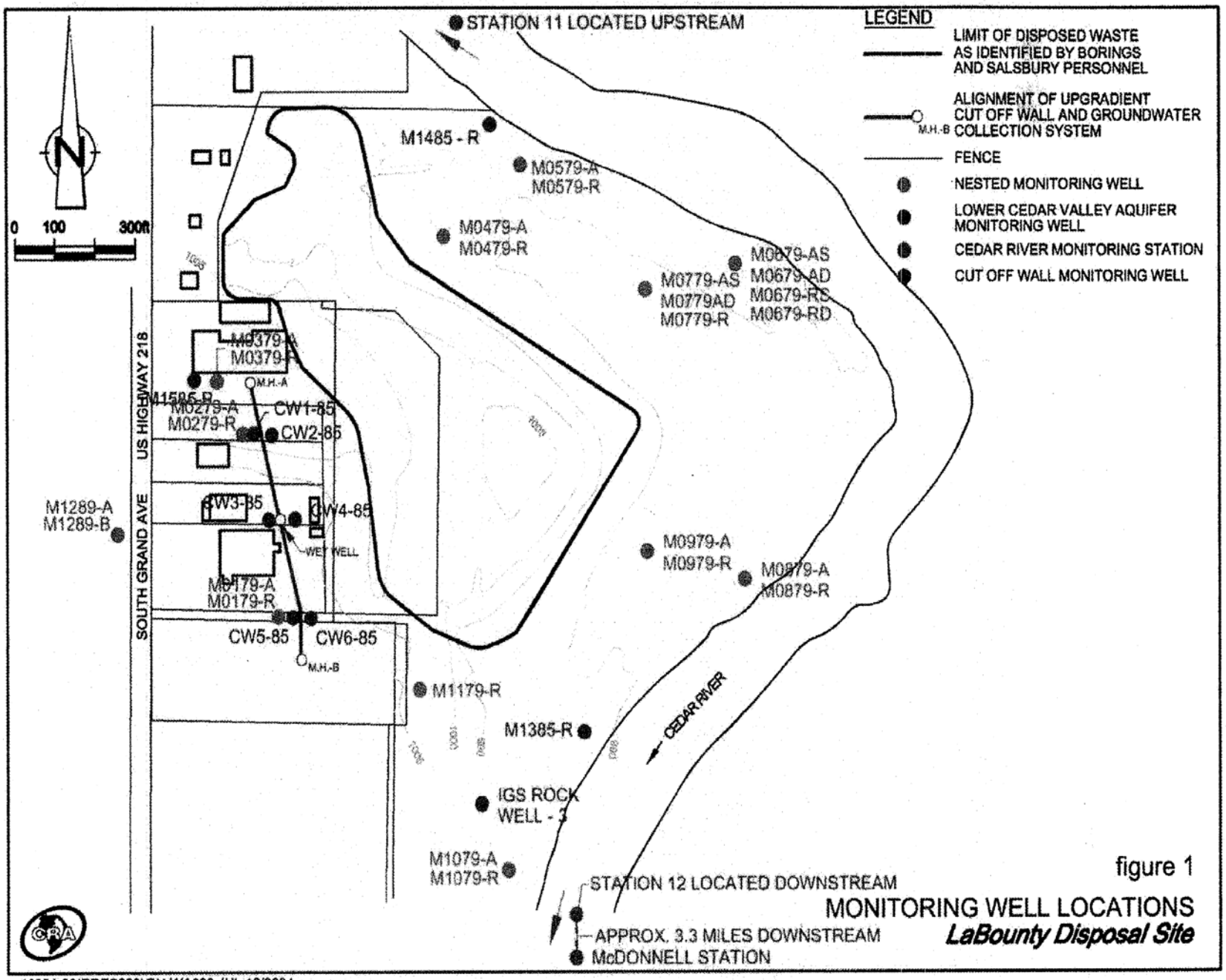


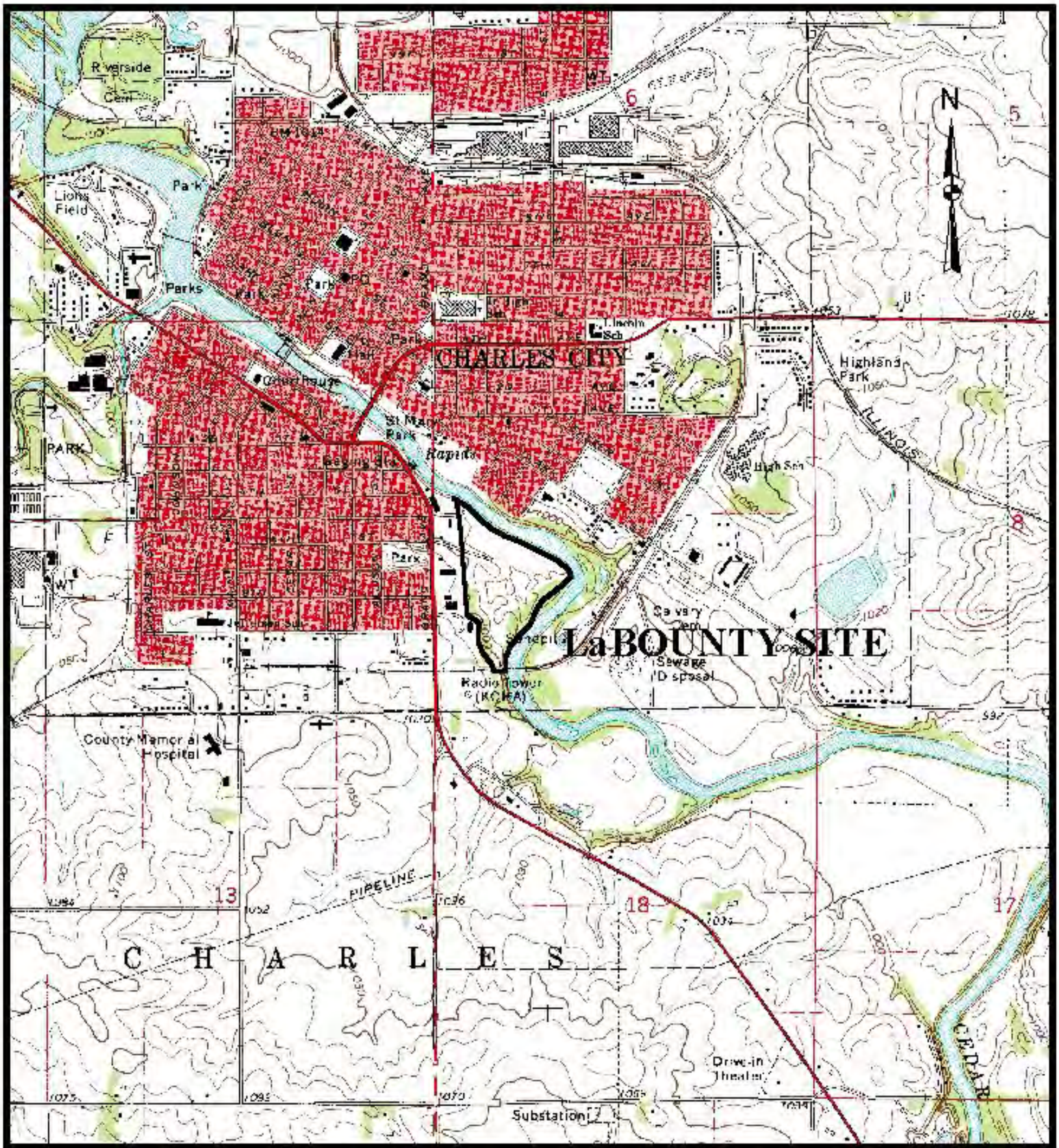
figure 1

MONITORING WELL LOCATIONS

LaBounty Disposal Site

10884-00(PRES008)GN-WA009 JUL 12/2004

(LaBounty Site)



Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 6000 Feet

MID AMERICA TANNING
(Sergeant Bluff, Iowa)

GENERAL DESCRIPTION

The Mid America Tanning site is located in a rural industrial area about 5 miles south of Sergeant Bluff, Iowa. The site is located on about 99 acres in the S 1/2 of the NE 1/4 of Section 19, T87N, R47W, Woodbury County, Iowa. The main channel of the Missouri River is 1.5 to 2.0 miles west and southwest of the site. An unnamed oxbow lake is located on the site approximately 175 feet north of the disposal trench. Browns Lake State Park is located about two miles southeast of the site. The site was owned by Mid America Tanning Company, who was last doing business as U.S. Tanning Co. Mid America Tanning was active from 1969 until it was abandoned in 1990. The plant used a chrome process for tanning hides and generated chromium sludge as a by-product of the tanning process. The site was entered on the Registry in August 1989. The EPA placed the site on the National Priorities List (NPL) in August 1989. It was deleted from the NPL in 2004.

SITE CLASSIFICATION

In 2001 the site was reclassified as “d” Site Properly Closed Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

Metals: Chromium

In 1979 approximately 900 cubic yards of chromium sludge were disposed of in an unlined trench on the property. Sludge was also land-applied on two cornfields north and south of the tanning building impacting approximately 12,000 cubic yards of soil. Former onsite wastewater treatment facilities included two sludge aeration basins containing approximately 45,000 cubic yards of sludge and a polishing basin contained approximately 40,500 cubic yards of contaminated sediments.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

The principal health threat is due to chromium contamination of soil, impoundment sediment, and impoundment water. The EPA set the primary action level at 2,000 mg/kg of total chromium for soil. The highest levels of chromium contamination in these three areas are 43,000 mg/kg, 11,000 mg/kg, and 22,000 mg/kg respectively. The primary concerns were the potential threats to site workers from exposure to chromium by falling into the aeration basins and/or inhaling dust in the north cornfield.

Remedial actions completed in 2000 severed the potential exposure pathways by consolidating and capping all soils and waste materials containing chromium in excess of 2,000 mg/kg. A plastic cover was placed over the two aerated sludge lagoons. In the summer of 2005 a release occurred from the east aeration lagoon from a previously unidentified pipe. The pipe was plugged. No significant adverse impact resulted from the release. In 2006 the Superfund Remedial program solidified the contents of both aerated lagoons to prevent any such future release. The only residual risk exists at the site is the potential long-term exposure to the consolidated and capped wastes, which will not occur unless excavation occurs in the capped areas. Excavation in the capped areas is prohibited under this Registry authority.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

In 1980, the IDNR identified the site as a potential problem because of the onsite burial of filter press sludge. The EPA conducted a Preliminary Assessment/Site Investigation (PA/SI) of the site in 1985. Chromium concentrations of the sediment within the disposal trench and from an oxbow lake located on the site were 47,000 mg/kg and 5,400 mg/kg, respectively. Chromium was detected in two onsite monitoring wells above the drinking water standard. Total metals concentrations of arsenic, barium, chromium, iron, lead, and manganese were detected in surface water and groundwater at the site above background levels.

In 1990 the EPA initiated a removal assessment and a Remedial Investigation/Feasibility Study (RI/FS). In 1990 the removal assessment for the trench burial area was initiated. The extent of chromium soil contamination was determined, five monitoring wells were installed, and 1290 cubic yards of sludge were removed from the trench and placed on a liner at the site. The final disposal of the excavated material was addressed as part of the later remedial action for the entire site.

The EPA was the lead agency for the site during the assessment and remediation phases. The EPA completed the RI/FS in 1991, which included the installation of shallow, intermediate, and deep groundwater monitoring wells along with the collection of surface water and sediment samples. The EPA signed a Record of Decision (ROD) in September 1991. A potentially responsible party conducted removal actions at the site in 1995. This included removal of drums and debris, cleaning out and sealing off the building, and welding manhole covers closed.

In 1996 an amended ROD called for the following actions:

- Consolidation and capping soils from the north and south cornfields, the previously excavated burial trench material (after stabilization), and possibly sediments from the polishing basin.
- De-watering and capping in-place sediments in the two aeration lagoons.
- Onsite treatment and discharge of impoundment water to the nearby oxbow lake.
- Removal of sediments from other former wastewater treatment basins and consolidating with sediments in the aeration lagoons before capping.
- Cleaning of site buildings.
- Land use restrictions to limit future use of the site.
- Annual long-term monitoring of groundwater, which was subsequently determined not to be necessary.

The EPA, in cooperation with the DNR, completed implementation of remedial actions prescribed in the amended ROD in 2000. In lieu of dewatering and capping the aeration lagoons, a floating cover was placed over the aeration lagoons. The polishing basin was drained and sediments consolidated at the southern end and capped.

Later in 2000 another Superfund Record of Decision was issued by EPA which concluded that groundwater contamination was no longer a concern at the site. A Superfund five-year review was conducted in 2003 which concluded that the remedy was protective.

In July of 2005 a release from the closed east aeration lagoon occurred from a previously unidentified buried pipe connected to the lagoon. The EPA and DNR responded to the release and plugged the leaking pipe.

In 2007 the EPA Removal program, in cooperation with the DNR conducted a permanent closure of the 2 aeration lagoons using fly ash to solidify the lagoon contents.

A second Superfund five-year review for the site was initiated in February 2008. The state participated in a site inspection for the next five-year review in conjunction with EPA in November 2012.

In December 2012 the state gave Registry approval to construct a rail line and road along the southern and southeastern boundary of the site. Demolition of the main plant building and well abandonment were conducted at the end of 2013 to accommodate the road and rail line.

The state is responsible for oversight of the site, which involves annual inspections. The state conducted the latest annual inspection of the site in September 2014 and found the three disposal areas in good condition.

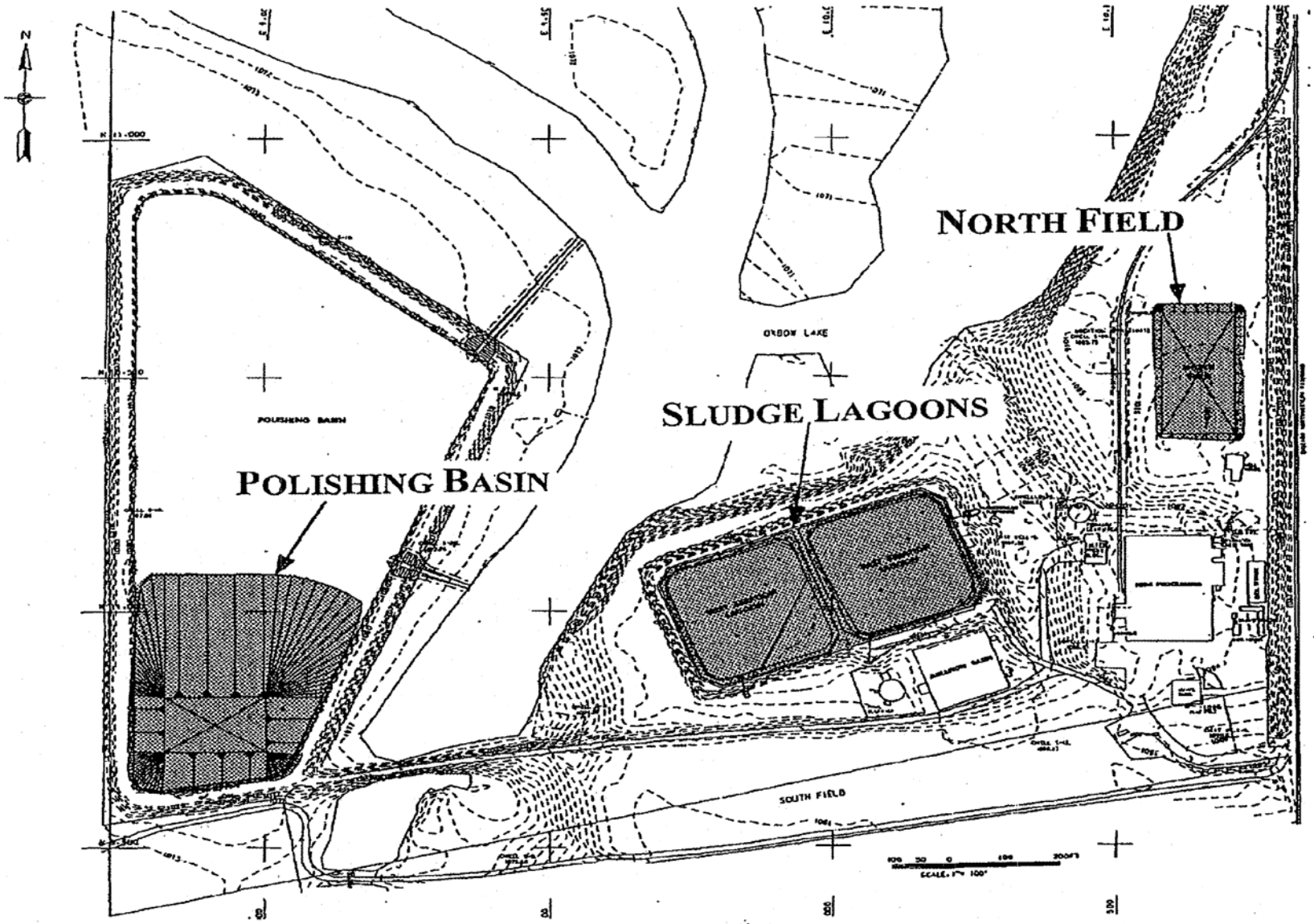
2016; Annual inspection on 12/5/2016 and the three capped disiposal areas were in good condition. Owner had applied to Woodbury county for Conditional Use Permit (CUP) on 8/10/2016. CUP was denied.

2017 ; IDNR Registry letter sent 8/21/2017. The state continues annual inspection of the three capped disposal areas (must recent 10/25/2017 and attended by EPA) and were found in good condition. EPA is initiating 4th Superfund Five Year Review.

2018: Fourth 5YR signed 9/5/2018. State is supposed to sample on-site monitoring wells and perfect an EC by 9/30/2020. These recommendations have not been agreed to. Iowa DNR 2018 annual inspection occurred 1/3/2019. No issues

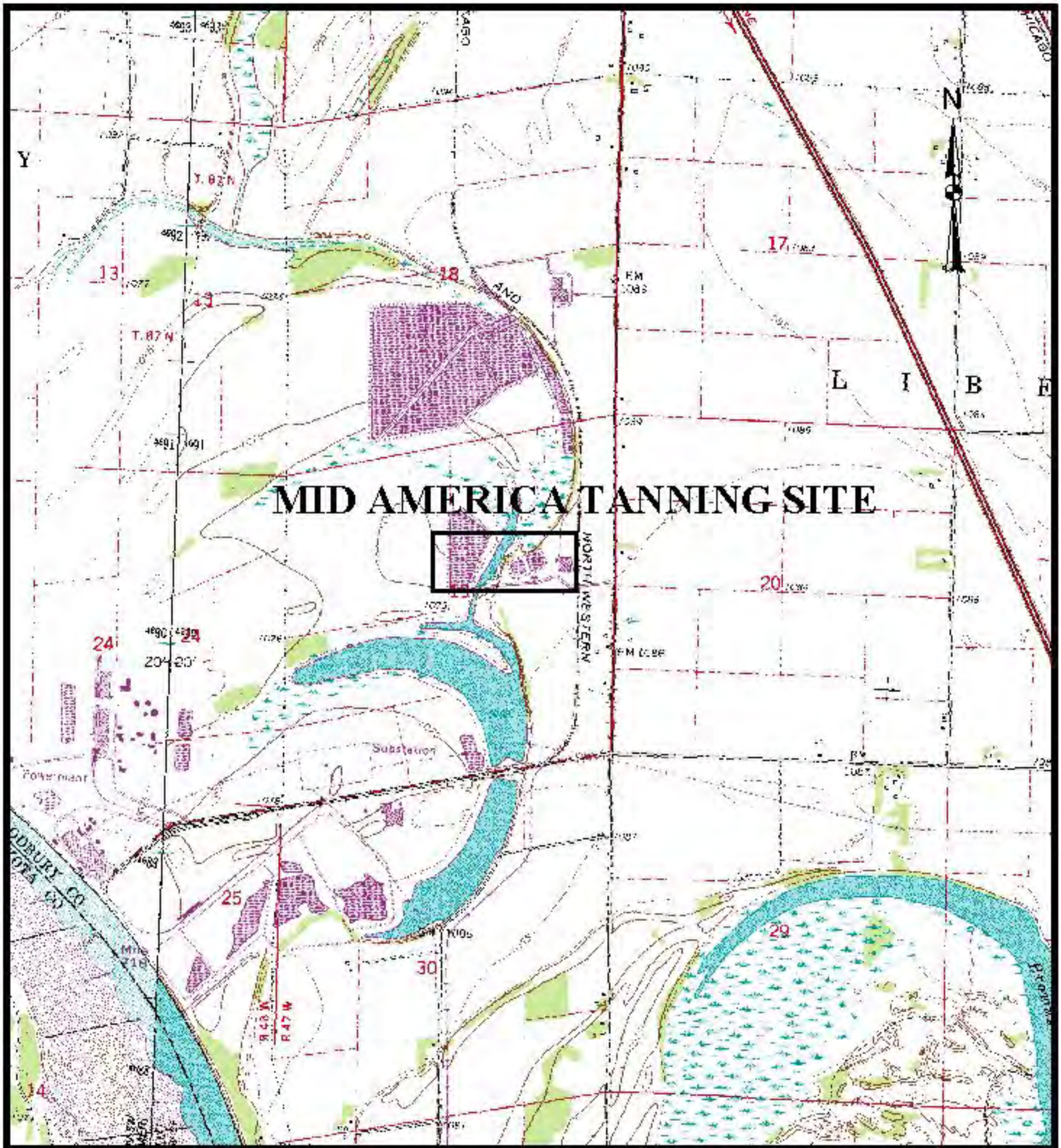
2019: Iowa DNR 2019 annual inspection occurred 12/4/2019. No issues

2020: Iowa DNR annual inspection not yet completed.



MID-AMERICA TANNING SITE MAP

(Mid America Tanning)



Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 6000 7000 Feet

MITRISIN DISPOSAL SITE
(Clow Corporation)
(Oskaloosa, Iowa)

GENERAL DESCRIPTION

The site is located in SW quarter of the NE quarter of the SW quarter of Section 9, T75N, R15W, Mahaska County, Iowa about two miles east of Oskaloosa, Iowa. The owner of record was Edward Mitrisin. Clow Corporation of Oskaloosa purchased the property from Mr. Mitrisin. The site was entered on the Registry in 1984.

SITE CLASSIFICATION

This site is classified "d" Site Properly Closed, Required Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

Clow Corporation leased the site for disposal of wastes from their foundry operations. Disposal occurred in an abandoned strip coal mine which had several water-filled depressions. The disposal area is estimated to be less than one acre. Wastes was first placed in the site in 1978 and stopped in January 1982. Wastes included melt baghouse dust, spray booth wastes, foundry sand, wood, and other materials. It is estimated that about 27,800 cubic yards of waste were disposed of at the site.

The arc melt baghouse dust is a characteristic hazardous waste by E.P. toxicity for lead and cadmium. The company estimates about 875 cubic yards of this waste were disposed of at the site. The arc melt baghouse dust is estimated to have included 54 tons of lead and a little less than one ton of cadmium.

The Clow Corporation closed and capped the landfill under a state-approved plan in 1986. The cap was about one foot thick. Six ground water monitoring wells are located around the perimeter of the former landfill.

The EPA conducted RCRA compliance monitoring inspections at the site in 1987, 1989, 1990, 1991 and 1995. In December 1988 the EPA issued a Compliant, Compliance Order, and Notice of Opportunity for Hearing to Clow Corporation and Edward Mitrisin. The order included the assessment of a $39,000 civil penalty for violations of RCRA with respect to groundwater monitoring requirements at the site.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

Surface waters at the site have shown cadmium contamination levels as high as 0.2 mg/L. Groundwater monitoring wells near the site have shown concentrations of 0.7 mg/L of lead and 0.2 mg/L of cadmium. These values are above the Primary Drinking Water Standards for lead (0.05 mg/L) and cadmium (0.01 mg/L). The extent of this contamination has not been determined.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA is the lead agency and will continue to investigate and regulate this site under the RCRA program. The EPA is working with Clow Corporation to correct deficiencies in the site closure and groundwater monitoring actions. The company submitted a revised ground water monitoring plan in March 1990 and was required to develop a cap remediation plan attached to a Consent Order for post-closure activities at the site. The first annual groundwater monitoring report was submitted to the EPA in February 1992. The Maintenance Plan for the site requires quarterly site inspections and immediate repair of any eroded areas.

2007: The EPA is working with Clow Corp. on the completion of a Modified Ground water Monitoring plan

2008: EPA commented on and approved an extension request for the groundwater monitoring plan.
The department will continue to coordinate with the EPA to assure proper continued maintenance.

2009 EPA approved (w/amendments) Clow Valve's proposal to modify monitoring well installation/monitoring plan. Clow Valve will continue quarterly groundwater monitoring of all wells (including new wells MW-3B & MW-4B).

2010
EPA approved post-closure cost estimate 4/7/1020

2011
EPA reviewed and asked for modifications to Clow Valves sampling plan on 1/27/2011
EPA issues Letter of Warning regarding financial assurance on 4/8/2011
EPA approves new up gradient wells on 9/12/2011

2012
EPA (in 4/3/2012 letter) requires continued monitoring

2013
No actions

2014
EPA approval of post closure sampling modification – from quarterly to semi-annually and dropping 2 monitoring wells (2/11/2014)
EPA comments on post-closure Financial Assurance Financial Assessment (6/18/2014)
EPA approval of post-closure QAPP (8/15/2014)

2015
No actions

2016
No actions

2017
IDNR EC letter sent 8/21/2017

2019
No new site activity

2020
2019 annual water quality report was completed in Feb. 2020 and a copy submitted to IDNR

Legend

- Monitoring well location
- Groundwater flow direction
- Intermittent stream
- Potentiometric surface contour
- Approximate waste area
- Facility boundary
- 793 Potentiometric surface elevation

Note: All elevations are in feet above mean sea level.

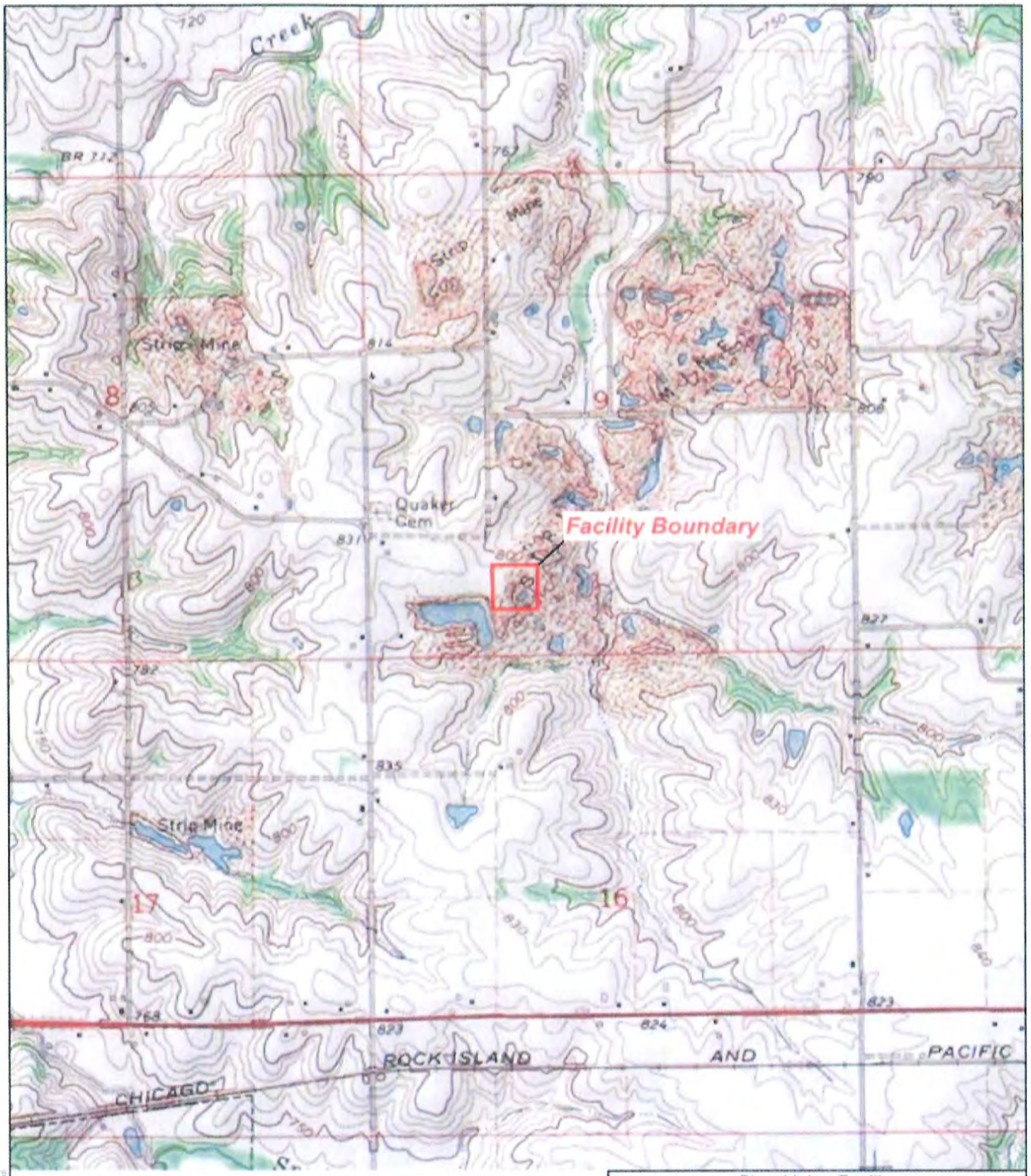
Source: GlobeXplorer Aerial Imagery, DigitalGlobe, 2009

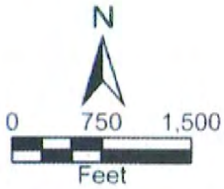
Clow Valve Facility
2480 Norwalk Circle
Oskaloosa, Iowa

Figure 3

Water Table Contour Map

TETRA TECH EM INC.





Source: USGS University Park, IA 7.5 Minute Topo Quad, 1976

Clow Valve Facility
2480 Norwalk Circle
Oskaloosa, Iowa

Figure 1
Facility Location Map

TETRA TECH EM INC.

MONSANTO COMPANY
(Muscatine, Iowa)

GENERAL DESCRIPTION

The 454-acre site is located in the SW 1/4 of Section 27, the S 1/2 of Section 28, the N 1/2 of Section 33, and the NW 1/4 of Section 34, T76N, R2W approximately four miles south of the city of Muscatine, Iowa. Monsanto Chemical Company is the owner of record. The site was entered on the Registry in June 1990. A chemical manufacturing plant has been operated at the site since 1961. Originally a manufacturer of ammonia, the plant now manufactures several agricultural herbicides and acrylonitrile/butadiene/styrene (ABS) plastics.

SITE CLASSIFICATION

In 2017 this site is re-classified "d" - site closed with continued management in accordance with 455B.427.3.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- **Pesticides and Chlorinated Hydrocarbons**

Contaminated groundwater was first detected at the site in 1975. The quantity of hazardous waste released is undetermined. Elevated concentrations of the herbicide Diallate and monochlorobenzene (MCB) have been detected in ground water. The soil and groundwater contamination is attributed to several factors. Spills in unpaved areas are believed to be the most significant source of contamination. For many of the early years of plant operation, wastewater was conveyed from production units through unlined ditches at the site. The company has installed an extensive groundwater monitoring system at the site. In addition, two wells have been installed beneath the plant site near the center of the contaminant plume. These wells have been used since 1983 to pump contaminated water for on-site treatment. There have also been four separate investigative studies done at the site.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The Primary public health concern from this site is potential exposure to contaminated drinking water**

Public Health:

The Muscatine Island Aquifer provides the major source of groundwater in the area. The city of Muscatine operates two well fields in the aquifer. The nearest is the Progress Well Field, located about two miles northeast of the site. Numerous irrigation wells are located in the area.

Environmental:

The site is located in a part of the Mississippi River flood plain known as Muscatine Island. In the vicinity of the plant, the alluvial sand and gravel deposits are generally about 140 feet thick. The Mississippi River is immediately east of the site and Spring Lake and Beatty's Pond are directly to the south. Other small lakes, sloughs, and wetlands are found nearby.

The groundwater beneath the site is highly contaminated with several herbicides and other chemicals. However, the pumping of purge wells has helped reduce the levels of contamination. Monochlorobenzene has decreased from a high of 50,000ug/l to 5,000ug/l in the center of the plume in the herbicide production area. The most significant herbicide contaminants are alachlor (Lasso), atrazine, butachlor (Machete), diallate (Avadex), and propochlor (Ramrod). This includes alachlor up to 27,200ug/l. Significant contamination has reached a depth of 95 feet at the site.

On-site soil contaminants are the same ones observed in the groundwater. Alachlor is the most widespread and, in general, is found in the highest concentrations (up to 7,157 mg/kg). The highest level for diallate is 8,859 mg/kg. Soil contamination has been found to increase with depth to ten feet in many locations.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA is the lead agency for the site. Oversight of site investigations and remedial actions are conducted under the authority of the RCRA program.

The EPA and the company signed a Consent Order in June 1989 to complete a RCRA Facility Investigation/Corrective Measures Study (RFI/CMS) under RCRA authority. The RFI was completed in February 1990 and approved by the EPA in January 1991. The report of the Investigation analysis and the CMS was submitted to the EPA in the second quarter of 1991.

Interim remedial activities required under the June 1989 Consent Agreement included groundwater monitoring, groundwater pumping to keep the contaminant plumes within the facility boundary, and treating contaminated groundwater.

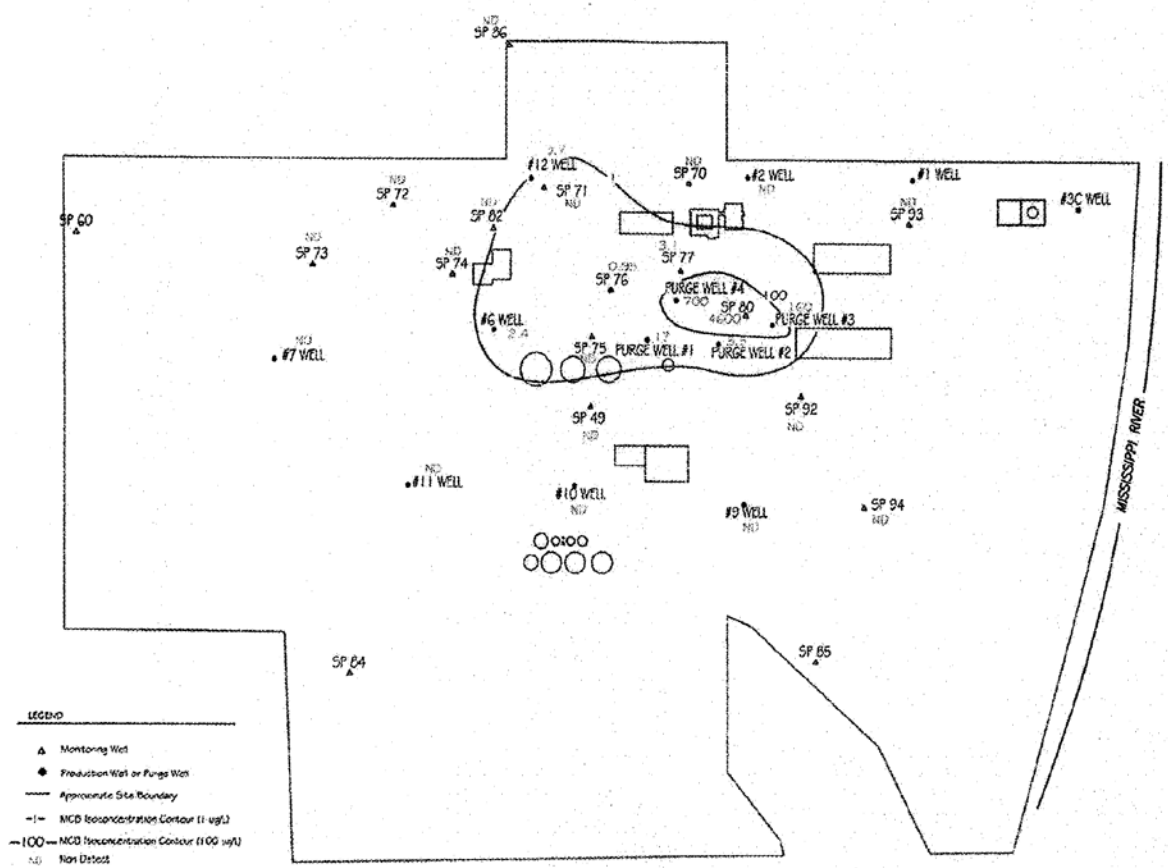
The EPA approved the Corrective Measure Design and Operations and Maintenance Plan in July 1995. The required remedial action includes the following:

- Site restrictions to control site access (fencing) and current and future land use (deed restrictions).
- Pumping groundwater from the facility's production wells to create a cone of depression on the ground water to maintain contaminant plume on the facility property.
- Extracting and treatment of contaminated groundwater with a liquid phase activated carbon adsorption system.
    - Using treated groundwater as cooling water and discharging to the Mississippi River under an NPDES permit.

2005: Monsanto completed the closure of their fifth and final regulated unit under the RCRA hazardous waste permit. They also are working towards updating their corrective measures program, including installing a new monitoring well. The RCRA hazardous waste permit has been continued since 1999 to allow Monsanto to close their regulated units and will be renewed in 2006 for corrective action only, no regulated units.
2007: One new monitoring well installed in spring of 2007. Annual ground water monitoring reports are submitted to EPA to track performance of Corrective Measures. Monitoring indicates complete on-site containment of mono-chlorobenzene ground water plume.
2008: 2007 report received. Annual ground water monitoring reports are submitted to EPA to track performance of Corrective Measures (CM). Indications are that chlorobenzene groundwater plume is being contained by active pumping. 3/3/2008
2009: 2008 report received 2/24/2009. Annual ground water monitoring reports are submitted to EPA to track performance of CM and monitoring of dillate and mono-chlorobenzene (MCB). EPA indicates that the site is complying with EPA's requirements. Groundwater purging and monitoring will continue.
2010: 2009 annual report received 2/25/2010. Annual ground water monitoring reports are submitted to EPA to track performance of CM and monitoring of dillate and mono-chlorobenzene (MCB). Report indicates 55.7 million gallons of groundwater purged in 2009 – 46 million required in permit. Groundwater monitoring will continue.
2011: EPA reviewed Sediment and Surface water investigation work plan, 8/31/2011
2012: EPA approves sediment and surface water monitoring plan
2013: 2012 Annual report to EPA on 2/27/2013
2014 2013 Annual report to EPA on 2/28/2014, DNR letter to facility RE amendment to 455B on 9/26/2014
2017: 2016 Annual report received and site reclassified ?

2018: Monsanto Company prepared a Corrective Measures Performance Evaluation Report (CMPE) for the Muscatine Iowa facility in accordance with the requirements of Resource Conservation and Recovery Act (RCRA) for review to evaluate the effectiveness and performance of the specified corrective measures

2020 (and 2019); No new activities



LEGEND

- Monitoring Well
- Production Well or Purge Well
- Approximate Site Boundary
- MCB Isoconcentration Contour (1 ug/L)
- 100 MCB Isoconcentration Contour (100 ug/L)
- ND Non Detect
- 9.1 Severn Trent Laboratory (STL) Analytical Result

Note: Contours based on STL Analytical Results and shallow-most monitor wells in nests.

0 200 400 600 800

SCALE (IN FEET)

FIGURE 5

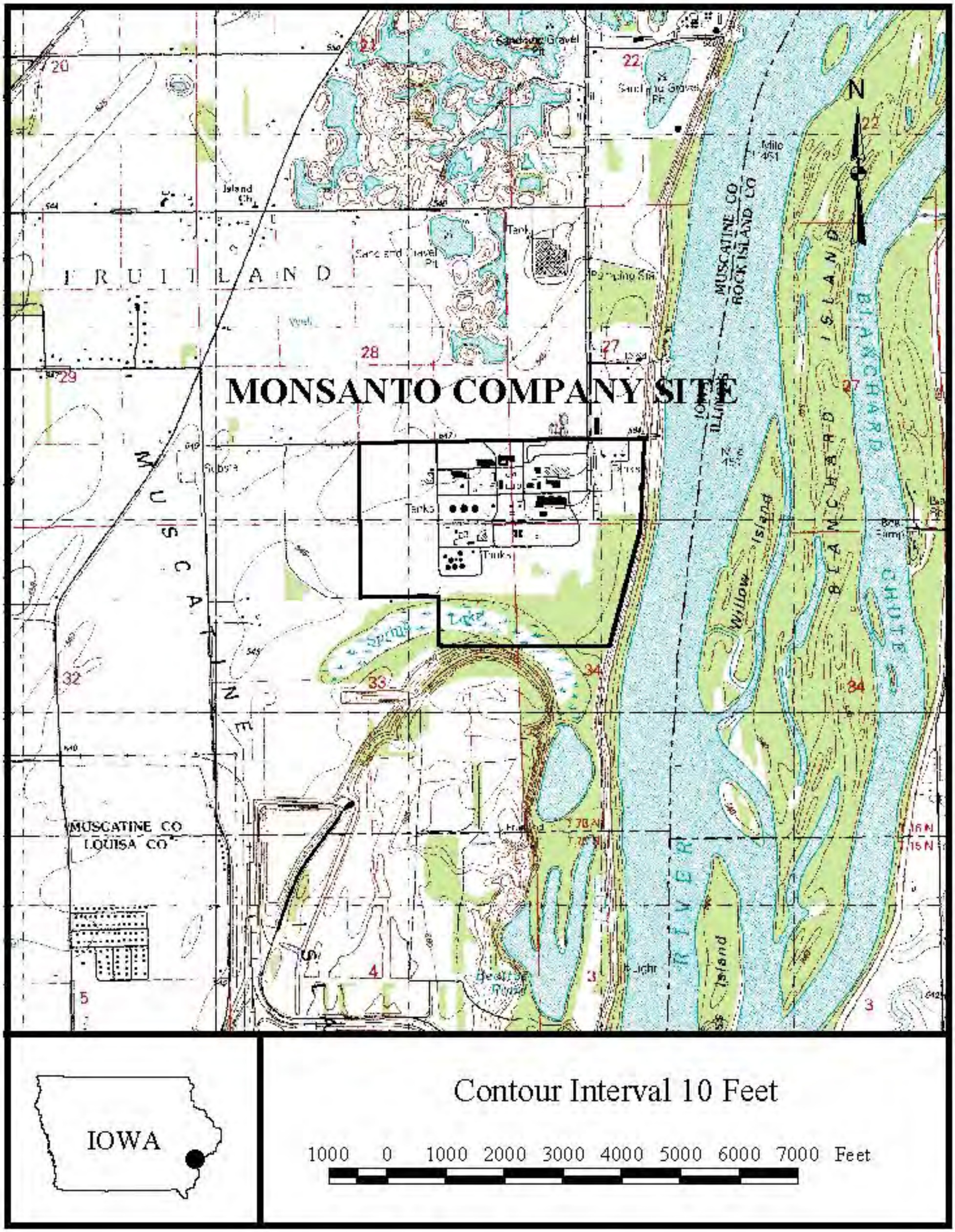
File Path and Name: Dat\PROJECTS\06220004.005\Ann2005GMProgressRpt\Figure3MCBPlume.dwg | Designed by: VHI | Drawn By: EM | Checked by: PRB | Approved by: PRB

WESTON SOLUTIONS

2501 Jolly Road Suite 100
Okemos, Michigan
48864

MCB IN GROUNDWATER
Fall 2006
MONSANTO MUSCATINE SITE
MUSCATINE, IOWA

(Monsanto Company)



NEWTON, CITY OF, DUMP SITE
(Newton, Iowa)

GENERAL DESCRIPTION

The site is within the corporate limits of the city of Newton, Iowa. It is on land generally described as Lot A (3.09 acres) of the SW 1/4 of the SE 1/4 of Section 28, T80N, R19W and Lot C (8.12 acres) of the NW 1/4 of the SE 1/4 of Section 28, T80N, R19W, Jasper County, Iowa. The owner of record is the city of Newton. The site was entered on the Registry in 1984. The Maytag Company owned the site from 1934 until they sold the property to J.D. O'Roake in 1960. The city of Newton purchased the property from J.D. O'Roake in 1971.

SITE CLASSIFICATION

In 2001, the classification of this site was revised from "c' to "d" Site Properly Closed, Requires Continued Management in the form periodic inspection.

TYPE AND QUANTITY OF HAZARDOUS WASTE

The site was used for about 25 years as a dump for the Maytag Company and the city of Newton. The quantity and type of wastes at the site are not fully known. The Maytag Company wastes may have included halogenated solvents, quenching bath sludges, spent plating bath solutions and sludges, corrosives, ignitable wastes, and spent non-halogenated solvents. All hazardous wastes may have been placed in 55-gallon drums before disposal.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CNCERNS

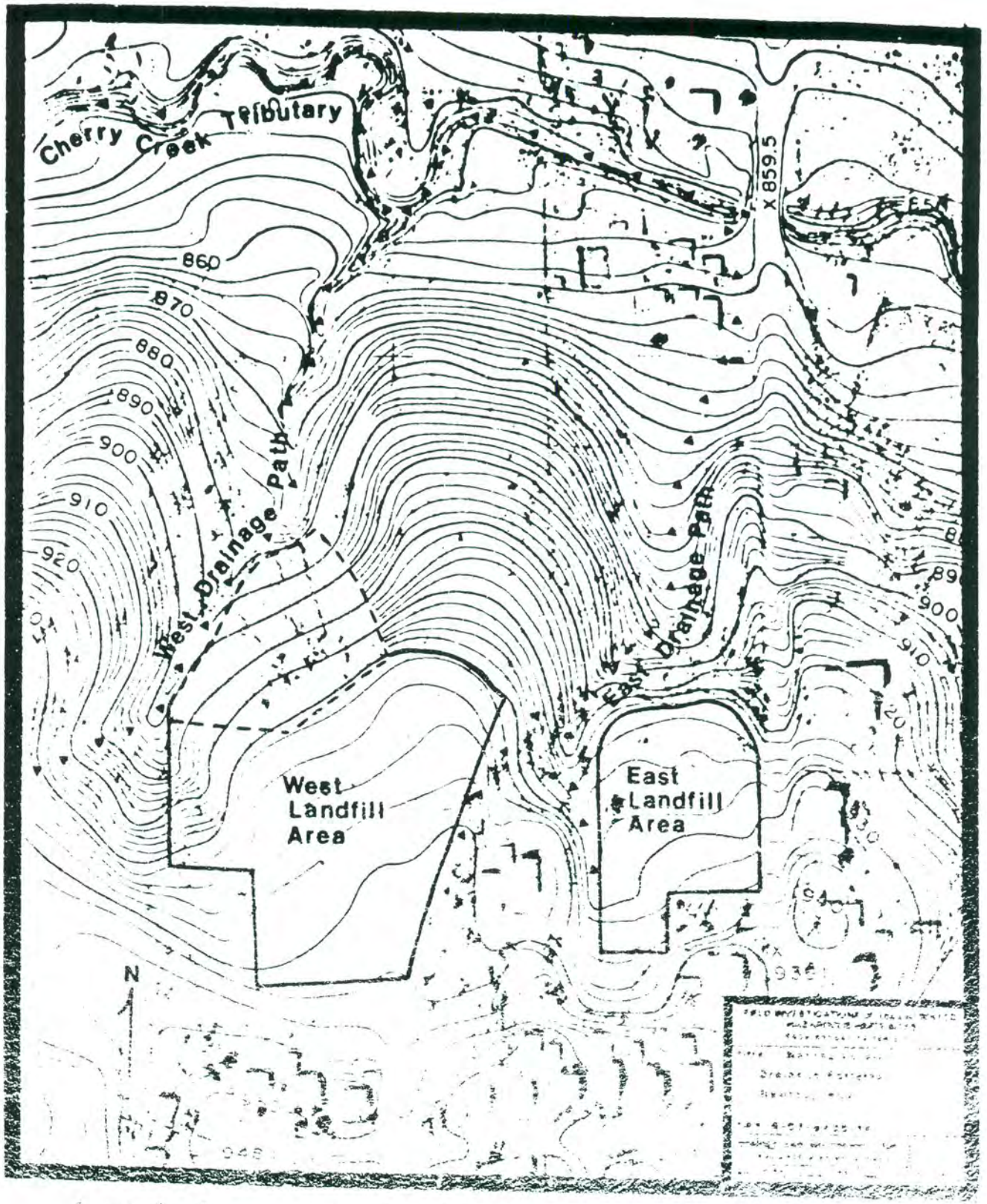
Heavy metals appear to be leaching from the site. Cadmium, chromium, and lead were found above background levels in some of the samples. However, the sampling indicates the current surface water migration is contained in a localized area. The contaminated surface waters are fairly isolated and are not used for drinking water. Therefore, the threat from this contamination to the environment appears to be low. The effect of this site on groundwater has not been fully evaluated. However, the site does not appear to be affecting the city of Newton's wells located about five miles from the site.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

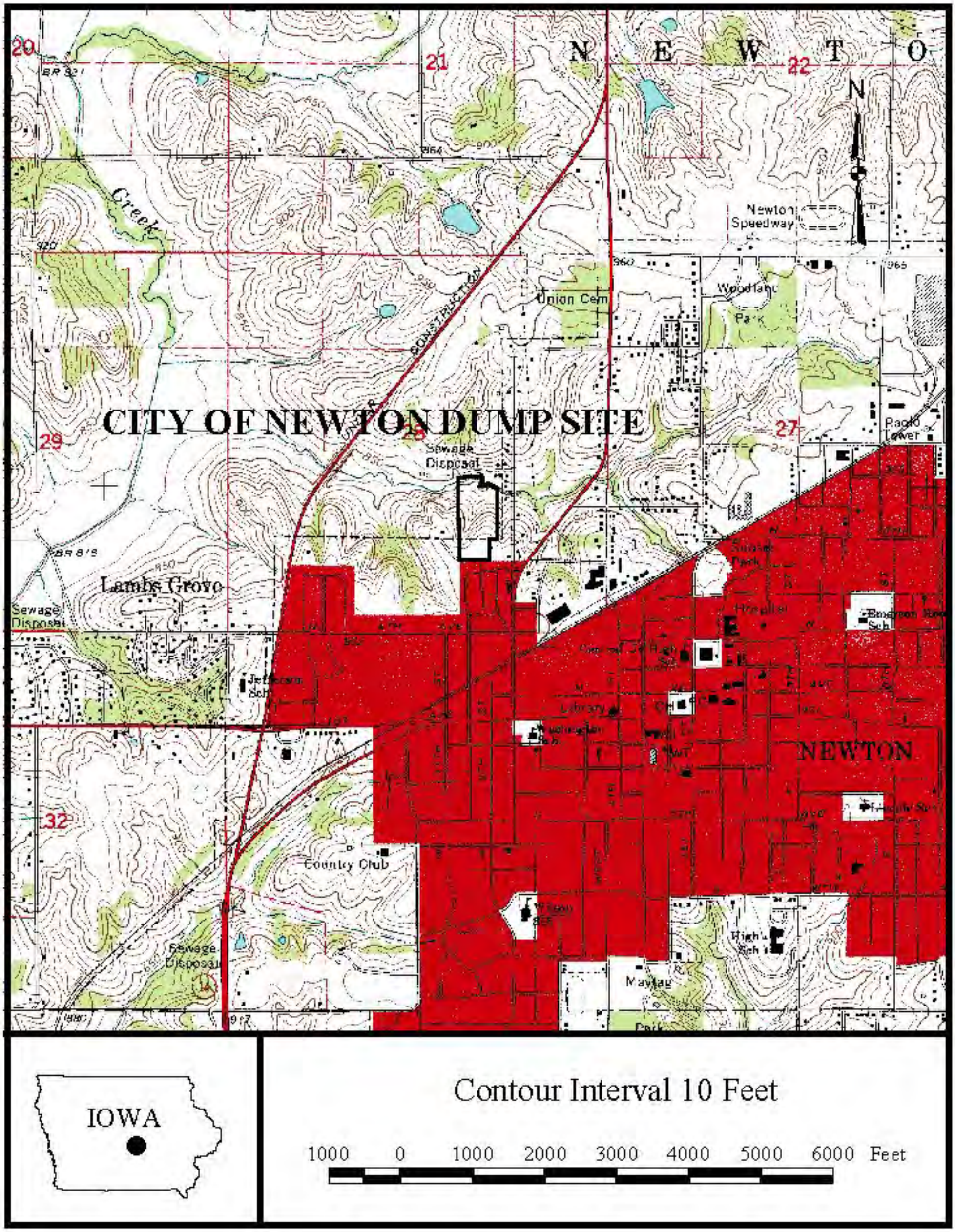
The EPA was the lead agency for the 1985 investigation and evaluation of this site. The EPA has referred the site back to state authority for any further action. The IDNR will provide periodic inspection.

In December 1985 the EPA completed an evaluation of samples taken at the site. Soil samples from the landfill surface indicate the site is covered with moderate to low permeability soils. Geophysical surveys of the site show the majority of the waste may be buried on the northern edge of the landfill. Unfortunately, this portion of the landfill has an inadequate soil cover and a high slope. Therefore, landfill material from this area is subject to both leaching and erosion. Surface water and sediment samples show metal contaminants are leaching from the landfill to drainage ways near the site and to a tributary of Cherry Creek.

2020: No entries in file after 2017 Registry EC letter.


Cherry Creek Tributary
X 859.5
860
870
880
890
900
910
920
West Drainage Path
East Drainage Path
West Landfill Area
East Landfill Area
N

(Newton, City of, Dump Site)



PROGRESSIVE FOUNDRY (FORMER WASTE DISPOSAL SITE)
(Perry, Iowa)

GENERAL DESCIPTION

The 3.7-acre site is located in the SE 1/4 of the SW 1/4 of Section 5, T81N, R28W, Dallas County, Iowa adjacent to the east side of the North Raccoon River. The owner of record is Beverly Devilbiss. The site was entered on the Registry in February 1991. Progressive Foundry ceased disposal at the site after the IDNR discovered the site during a routine air inspection of the manufacturing facility in September 1982. Wastes were then shipped to the Black Hawk County Landfill from 1983 to 1985. Since 1986 waste is shipped to Peoria Disposal County Landfill in Illinois. **This site is now being used as an auto salvage yard.**

SITE CLASSIFICATION

In 2002, this site was re-classified to "d" Site Properly Closed, requires continued management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

The site was used for the disposal of foundry wastes from 1974 until 1982. The open dumping is estimated to have included 8,636 tons of sand, clay, and sea coal, and 443 tons of scrubber sludge. The scrubber sludge was been identified as a hazardous waste because of high lead levels. On-site soils are contaminated with lead and mercury. Semi-volatile organic compounds (SVOC's) specifically, butyl benzyl phthalate and the poly-aromatic hydrocarbons (PAH's), benzo(a)anthracene, chrysene, benzo(b)fluoranthene, and pyrene) were detected in on-site soil and soil/waste piles. Fifty-five gallon drums of hardened cupola wastes containing heavy metals, cyanides, and phenols are also buried on-site.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The primary health concern is the potential exposure to heavy metal, and PAH's in soil.**
- **The primary environmental concern is for the water quality of the North Raccoon River.**

The site is in the floodplain of, and immediately adjacent to, the North Raccoon River. Two intermittent creeks flow into a pond on the site and subsequently discharge into the North Raccoon River. Flooding could result in contaminant movement into the North Raccoon River as well as dispersal. The city of Perry draws a portion of its drinking water from alluvial aquifer wells located 1.5 to 2.5 miles southeast and down gradient of the site.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

In June 1984 the IDNR referred the Progressive Foundry facility to the EPA for violations of the Resource Conservation and Recovery Act (RCRA). Since then, the production, storage, and disposal of wastes at the manufacturing facility have been regulated under the RCRA program.

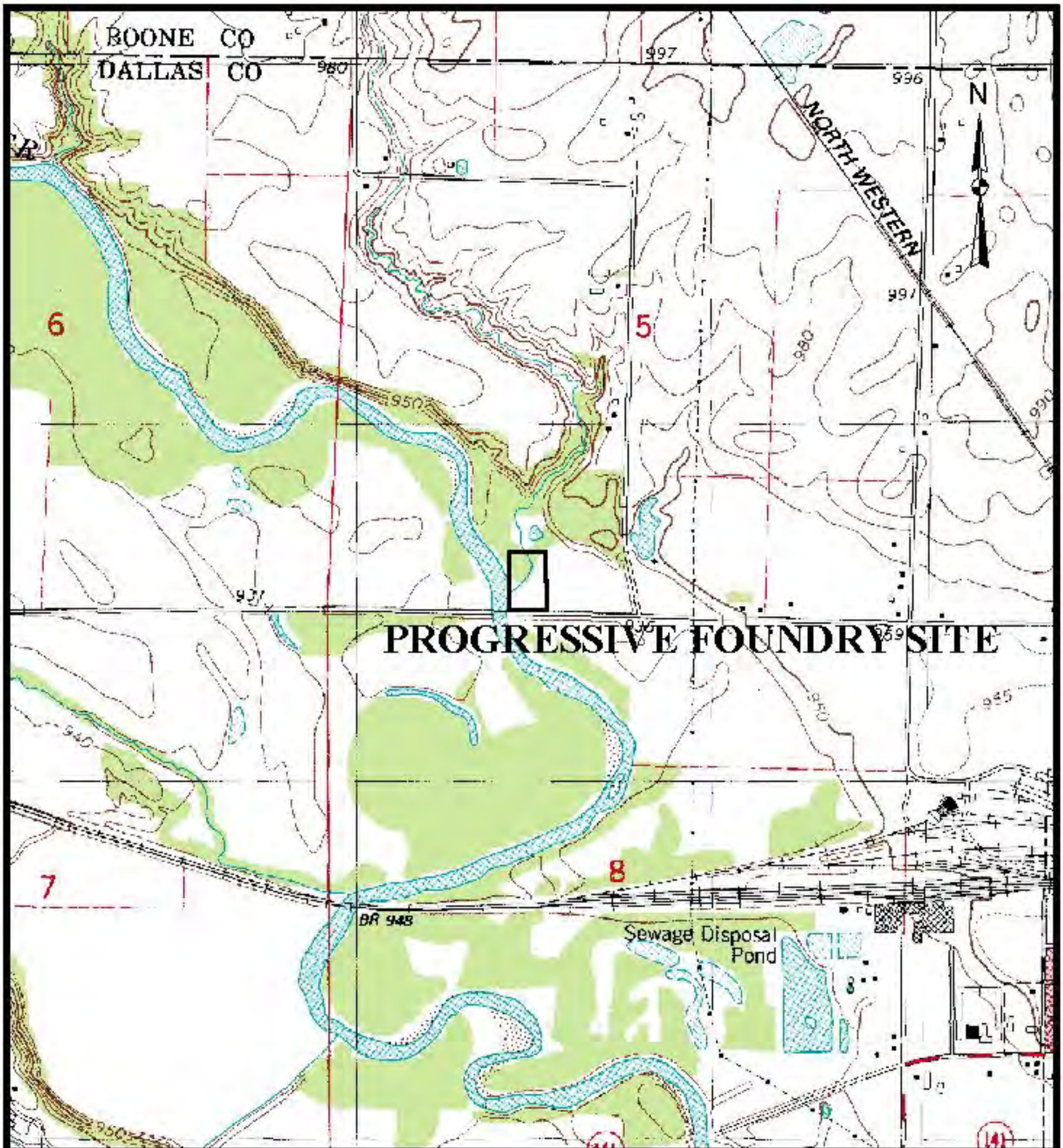
The EPA, under the Superfund program, conducted a site investigation of the disposal area in May 1985. Soil samples showed elevated levels of lead and mercury. No significant heavy metal contamination was found in nearby residential or city water supply wells. Upon completion of the site investigation in 1986, the Superfund program referred the site to the RCRA program however, RCRA is regulating the manufacturing site and determined the disposal site does not fall under RCRA jurisdiction.

The EPA has referred the site back to state authority. The IDNR conducts periodic inspection of the site. The last inspection was conducted in 2003.

2017: A letter was sent from the Iowa DNR to the responsible party pursuant to Iowa Code (IC) §455I allowing sites listed on the Registry of Hazardous Waste Disposal sites to self "de-list" with the implementation of an Environmental Covenant.

2020: No actions taken

(Progressive Foundry)



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RALSTON SITE
(Cedar Rapids, Iowa)

GENERAL DESCRIPTION

The Ralston site occupies two acres in the NE 1/4 of the NW 1/4 of Section 2, Township 83N, Range 7W, Cedar Rapids, Linn County, Iowa and is now owned by Rockwell Collins. The site was entered on the Registry in May 1990.

SITE CLASSIFICATION

In 2001 the site was reclassified as "d" Site Properly Closed Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

From 1956 to 1958 the Ralston site was operated by Rockwell International as a disposal area for wastes from a gold plating facility and other industrial sources. A surface disposal area at the site was used to burn wastes produced by the plant. An adjacent area was used as a burial site for drummed cyanide plating waste.

High concentrations of heavy metals and volatile organic's have been detected in soil over most of the site including lead, nickel, and cadmium. Trichloroethylene (TCE) and tetrachloroethylene (PCE) were also detected in soil.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

The site is located in northern Cedar Rapids, Iowa. The nearest single family residence is located 700 feet southeast of the site and the site is surrounded by residential areas. A fence limits access to the site.

During the 1992 Phase I Remedial Investigation, contamination was found in a shallow bedrock well downgradient of the disposal area. This included TCE, 1,2-DCE, and VC at 2,200 ug/L, 4,600 ug/L, 2,100 ug/L respectively. Several private wells are located in the vicinity of the site, including 2 within 1,000 feet of the site that have been impacted, one above drinking-water levels. Dry Creek is located 100 to 150 feet north of the site. The flooding potential at the site is high, with portions of the site being inundated by a 10-year frequency flood and the disposal site being within the 500-year frequency flood. The site experienced significant flooding during the summer of 1993.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The state is the lead agency for further investigation and remediation of the site.

A site investigation was performed in November 1988. Soil samples were collected from the site, but no groundwater or surface water samples were collected. The site investigation found high concentrations of barium, copper, and zinc. Lead was identified at levels as high as 1,900 mg/kg. Also found were low levels of cyanide and three volatile organic compounds: trichloroethene, tetrachloroethene, and toluene. Several deteriorated drums filled with concrete were observed exposed on the surface at the site. Two of the concrete-filled drums were found in Dry Creek. The condition of the exposed drums was reported to be very poor. In 1990 Rockwell International had these drums removed from the site.

During November 1990 Rockwell International conducted a site investigation. Soil sample results showed high concentrations of heavy metals and volatile organics over most of the site. Lead, nickel, and cadmium were detected at concentrations of 4,500 mg/kg, 2,400 mg/kg, and 130 mg/kg respectively. Trichloroethylene (TCE) and tetrachloroethylene (PCE) were detected in soil at concentrations of 56 mg/kg and 14 mg/kg respectively.

Phase I of the Remedial Investigation (RI) was conducted at the site in June 1992. TCE, 1,2-dichloroethylene (1,2-DCE), and vinyl chloride (VC) were found in groundwater samples from monitoring wells in the surficial and bedrock aquifers. TCE at 950,000 ug/L was found in the shallow groundwater at the disposal area.

In December 1991, Rockwell International and the EPA entered into an Administrative Order on Consent for conducting a Remedial Investigation/Feasibility Study (RI/FS). In September 1992, Rockwell International agreed to participate in the Superfund Accelerated Cleanup Model (SACM) to expedite source control measures at the site. In November 1992, the Phase II RI was initiated to determine the extent of groundwater contamination. Several bedrock monitoring wells were installed in 1993 as part of this effort. Quarterly monitoring well sampling for the RI was completed in September 1996.

An Engineering Evaluation/Cost Assessment (EA/CA) was prepared by Rockwell in 1993. Four actions were called for in the EA/CA, as listed below. The first two actions listed below were completed in 1994. The remaining two actions were initiated in February 1995. By September 1996 approximately 4,515 pounds of VOCs had been removed from the soil and groundwater at the site.

1) Cap the disposal area with clay.

2) Stabilize the creek banks.

3) Remove contaminants in the disposal area by soil vapor extraction.

4) Pump and treat contaminated groundwater in the disposal area and the shallow contaminant plume north of the creek.

In September 1996, the state designated by Chapter 53 rule all groundwater within a one-mile radius of the site a "protected resource." Subsequent to this designation, drilling for groundwater is prohibited within this area without state approval.

A Remedial Investigation of the site was completed and approved by EPA in 1997. The Feasibility Study to evaluate final remedial alternatives was completed in 1999. A Record of Decision was completed September 1999 calling for continued monitoring and institutional control including registry listing and protected water source designation.

In July 2000 Rockwell entered into a consent order with IDNR for continued oversight by the state.

A superfund five-year review was completed in 2006, which identified no major issues. The five-year review recommended continued groundwater monitoring reduced to an annual frequency and concluded that the remedy at Ralston Site currently protects human health and the environment because there is no exposure to site-related contaminants.

The second five-year review was released in June 2011. It deferred making a protectiveness statement until a vapor intrusion assessment is conducted and evaluation of sediments in Dry Run Creek is done. In September 2013 Rockwell submitted a report of the additional work to address these concerns.

In November 2013, the EPA released a five-year review addendum with a protectiveness statement for the entire site.

2014;
2013 annual report received

2015:
2014 annual report received

2016;
Third Five Year Review completed. 2015 annual report received. Discussions with City of Marion and new owner of a private well controlled under Chapter 52 – both concerning possible change in use.

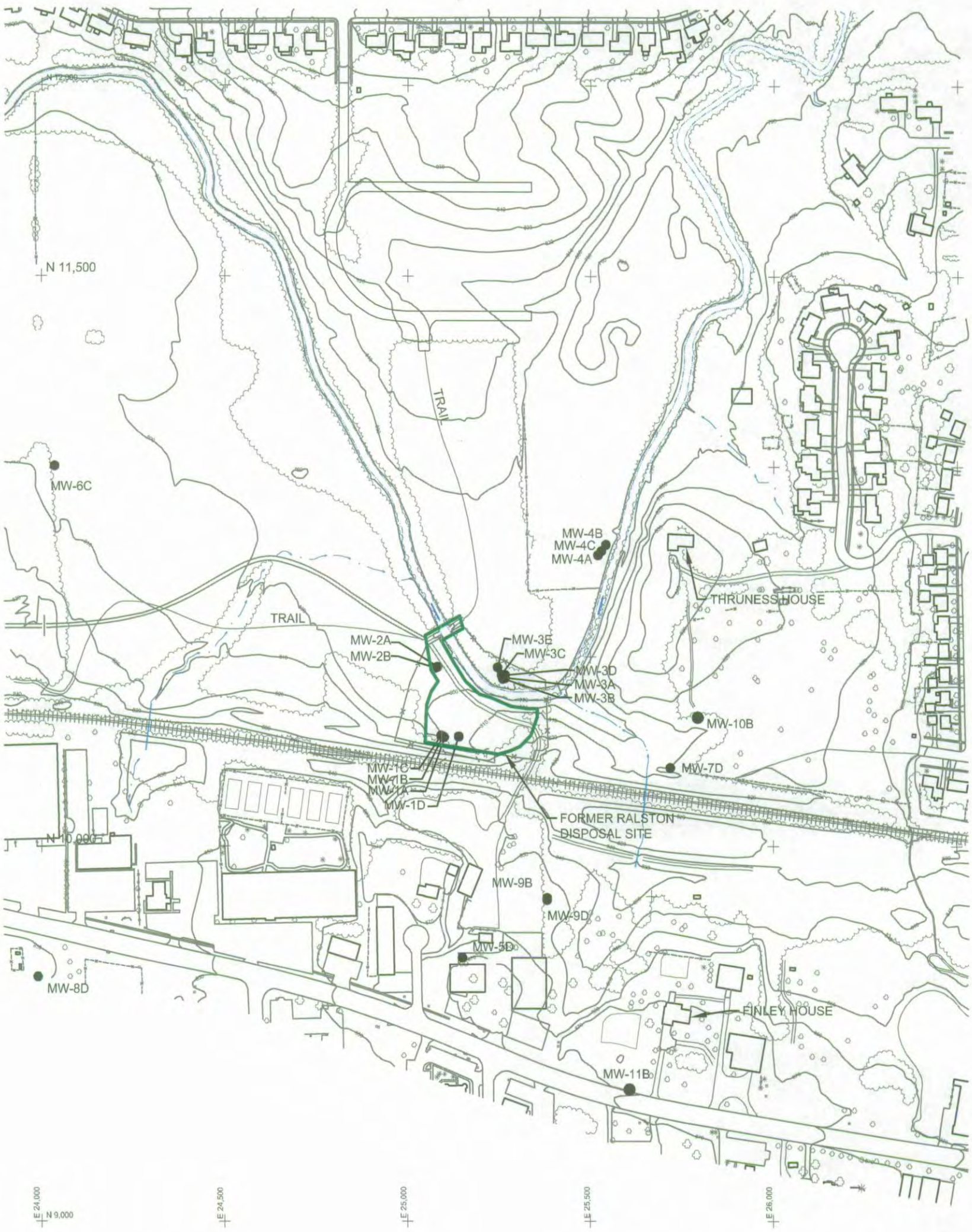
2017;
2016 annual report received. Additional monitoring performed in June in response to issues raised in last 5YR. Sampling for 1,4-Dioxone to be conducted. IDNR EC letter sent 8/21/2017.

2018;
Rockwell continues to inspect the site twice a year, sample groundwater annually, and submit an annual report to the department. Remedial Action Report for 2017 received 5/8/2018.

2019;
Addendum to last 5YR completed in February. Annual sampling conducted in June. Private well sample results submitted on December 19, 2019. No new issues at site

2020;
Spring 2020 sampling data submitted Aug. 2020 No new issues at site. Tax sale of a neighboring lot to third party completed in 2020.

Filename: L:\Iowa Drawings\Rockwell Collins\Cedar Rapids\Ralston Site\SLoM.dwg – Last Edited: Mar 27, 2014 15:36 – By: mpwarner



LEGEND:

- ● MONITORING WELL
- EXTENT OF DISPOSAL CAP
- —x——x— FENCE

DESIGNED BY	.	
DRAWN BY	NORA DAY	
CHECKED BY	ROB MALCOMSON	
APPROVED BY		
PROJECT MANAGER	STEVE VARSA	
CLIENT APPROVAL	.	
CLIENT REFERENCE NO.	.	

0 150 300
SCALE IN FEET

PROJECT LOCATION: DES MOINES, IOWA

PROJECT: ROCKWELL COLLINS, INC
CEDAR RAPIDS, IOWA

TITLE: **SITE MAP**

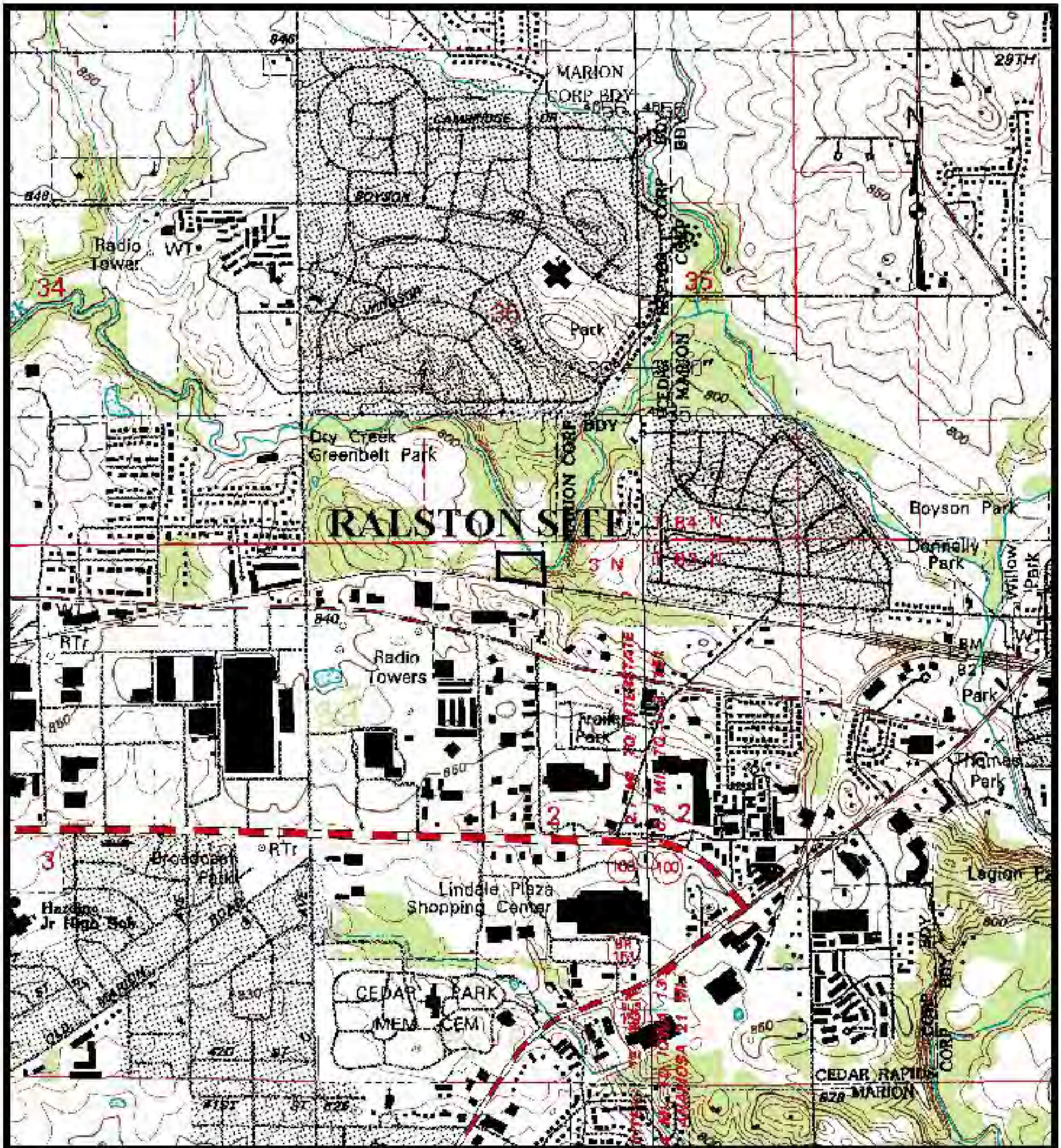
MWH

FIGURE: 2-2

REVISION: .

FILE NAME: .

(Ralston Site)



Contour Interval 10 Feet

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RED OAK LANDFILL
(Red Oak, Iowa)

GENERAL DESCRIPTION

The site was owned and operated by the city of Red Oak as a landfill from 1962 to 1974. It includes about 40 acres generally described as the NW 1/4 of the SW 1/4 of Section 17, T72N, R38W, in Montgomery County, Iowa. The site is located near the East Nishnabotna River, about 1.5 miles northwest of Red Oak, Iowa. The site was operated as a limestone quarry from 1947 to 1953-54 and was subsequently purchased by the city of Red Oak for use as a landfill. It was entered on the State Registry in December 1986 and the EPA placed it on the National Priorities List (NPL) in March 1989 and delisted from the NPL in September 2005.

SITE CLASSIFICATION

In 2001 the site was reclassified as "d" Site Properly Closed Requires Continued Management.

TYPE AND QUANTITY OF HAZADROUS WASTE

Waste delivered to this site included municipal refuse and industrial waste from several industries. Union Carbide-Battery Production Division, Uniroyal Hose Company, and Art Calender Company are considered the major contributors of industrial waste at the site. Waste containing hazardous materials including; lead, mercury, tetrachloroethylene (PCE), toluene, diacetone alcohol, and methyl isobutyl ketone (MIK) were disposed at this site. Union Carbide disposed at least 1,144 drums solvents including toluene, MIK, PCE, mineral spirits, and diacetone alcohol. The disposal also included laminated paper with high mercury levels. Uniroyal disposed of filter paper material with high lead levels. Art Calender Company disposed of ink wastes.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCENRS

During the Remedial Investigation (RI), elevated levels of volatile organic compounds (VOCs) were detected in subsurface soil and seeps in the southeast corner of the landfill near the river. Samples were collected from two seeps along the bank of the river. Local residences and small businesses get their drinking water from shallow wells within three miles of the site. The closest residential well was sampled. No organic contaminants were detected and metal concentrations were considered within normal range.

STATUS OF ASSESSMENT, MONITORING OR REMEDICAL ACTIONS

The EPA is the lead agency and conducted the initial site investigation in 1983.

In August 1987 the EPA conducted a site reconnaissance and completed a Remedial Investigation (RI) and Feasibility Study (FS) Work Plan.

In December 1989 the EPA and the responsible parties signed a Consent Order for an RI/FS. The RI was conducted with a Phase I part in 1990 and a Phase II part in 1991. The Remedial Investigation (RI) was completed in May 1991. A river-bank slope stability study was completed in 1992 and the Feasibility Study (FS) was completed in August 1992.

The EPA completed the Record of Decision (ROD) for the site in March 1993. The selected remedial alternatives included in the ROD were:

- Installation of a sanitary landfill cap in accordance with the state's solid waste regulations 567:IAC113.
- Land contouring and revegetation to stabilize the river bank slope.
- Construction of a security perimeter fence and placement of deed restrictions to prevent inappropriate uses of the site.
    - Implementation of a groundwater monitoring program with annual reporting.

In 1996, the EPA issued an Explanation of Significant Differences (ESD) for a cleanup action. The ESD included a reduction in the area and the depth of soil materials required for the landfill cap. The ESD also limited riverbank control measures to vegetation and landscaping to prevent erosion at the top of the landfill. The EPA also entered a consent decree with the Potential Responsible Parties to perform the Remedial Design/ Remedial Action (RD/RA) for the site. The remedial measures were commenced in August 1997 and completed in November 1997. The city of Red Oak and an industrial party are responsible for ongoing groundwater monitoring and maintenance of the landfill. The Superfund five-year review that was conducted in 2007 concluded that the remedy remained protective.

In 2008 the EPA prepared a draft re-use assessment report for the site. Slumping of the riverbank slope resulted from heavy rains in June of 2008. EPA and the responsible parties continue to address the riverbank slumping and the responsible parties continue to conduct annual groundwater sampling. A Superfund Five-Year review report was completed July 2013. The Five-Year review found that the site remedy continues to be protective.

The DNR assists EPA on oversight of the Red Oak Landfill site. Ongoing actions at the site include annual groundwater monitoring, inspection & maintenance of the landfill cap, security fencing and drainage structures, and the monitoring of the stability of the riverbank slope.

2016: The 2015 Annual Report and O&M report was completed and an addendum report submitted. The Five-Year Review was initiated July and a site visit for the Five-Year Review was in November.

2017: The following site activities were completed

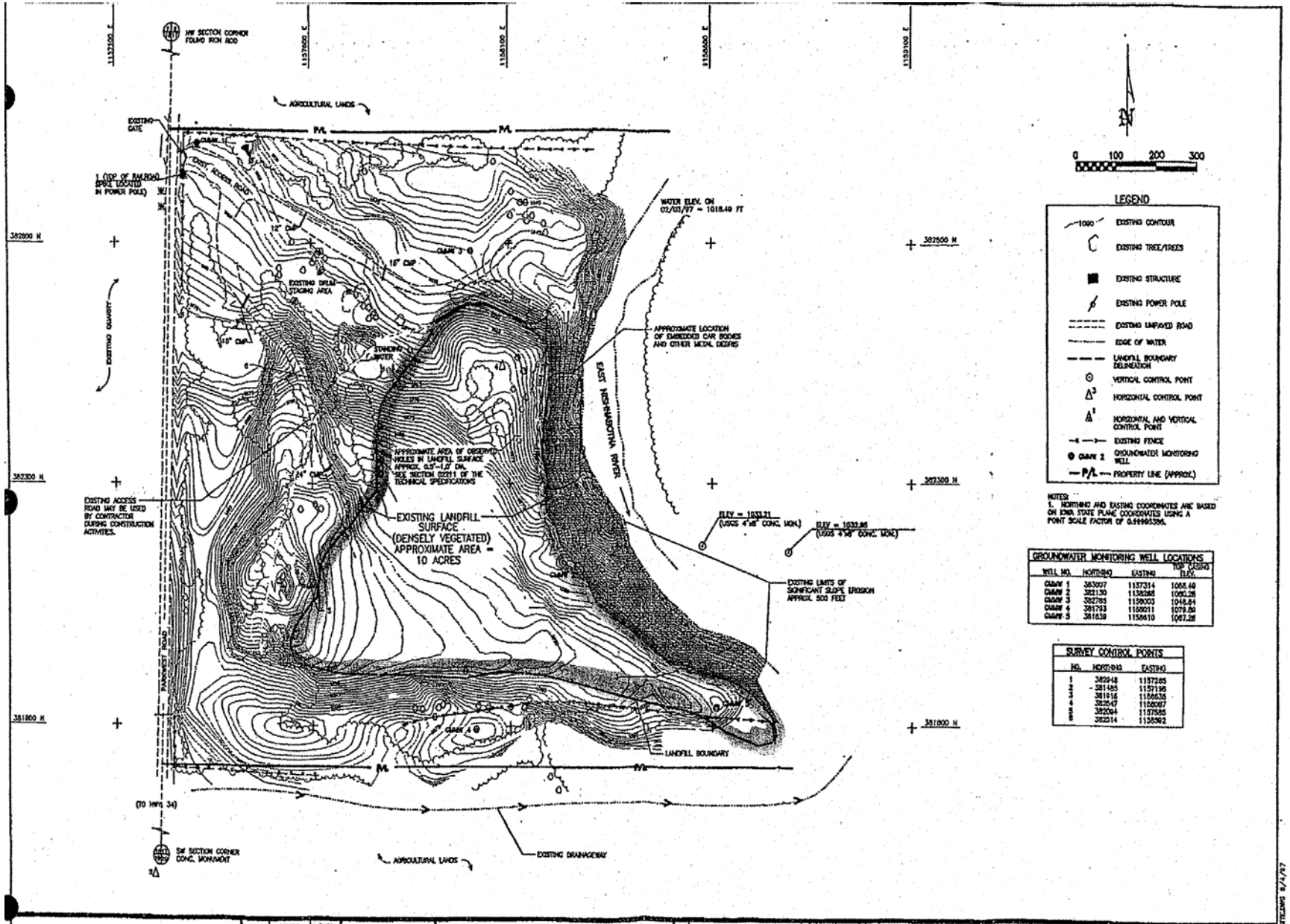
- The 2016 Annual Report site status report and O&M reports were completed.
- The Fourth Five Year Review was completed and the remedy is deemed protective of human health and the environment

2019: The 2018 Monitoring and Operation & Maintenance report (MOMR) was completed. This MOMR covers eighteenth year of monitoring and inspection data collected under the Consent Decree. During the 2018 sampling event, water collected from seep/spring, surface water and groundwater was analyzed for Target Compound List (TCL) VOCs, total TCL inorganics (Short List) and dissolved TCL inorganics (Short List). The 2018 program also included the Spring Landfill Cap and Riverbank Slope Reconnaissance, Gauging of Inclinometer INC-1, Annual Landfill Cap Maintenance, testing and inspection activities.

The 2018 sampling results do not indicate significant changes from previous trends observed for the analytes sampled. Two inspections of the riverbank were made in 2018. While some movement of soil was noted, no new areas of significant slope slumping or movement were identified and historic areas of slumping showed evidence of re-establishment of vegetation.

2020: Actions completed:

- **Submission of 2019 monitoring and operation & maintenance report (MOMR). This report covers the nineteenth year of monitoring and inspection data collected under the Consent Decree and included the Spring Landfill Cap and Riverbank Slope Reconnaissance, Gauging of Inclinometer INC-1, Annual Landfill Cap Maintenance, testing and inspection activities. The 2019 surface water sampling results indicate a slight increase in concentrations over 2018 results.**



NOTES:
1. NORTHING AND EASTING COORDINATES ARE BASED ON IOWA STATE PLANE COORDINATES USING A POINT SCALE FACTOR OF 0.999965396.

GROUNDWATER MONITORING WELL LOCATIONS

WELL NO.	NORTHING	EASTING	TOP CASING ELEV.
GWW 1	383007	1157314	1068.49
GWW 2	382130	1158265	1060.28
GWW 3	382783	1158003	1048.84
GWW 4	381733	1158011	1079.80
GWW 5	381839	1158610	1067.28

SURVEY CONTROL POINTS

NO.	NORTHING	EASTING
1	382948	1157265
2	381485	1157198
3	381916	1158636
4	382547	1158067
5	382044	1157565
6	382514	1158362

RSV ENGINEERING, INC
ENGINEERS, PLANNERS, SURVEYORS, CONSTRUCTION MANAGERS, ENVIRONMENTAL SCIENTISTS
110 N. UNION DR., SUITE C, JEFFERSON, WI 53549 (414) 674-3411

	INITIALS	DATE
DRAWN	DKV	
DESIGN	JKS	8/4/97
CHECKED	RKW	
APPROVED		

RED OAK LANDFILL SITE
REMEDIAL ACTION
RED OAK, IOWA

DRAWING CONFIDENTIAL:
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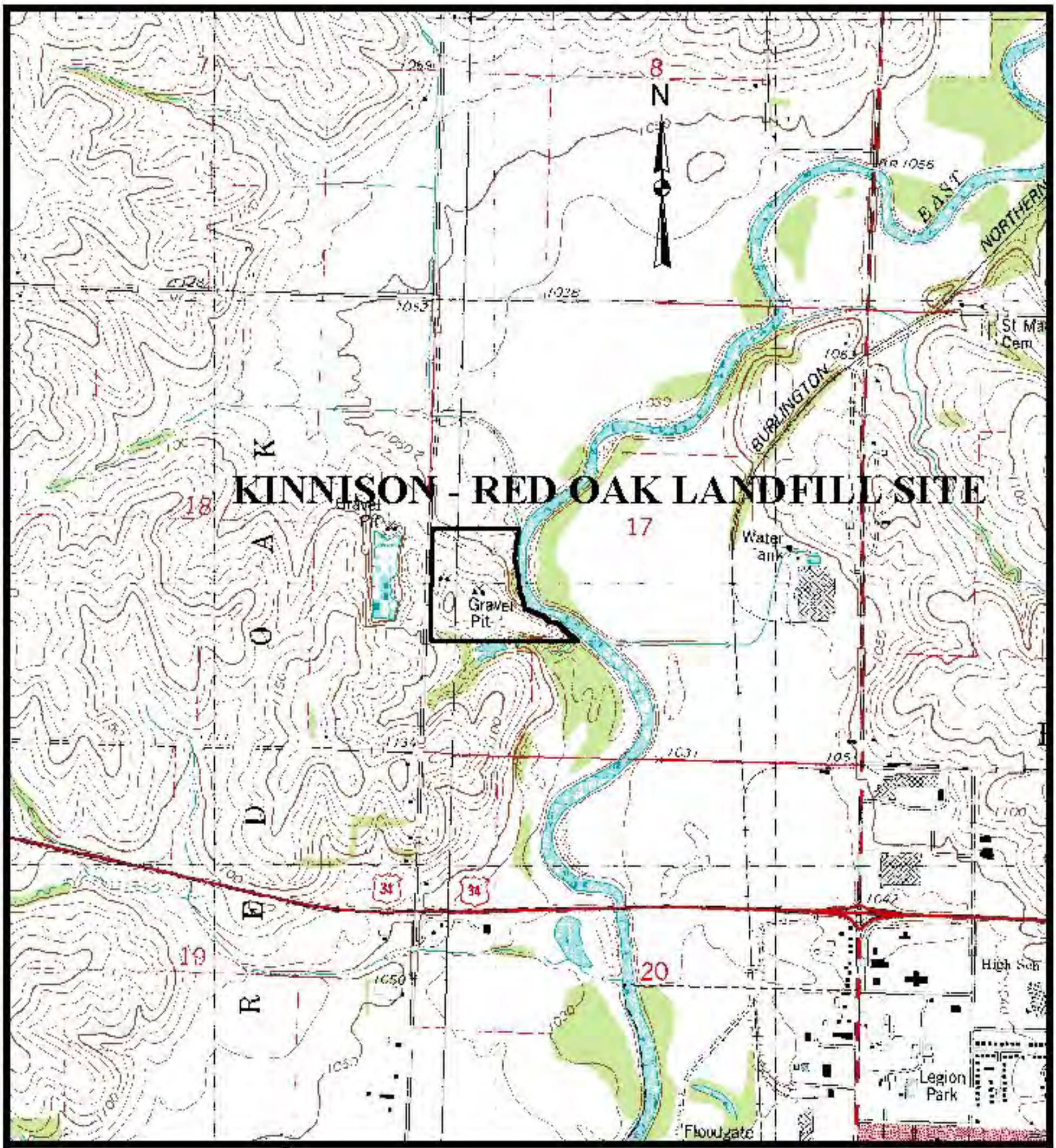
SITE PLAN
EXISTING CONDITIONS

RSV PROJ. NO. 97005

SHEET NO. 1

RSV 97005/FIGURE1.DWG 8/4/97

(Kinnison, Lowell & Blanche - Red Oak Landfill)



Contour Interval 10 Feet

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ROLSCREEN
(Pella, Iowa)

GENERAL DESCRIPTION

The Rolscreen site is located in the NW 1/4 of the SE 1/4 of Section 10, Township 76N, Range 18W in Pella, Iowa Marion County and is owned by the Rolscreen Company. The site was entered on the Registry in January 1990.

SITE CLASSIFICATION

In 2001 the site was reclassified as "d" Site Properly Closed Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

The quantity of hazardous waste released from this site is undetermined. Initially, three underground tanks were identified on this site as having released a compound known as "Miltreat". This wood preservative compound consisted of 95% mineral spirits and 5% pentachlorophenol (PCP). A subsequent groundwater investigation identified PCP, benzene, toluene, and xylenes in monitoring wells located on-site.

STATUS OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The primary public health concern has been the potential exposure to contaminated groundwater**

The Rolscreen Company is located within Pella, Iowa. The city obtains its water supply from a set of collection wells located below the Red Rock Dam, which is approximately 3.7 miles southwest of the site. The closest well is located at a farmhouse approximately one-half mile south of the site. Sent Creek is located approximately one mile southwest of the site. The creek flows south into the Des Moines River below Red Rock Dam. The river is approximately 3.7 miles south of the site.

STATUS OF ASSESSMENT, MONITORONG OR REMEDIAL ACTIONS

The state is the lead agency for the site.

In September 1988, Rolscreen removed 11 other underground tanks. Soil samples collected from the tank area showed a release had occurred. The original three Miltreat tanks were removed in January 1989. In the process of removing the tanks, an in-situ biological treatment system was installed. The system became fully operational in October 1989 and had five major elements. These included water collection, nutrient feed, water distribution, air distribution, and a secondary bio-reactor.

Remedial actions at the site were conducted in accordance with Administrative Consent Order 88-HC-05. Under the terms of the order, groundwater cleanup was to continue until the PCP level is reduced to 0.22 mg/L. The Order has since been rescinded and despite remedial efforts, groundwater contamination has remained in the immediate vicinity of the site at levels an order of magnitude above the cleanup goal and more than three orders of magnitude above the safe drinking water standard for PCP. The in-situ bio-remediation system in operation since late 1989 had only a marginal effect in reducing PCP contamination levels and was shut down in 1999.

In 2002 the IDNR closed the Consent Order as the site completed all remedial actions identified in the order. Although groundwater monitoring has been terminated, due to the determination of stable or improving conditions, the site remains listed to prevent installation of drinking water wells in the area.

In 2010 the EPA RCRA program issued an administrative order on consent to Rolscreen for additional corrective action at the site. Since then, Rolscreen has taken actions to comply with the order.

2015: The facility is continuing assessment of contamination at the property as stipulated in the 2010 order. A Corrective Action Framework document for conducting the RFI has been developed between the EPA and the facility, and was approved on April 28, 2015. This document details the remaining scope of work for completing the RFI and outlines a more streamlined approach for conducting and completing the investigation. Phase III RFI field work is currently being completed which includes assessment of groundwater at Area III underneath the existing manufacturing building, and further data gathering to support a human health and ecological risk assessment. Quarterly groundwater monitoring is ongoing and will incorporate new wells installed at Area III within future monitoring events.

2016: The facility is continuing assessment of contamination at the property as stipulated in the 2010 order. The facility has completed the Phase III portion of the RFI. Pending revisions to the report, the RFI appears to be complete. The facility is currently conducting indoor air sampling at Area III and IV to determine if vapor intrusion into the overlying building is a concern. The first round of VI sampling was completed in Summer 2016 with which no detections were above screening levels. The second round of VI sampling will be conducting during the Winter of 2016/2017. The facility is also currently conducting a human health and ecological risk assessment which is in the work plan phase at this time. Groundwater monitoring is ongoing and have incorporated new wells installed in Area III.

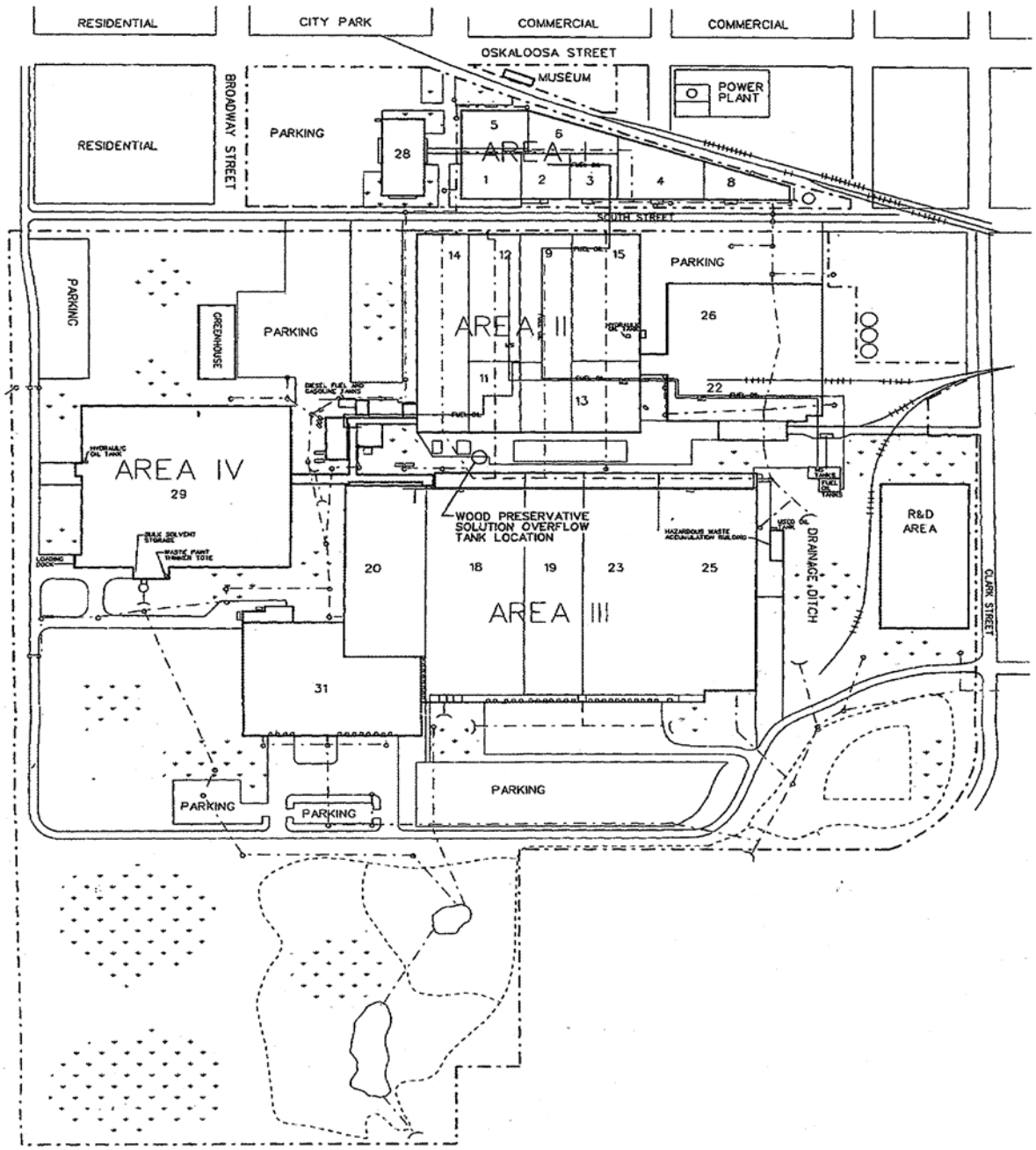
2017:
The facility is currently conducting Corrective Measures Study activities at the property as stipulated in the 2010 order. The facility completed indoor air sampling at Area III and IV, and the vapor intrusion assessment, which indicated PCE detections in indoor air well below the conservative Industrial Target Indoor Air Concentration of 37.7 µg/m3. The facility completed a SLERA and focused ERA which indicated no adverse effects on ecological receptors. The facility is also currently conducting a human health assessment with which the final report will be submitted shortly. Groundwater monitoring is ongoing.

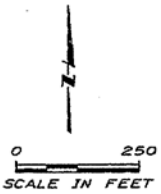
2018:
The facility continues to conduct activities related to the Corrective Measures Study. In March the EPA conducted split sampling at MW-28, MW-33, VMW-2, and VMS-3. The Corrective Measures Study Work Plan has been approved and the CMS Report will be submitted soon. As part of this evaluation, the facility will be conducting a metals turbidity and monitored natural attenuation evaluation.

2019:
The EPA has received the arsenic evaluation and it is currently in review. The facility is currently conducting a Monitored Natural Attenuation evaluation. The Corrective Measures Study Report has not been received by the EPA.

2020:

The EPA approved the Protection of Groundwater Soil Screening Level Evaluation Report in April 2020. In June 2020, the EPA approved the Monitored Natural Attenuation Evaluation Report. The EPA has reviewed the Corrective Measures Study Report and is awaiting revisions.



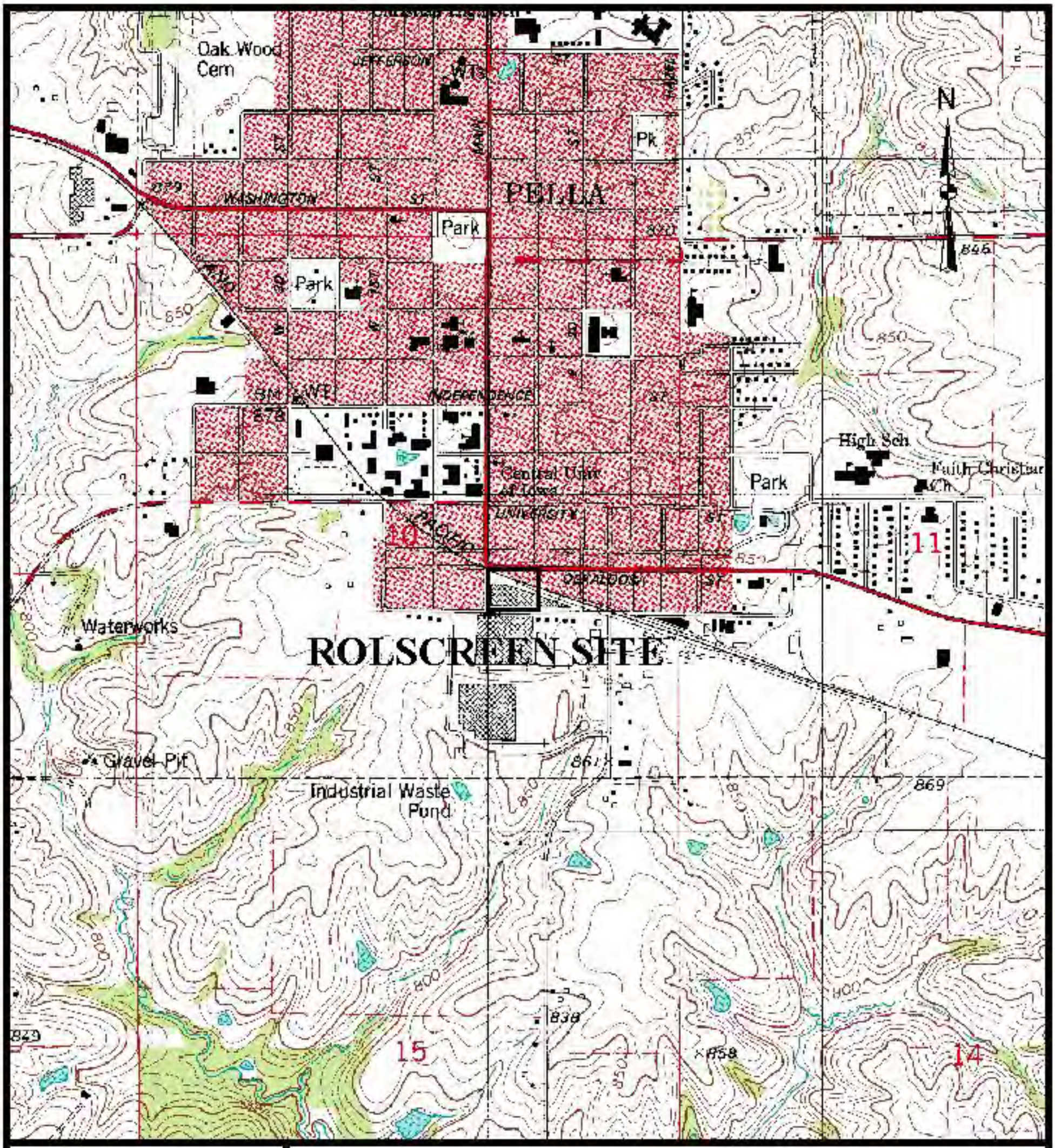


LEGEND

- STORM SEWER
- PROPERTY LINE
- PAVEMENT
- RECREATION PATH
- MINERAL SPIRITS
- FUEL OIL
- RAILROAD TRACKS
- STORM SEWER INLET
- STORM SEWER OUTLET
- GRASS

MWH MONTGOMERY WATSON HARZA — Des Moines Iowa	PELLA CORPORATION PELLA, IOWA	SITE MAP	FIGURE 2

(Rolscreen)



Contour Interval 10 Feet

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SHAW AVENUE DUMP SITE
Charles City, Iowa

GENERAL DESCRIPTION

The Shaw Avenue Dump is located in the NW 1/4 of the SW 1/4 of Section 7 of Township 35N, Range 15W, Floyd County, Iowa. The site is located approximately 600 feet east of the Cedar River, and is directly across the river from the LaBounty Landfill site. The site is owned by the city of Charles City, Iowa. The site was entered on the Registry in February 1990. The EPA placed the site on the National Priorities List (NPL) in July 1987.

SITE CLASSIFICATION

In 2001 the site was reclassified as "d" Site Properly Closed Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- **Types of hazardous waste at this site include metals, primarily arsenic, and VOC's**

The quantity of hazardous waste disposed of at the Shaw Avenue Dump is undetermined. It was the initial waste disposal site of Salsbury Laboratories, an animal pharmaceutical manufacturer. The disposal of solid waste produced by Salsbury began at the Shaw Avenue dump in 1949 and continued until 1953 when the company began disposal at the LaBounty landfill site.

The municipal wastewater treatment plant received liquid waste discharges from the Salsbury Laboratories. The sewage sludges accumulated contaminants from these discharges. Sludges from the Charles City Wastewater Treatment Plant were disposed of at the site from 1949 until 1964. Salsbury Laboratory waste contained high concentrations of arsenic and organic compounds including nitrophenol, 2-nitroaniline, nitrobenzene, and 1,1,2-TCA. The Site was identified as a potential hazardous waste site by the Iowa Department of Environmental Quality (IDEQ) in 1977 and was placed on the National Priorities List (NPL) in July 1987.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The primary public health concern is the potential exposure to contaminated drinking water.**

The Shaw Avenue Dump is located on the southeastern edge of Charles City, a city of about 8,800 residents. The Charles City municipal wells are located two miles north of the site. Several private wells are located within 2000 feet of the site, the nearest well approximately 600 feet southeast of the site. The dump is located on the floodplain of the Cedar River. The river is located approximately 600 feet west of the site and flows generally to the southeast.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The U.S. Environmental Protection Agency, in consultation with the Iowa Department of Natural Resources (IDNR [formerly IDEQ]), issued an Operable Unit 1 (OU1) Record of Decision (ROD) in September 1991 that presented the remedy of in situ fixation/stabilization of soil and chemical fill containing greater than 50 parts per million (ppm) arsenic or 20 ppm cadmium, installation of a low permeability cap, groundwater monitoring, and institutional controls as the remedy. The EPA issued an Explanation of Significant Differences (ESD) in March 1992 which modified the remedy to excavation and off-site disposal of the chemical fill and contaminated soil. In 1992, the EPA entered into a Consent Decree with the city of Charles City, Iowa, and Solvay Animal Health, Inc. (the successor to Salsbury Laboratories, Inc.) which required the remedy be implemented. Remedial action field work was physically completed on May 15, 1992. An estimated total 2,220 cubic yards of chemical fill and contaminated soil was excavated and disposed off site.

The EPA issued an OU2 ROD in September 2000 which selected no further action for groundwater, but stipulated that groundwater monitoring and institutional controls required by the 1992 Consent Decree be continued. The intent of the groundwater monitoring was to allow for an evaluation of the effectiveness of the contaminated soil and chemical fill remedial action (RA) in preventing or reducing the leaching of contaminants to groundwater, as well as to assess the need for additional RAs at the Site. Groundwater monitoring and site maintenance are the remaining actions being conducted at the Site.

The OU1 RA has been completed and chemical fill areas have been excavated. These activities have either eliminated or reduced risks posed by exposure to contaminated soil and chemical fill in these areas. Newly available toxicity values for the polycyclic aromatic hydrocarbons (PAHs) since completion of the ROD call into question whether current concentrations of these contaminants in the on-site soil warrant additional remedial action(s).

CURRENT ACTIVITIES

The Monitoring and Maintenance Plan was modified in 2015. EPA and IDNR approved the abandonment of wells 4B, 8A, 12A, 15A, 16, 18, and 18A, as sampling of the remaining wells will be adequate to monitor site conditions.

EPA also finished the third five review in August 2015. The five year review report summary stated the following:

Contaminants remain in groundwater at concentrations which exceed federal primary drinking water maximum contaminant levels (MCLs) and Iowa health-based standards. Although contaminants remain above drinking water standards, general decreasing arsenic concentrations in groundwater indicate that the OU1 RA has reduced contaminant migration into groundwater. However, MW-2 arsenic concentrations continue to increase, and certain wells previously exhibiting decreasing arsenic concentration trends now exhibit either no discernible trend or one which is stable. In addition, the current groundwater monitoring plan includes limited chemical constituents. For example, the plan was revised in 2002 and no longer includes site-related contaminants of potential concern (COPCs) such as benzene, xylene, toluene, and 2-nitroaniline. Current levels are unknown and changes in toxicity warrant

additional investigation. It is recommended that additional sampling be performed and the results evaluated to determine if additional remedial actions are warranted.

Ecological risks were not comprehensively evaluated as part of the OU1 and OU2 risk assessment and remedy selection process. Currently, the campground adjacent to the Site has a recreationally used pond, and environmental data has not been collected from the pond since a 2000/2001 risk assessment. Due to the increasing arsenic concentrations in MW-2, adjacent to the campground pond, it is recommended that environmental samples (i.e., surface water and sediment samples) be collected from the pond and the adjacent Cedar River to evaluate whether there are unacceptable risks to human health and the environment.

Site institutional controls are in place and no groundwater production wells have been completed on site. No private wells are located downgradient of any site monitoring well where arsenic and/or vinyl chloride exceeds its MCL.

A protectiveness determination of the OU1 remedy cannot be made at this time until further information is obtained. Further information will be obtained by collecting soil samples and evaluating them for PAHs in on-site soil. Once results are evaluated, these levels will be used to evaluate risk and determine if additional remedial action is warranted. It is anticipated that information will be collected and evaluated by September 2016, at which time a protectiveness determination will be made.

A protectiveness determination of the OU2 limited action remedy cannot be made at this time until further information is obtained. Further information will be obtained by completing the following activities:

- Collect environmental data from the recreational pond and Cedar River to determine if unacceptable risks to human health or the environment exist and could warrant additional remedial actions; and
- Based on changes in toxicity values for benzene, xylene, toluene, and 2-orthonitroaniline, collect groundwater samples and evaluate risks to human health to determine if additional remedial actions are warranted.

It is anticipated that information will be collected and evaluated by September 2016, at which time a protectiveness determination will be made.

2015: The 3rd Five Year Review was completed and EPA and IDNR conducted review of the proposed changes to the Maintenance and Monitoring Plan.

2016: The protective measures work plan was approved in July and field work initiated in October, 2016

2017: EPA issued an addendum to the third Five Year Review. The determination was that the remedy is protective of human health and the environment. A monitoring work plan was also submitted that requires annual groundwater sampling summary reporting of groundwater conditions every 5 years. The next report is due in 2019.

2018: Annual groundwater sampling was conducted

2019:

- Completion of the 5 year Summary Monitoring report. Consistent with the findings of EPA's September 2017 Five-Year Addendum Report (EPA, 2017a), the groundwater monitoring data demonstrates the site remedy remains protective of human health and the environment.

- During 2019, the EPA conducted a five-year review

- The Iowa DNR concurred with partial deletion of Operable Unit 0-1 (Chemical dump and contaminated soil) from NPL.

2020:

- **The 4th Five-Year review report was completed: The conclusion is that the remedy is protective**

Figure 1 Location Map
Shaw Avenue Dump Site

DRAWN BY: ASG

DATE: March 2010

US Army Corps of Engineers

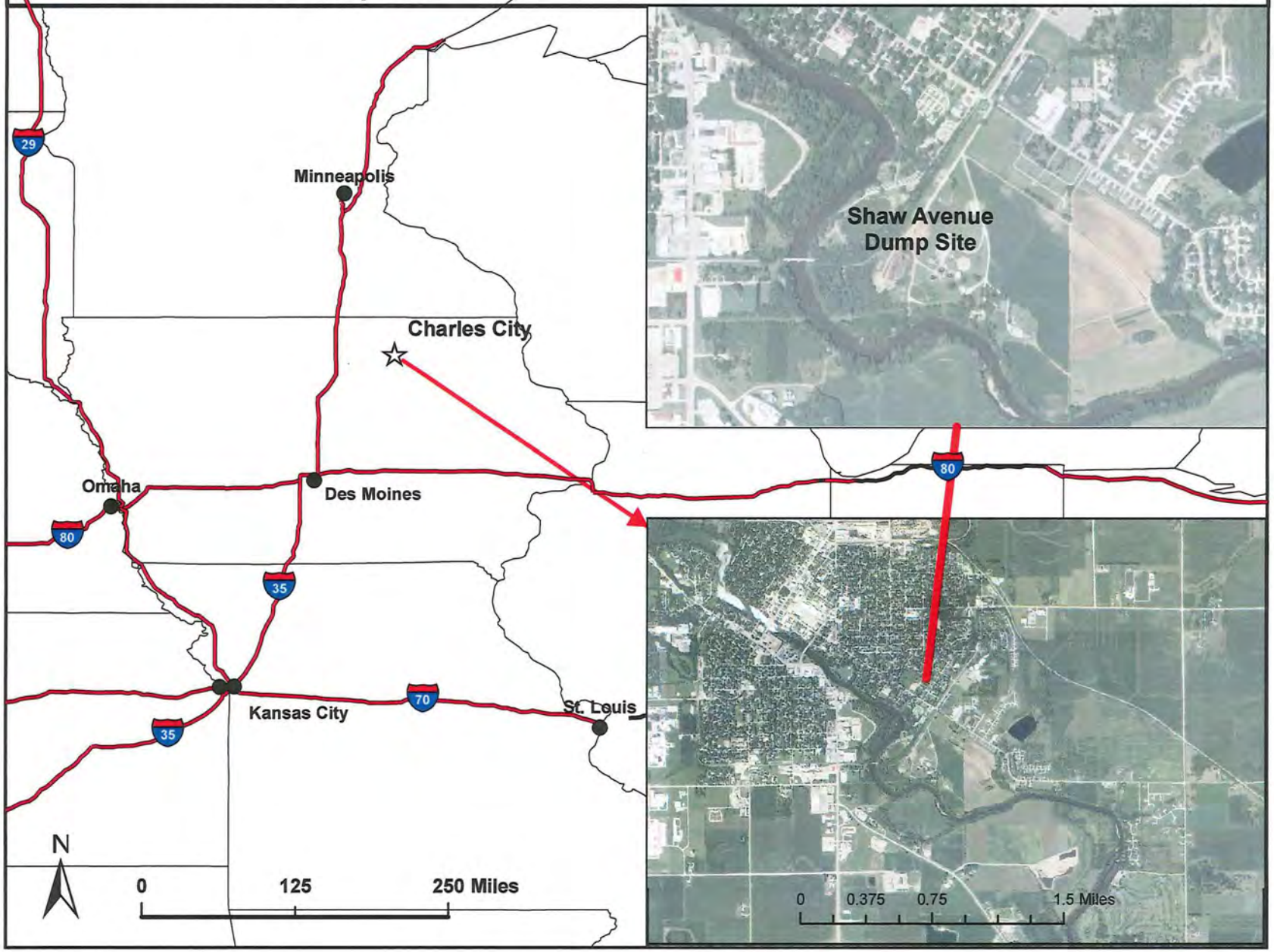


Figure 2 Site Map
Shaw Avenue Dump Site

DATE: March 2010

DRAWN BY: ASG

CHECKED BY: FWM

US Army Corps of Engineers

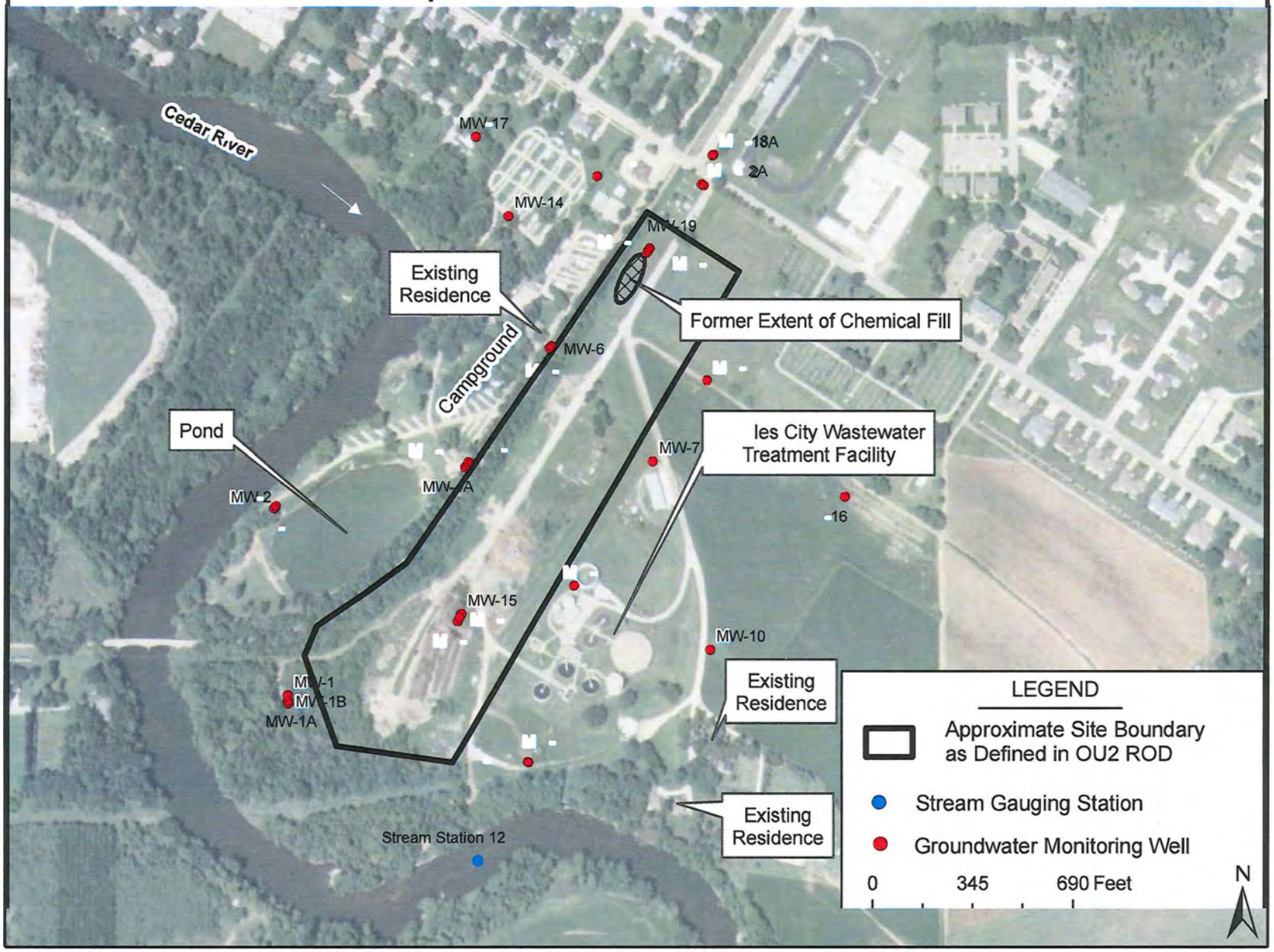


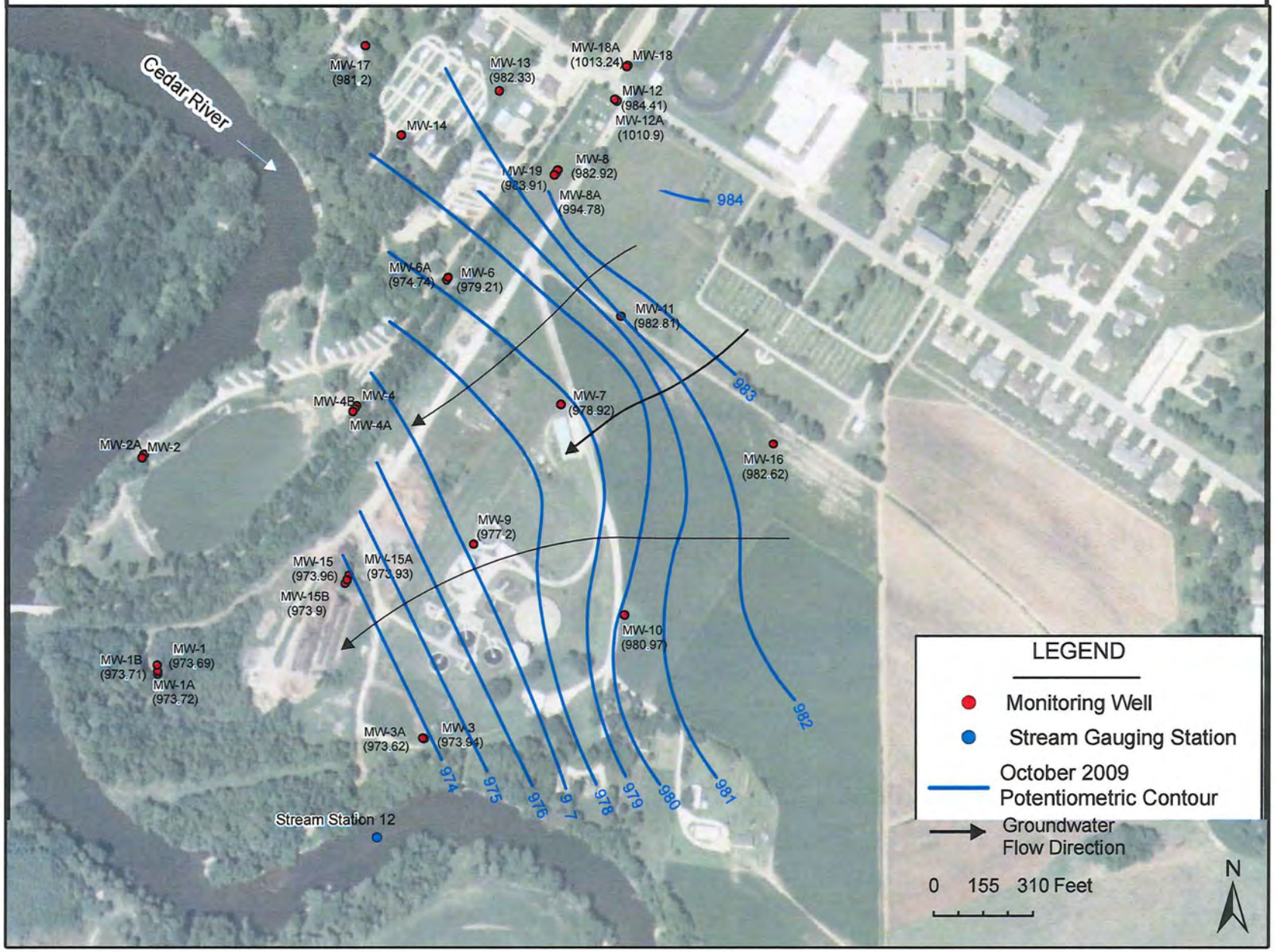
Figure 3 Groundwater Flow - October 2009
Shaw Avenue Dump Site

DATE: March 2010

DRAWN BY: ASG

CHECKED BY: FWM

US Army Corps of Engineers



TODTZ FARM (Camanche Landfill)
(Camanche, Iowa)

GENERAL DESCRIPTION

The site is located approximately 1.5 miles west of Camanche, Iowa. It occupies a gravel pit located in the SW 1/4 of the SW 1/4 of Section 29, T81N, R6E in Clinton County. The 12-acre site is owned by Lewis L. and Lynn R. Todtz, they acquired the site in 1988. The site was entered on the Registry in February 1989. The EPA placed the site on the National Priorities List (NPL) in June 1986. Lawrence Todtz purchased the land in 1958. From 1959 to 1969, he leased the 12-acre site for sand and gravel mining. When mining ceased, the pit was operated by McManus Brothers as a municipal landfill for the city of Camanche from 1971 to 1975.

SITE CLASSIFICATION

The site is classified "b" in accordance with 455B.427.3. Hazardous wastes containing arsenic, lead, nickel, sodium hydroxide, acetone, carbon disulfide, cresols, methylene chloride, tetrahydrofuran, and toluene have been disposed at the site, posing a significant threat to the environment.

TYPE AND QUANTITY OF HAZARDOUS WASTE

In 1971 McManus Brothers sublet a 2.5-acre part of the gravel pit to E. I. DuPont de Nemours and Company for the construction and operation of an industrial waste impoundment. DuPont disposed of 4,300 tons of process wastes from their cellophane plant in Clinton, Iowa. The impoundment cell was closed in 1975. Hazardous wastes containing arsenic, lead, nickel, sodium hydroxide, acetone, carbon disulfide, cresols, methylene chloride, tetrahydrofuran, and toluene have been disposed at the site.

TABLE 1
Groundwater Contamination

Compound	**Highest Value** (ug/L)	Statewide Standard for Protected Ground water (ug/L)
Carbon Disulfide	3,600	700
Acetone	2,000	700
Toluene	8,800	1000
Methylene Chloride	2,500	5.0
Tetrahydrofuran	97,000	NA
Cresol	1,200	NA
Arsenic	1,400	50
Lead	400	15
Nickel	4,000	100 (soluble salts)
Sodium	5,800,000	NA

NA means no applicable standard

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The primary public health concern is the potential exposure to contaminated drinking water**

The site is located on the floodplain of the Mississippi River and is about 1.5 miles northwest of the river. Two lakes are located next to the site on the east and south sides. An alluvial aquifer is present at the site, flowing to the southeast toward the river. This groundwater is the source of drinking water for nearby residential wells and for the municipal wells at the city of Camanche.

The disposed wastes at the site are in direct contact with the alluvial aquifer. Samples from the monitoring wells demonstrate the on-site groundwater is contaminated with hazardous substances originally disposed at the site. Several of the concentrations listed in Table 1 exceed the regulatory or advisory limits for these chemicals in drinking water. Sampling suggests contaminants may be migrating from the site. The local lakes, streams, and the Mississippi River are used for recreational activities and commercial shipping. Marshes adjacent to the river and about 1.5 miles southeast of the site form part of the Upper Mississippi River Wildlife and Fish Refuge.

STATUS OF ASSESSMENT, MONITORING OR REMEDIAL ACTION

The EPA is the lead agency on the site.

The EPA began investigating the site in 1980. A Consent Order, effective April 4, 1988, required DuPont to conduct a Remedial Investigation/Feasibility Study (RI/FS) for their impoundment cell. The draft RI/FS report was submitted in July 1988. The EPA issued a Record of Decision (ROD) on November 4, 1988, selecting the preferred remedial action. In November 1990, the EPA and DuPont entered a Consent Decree on the ROD.

In August 1989 the James Bark well was replaced with a deeper well. A second well also was installed at the adjacent Steven Bark residence. The replaced (James Bark) residential well was completed in the shallow alluvial groundwater. It is located near the southeast corner of the site and is down gradient of it. Elevated sodium concentrations (200,000 ug/l) have been detected at the well.

The Record of Decision (ROD) Required DuPont to cap the impoundment cell with soil, fence the area and install up-gradient groundwater monitoring system. These Remedial actions were completed in the summer of 1991. The ROD also required a long-term ground water monitoring program (at least 30 year). The Long-term ground water monitoring strategy included the establishment of the lower target level (80% of the action level) would mandate the evaluation of additional remedial options by DuPont. A detection of the higher levels would require implementation of the selected remedy.

In 1993, the lower action level was exceeded for tetrahyrofuran. During prescribed verification sampling the higher trigger level was also exceeded, however, levels have not consistently remained above the higher level. Evaluation of remedial options has resulted in the selection of a slurry wall as the preferred remedy should monitoring levels consistently exceed the higher trigger level.

The EPA conducted a five-year review in late 1995 and 2000. No changes have been recommended from the reviews, although the monitoring frequency has been reduced in accordance with the ROD.

2002: Annual Long-term Monitoring for DuPont Impoundment Operable Unit-2001 submitted to IDNR. Results indicate contamination concentrations did not exceed established “trigger levels” for this period of monitoring.

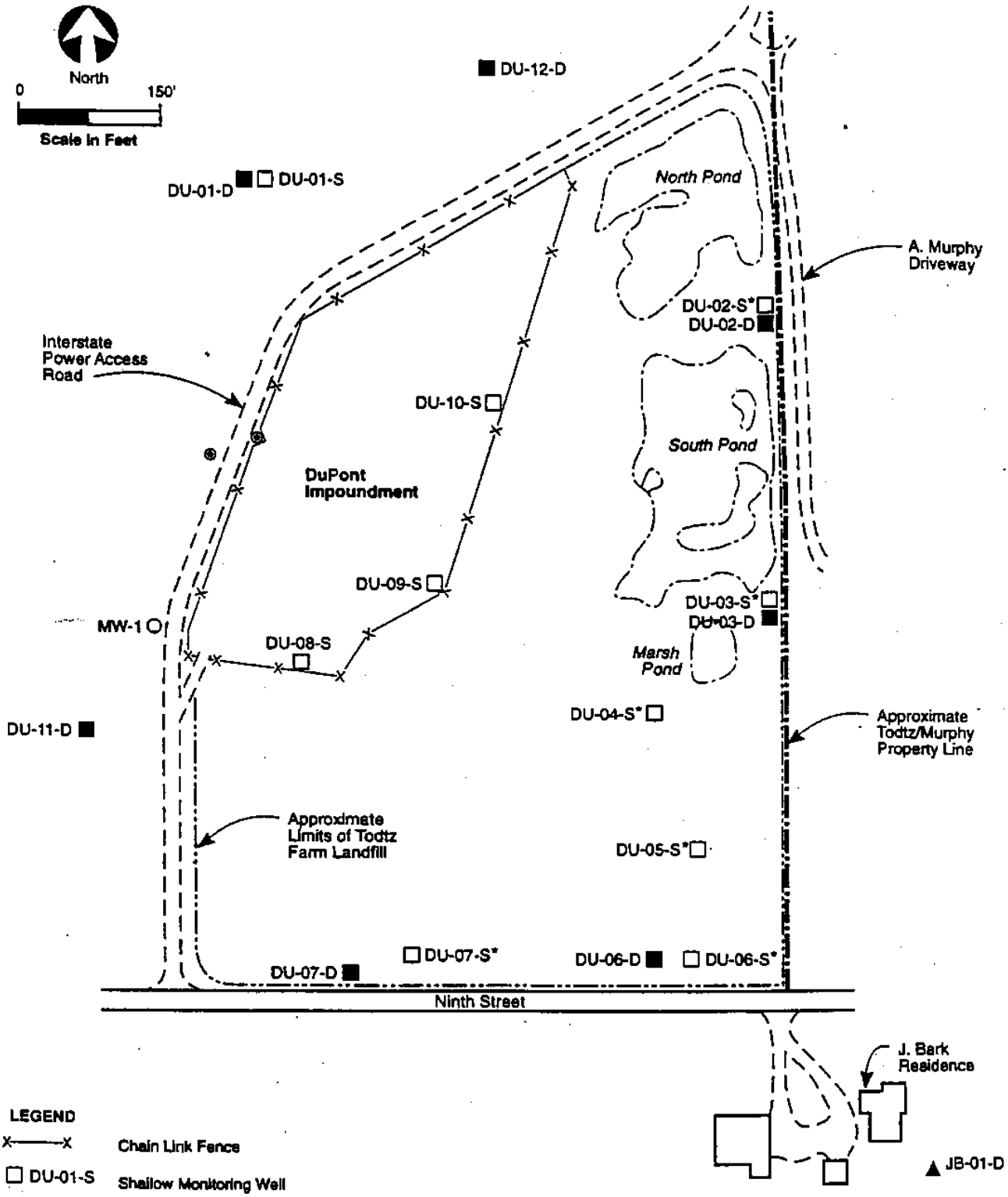
2005: Another Five-year review completed this year identified the following item to be addressed through anticipated work plans. Additional evaluation for arsenic due to lowering of the MCL that has resulted in increased concern for this contaminant, though no unsafe exposures identified.

2010 – A Five-Year Review was completed. No significant changes were noted from the previous Five-Year Review. A report titled "A Review of Remedial Options for Arsenic in Groundwater – Todtz Farm Site – Camanche, Iowa" was completed. This was done in the event that arsenic levels become problematic, they are not currently.

2015: A Five Year Review was completed.

2019: A Feasibility Study has been conducted for the site to determine a response to mobilized, naturally occurring arsenic. A Rod amendment is scheduled for 3rd ¼ 2020 and $1,000,000 in capital expeditures is planned.

2020: The sixth 5YR was drafted in August 2020. PFAS GW sampling was started in 2020 and at least one more round will be completed. Quarterly monitoring continues.



LEGEND

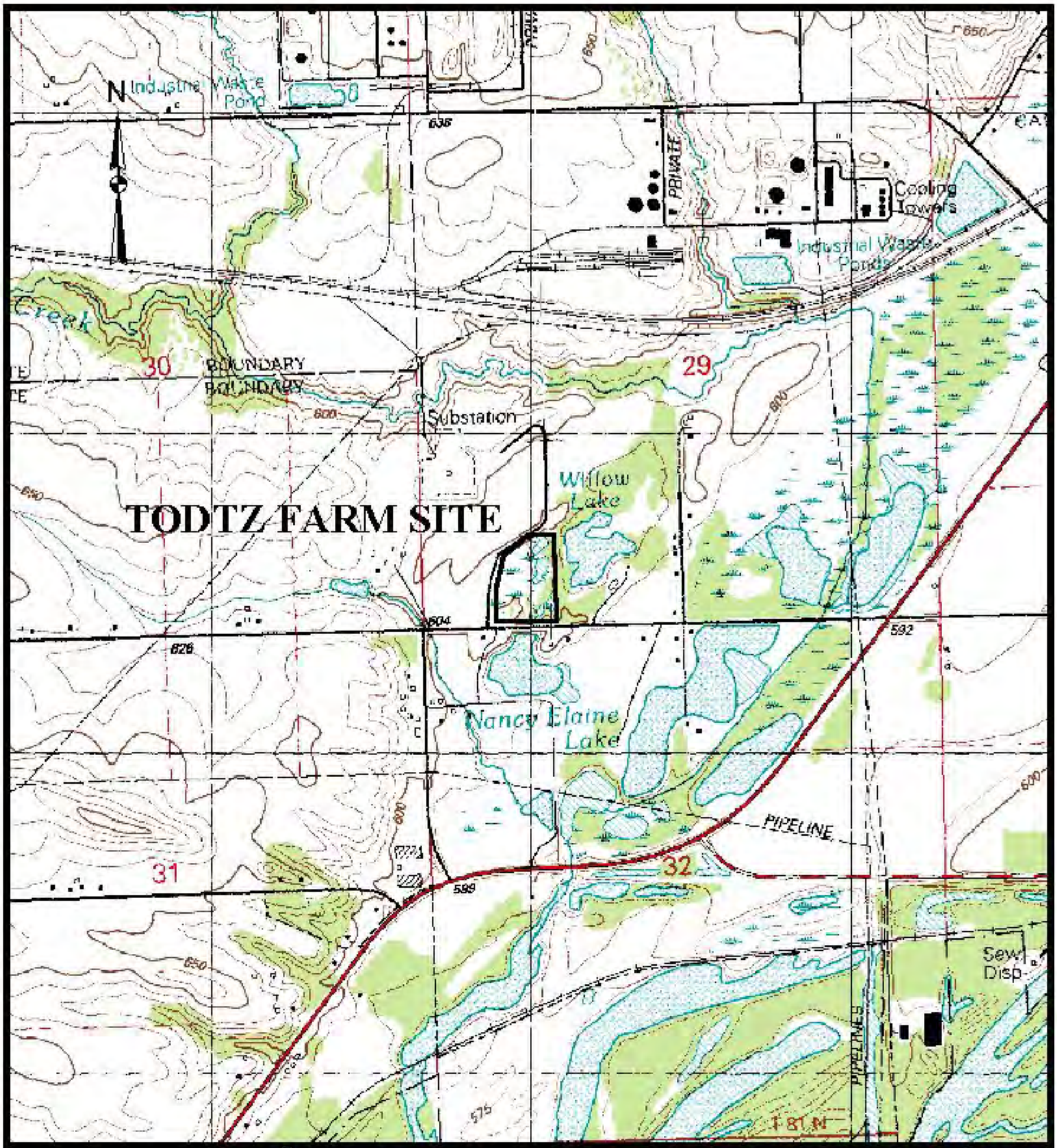
X——X	Chain Link Fence
□ DU-01-S	Shallow Monitoring Well
□ DU-02-S*	Remedial Action Trigger Well
■ DU-01-D	Deep Monitoring Well
○ MW-1	Existing EPA Monitoring Well
⊕	Power Transmission Line Pedestal
▲ JB-01-D	Deep Residential Drinking Water Level

FIGURE 1
Site Map
DuPont Impoundment RA
Lawrence Todtz Farm Landfill Site

CH2MHILL

E115133.E3.RP Site Map 12-12-98mmm

(Todtz Farm)



Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 Feet

U.S. NAMEPLATE
(Mt. Vernon, Iowa)

GENERAL DESCRIPTION

The site is 4.83 acres in the NW 1/4 of the NW 1/4 of Section 16, T82N, R5W, Linn County, Iowa about one mile west of Mt. Vernon, Iowa. U.S. Nameplate Company, Inc. is located on the property. Since the mid-50s the company has manufactured nameplates and other engraved and embossed items. Until approximately 1984, the company engaged in metal etching of aluminum, brass, and stainless steel. The site was entered on the Registry in 1984.

SITE CLASSIFICATION

The site is classified "b" in accordance with 455B.427.3. The hazardous wastes disposed of at the site pose a significant threat to the environment.

TYPE AND QUANTITY OF HAZARDOUS WASTE

From the mid-1950s to 1979, a sequence of three septic systems was used to dispose of the plant's wastewater. In March 1979 the department found a continuous discharge from the facility which flowed off-site and into a small creek. The discharge had a pH of 2.2 and a fluoride concentration of 390 mg/L, values consistent with the etching process wastes. In 1984 soil and groundwater samples showed high concentrations of trichloroethene (640 to 95,000 mg/kg) and ethylbenzene (120 to 2500 mg/kg) in the lagoon sludge. All the lagoon wastewater samples showed trichloroethene at 140 mg/L. One groundwater sample had a trichloroethene concentration of 4 mg/L.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The primary public health concern is for potential exposure to contaminated drinking water.**

The uppermost aquifer beneath the site (till aquifer) contains sufficient water to supply farms and individual residences in the area. Four residences are located 50 feet north of the facility. These residences are within 300 feet of the monitoring well which shows TCE contamination of 2,000 ug/L. The bedrock aquifer is composed of Silurian age dolostone/limestone deposits, which are encountered at the facility at approximately 55 feet below the surface. The Silurian aquifer is used by the city of Mt. Vernon for its drinking water supply. These wells are located within three miles of the site and serve a population of about 3,650 people.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

U.S. Nameplate obtained a permit and built the treatment lagoon in response to enforcement actions from the department in 1979. By 1981 because of inadequate operation of the system, the wastewater discharged into the lagoon had a pH below 2. The resulting sludge in the lagoon was a hazardous waste for corrosivity and EP toxicity for chromium.

In 1982 the IDNR determined the wastewater lagoon was leaking. A down gradient monitoring well showed fluoride as high as 137 mg/L. Bentonite was applied as a remedial measure to certain areas of the lagoon dike. In 1983 there were still elevated fluoride levels in one of two monitoring wells. Fluoride was used as an indicator of the leaking lagoon.

A RCRA compliance order was issued to U.S. Nameplate ordering them to immediately stop hazardous waste disposal to the lagoon and to submit a complete closure plan for the lagoon and a groundwater assessment plan. The compliance order was appealed to EPA Headquarters and was decided in favor of the company and the order was dismissed in March 1986.

In December 1984 the company submitted a petition to de-list their lagoon sludge as a hazardous waste. In order to evaluate the petition, the EPA obtained samples from the site in August 1985. The sample results showed high concentrations of trichloroethene (640 to 95,000 mg/kg) and ethylbenzene (120 to 2500 mg/kg) in the lagoon sludge. All the lagoon wastewater samples showed trichloroethene at 140 mg/L. One groundwater sample had a trichloroethene concentration of 4 mg/L. The EPA proposed to deny the petition because of the excessive total concentrations of trichloroethene (TCE) in the sludge. The company responded to the denial by reducing the TCE concentrations in the sludge with mechanical aeration and requested the EPA to re-evaluate the retreated waste.

In 1988 the EPA determined the retreated sludge was not hazardous and granted the de-listing petition for a one-time exclusion of the retreated wastewater treatment sludge. However, the EPA also determined the unlined surface impoundment appeared to have caused groundwater contamination. In addition, the surface impoundment will continue to be defined as a hazardous waste management unit because of residues from the retreated sludge that remain hazardous.

In August and September 1989 the EPA conducted a site investigation. This included the installation and sampling of four ground water monitoring wells. The results showed TCE groundwater contamination as high as 2,000 ug/L.

The EPA issued an Administrative Order to the company in June 1990. This order requires the company to conduct a Removal Action, a RCRA Facility Investigation (RFI), and a Corrective Measures Study (CMS) at the Facility. Some investigation and removal activities have been conducted, but these activities have not been in compliance with the order.

In September 1993, the EPA conducted a level D multimedia inspection of the facility. This included full compliance inspections for the RCRA, CWA/NPDES, EPCRA, and UIC programs. Screening inspections were conducted for the Drinking Water and Wetlands programs.

A groundwater remediation work plan with serious deficiencies was submitted in March 1993. A summary proposal for a more acceptable work plan was submitted in October 1995. The EPA requested the company to convert the summary outline to a more detailed plan and submit it for review and approval. As of October 1998, U.S Nameplate has failed to submit the requested work plan.

EPA is planning on initiating a Monitored Natural Attenuation (MNA) with deed restrictions program for this site. MNA actions planned include the installation of additional monitoring wells and annual groundwater monitoring along with stream sampling. Also being considered is a deed restriction to alert future owners of the environmental conditions to include to a prohibition on installing drinking water wells.

An investigation by EPA has determined that groundwater contamination (TCE) has migrated south from the facility across Highway 30 to the southern edge of the property to an intermittent stream where low levels of TCE have been detected. An Environmental Risk Assessment was performed by EPA and it was determined that no risk existed.

The primary source of groundwater contamination has been removed through a soil removal. Adjacent down gradient monitoring wells (two) at various depths show low TCE contamination. There are indications of biological and physical natural attenuation.

2008: Ongoing monitoring of ground water with collection of ground water samples from surrounding domestic supply wells for analysis for metals (arsenic, chromium), and volatile organic compounds. No contaminants were detected at levels of concern.

2013: The EPA conducted a site-wide monitoring event in December 2013 to evaluate groundwater conditions both on and off-site at the U.S. Nameplate facility. All facility monitoring and water supply wells were sampled as well as domestic wells in the vicinity of the facility. Surface water samples were collected from the drainage to the south of the facility. The results will be used to evaluate current conditions in groundwater at and around the facility and will be evaluated relative to the proposed realignment of US Highway 30.

2014: A comprehensive groundwater monitoring report summarizing monitoring data conducted in December 2013 was issued in 2014. The intent of the monitoring was to obtain adequate data to evaluate whether historical or current facility practices have resulted in environmental contamination. The EPA is the lead agency and will continue to investigate and evaluate this site under the RCRA program. The IDNR will continue to coordinate with the EPA to insure proper assessment and cleanup if warranted.

2015: The facility is working with the EPA to resolve two consent orders which include further evaluation of the integrity of the deep bedrock aquifer. In June, 2015 the facility was determined to be in compliance with requirements regarding their public water supply, storm water, and wastewater systems.

2016: EPA and the US Nameplate agreed that

- An additional round of groundwater sampling will be conducted at all on-site monitoring wells and adjacent residential wells to the north of the site.
- The integrity of bedrock monitoring well MW-2DD will be evaluated to determine the source of increasing VOC contamination.
- Previous surface water and newly discovered surface seeps locations along unnamed creek will be sampled downgradient of the facility. This work was conducted in the spring of 2016.
- A final sampling report has been submitted to the EPA and is currently in review to determine if further investigative work is necessary.

2017: The facility completed a comprehensive of groundwater sampling from existing monitoring wells and adjacent private water wells. Based on the results of groundwater sampling, additional delineation of groundwater contamination, and additional integrity testing of MW-2DD, was requested with which a work plan was approved to delineate the northern extent of groundwater contamination. Field work in accordance with this work plan is pending. The IDOT has commenced construction on Highway 30 south of the facility. Additional groundwater delineation to the south is pending until completion of these construction activities.

A letter was sent from the Iowa DNR to the responsible party pursuant to Iowa Code (IC) §455I allowing sites listed on the Registry of Hazardous Waste Disposal sites to self "de-list" with the implementation of an Environmental Covenant.

2018: The EPA received and approved the 2018 Groundwater Investigation Report

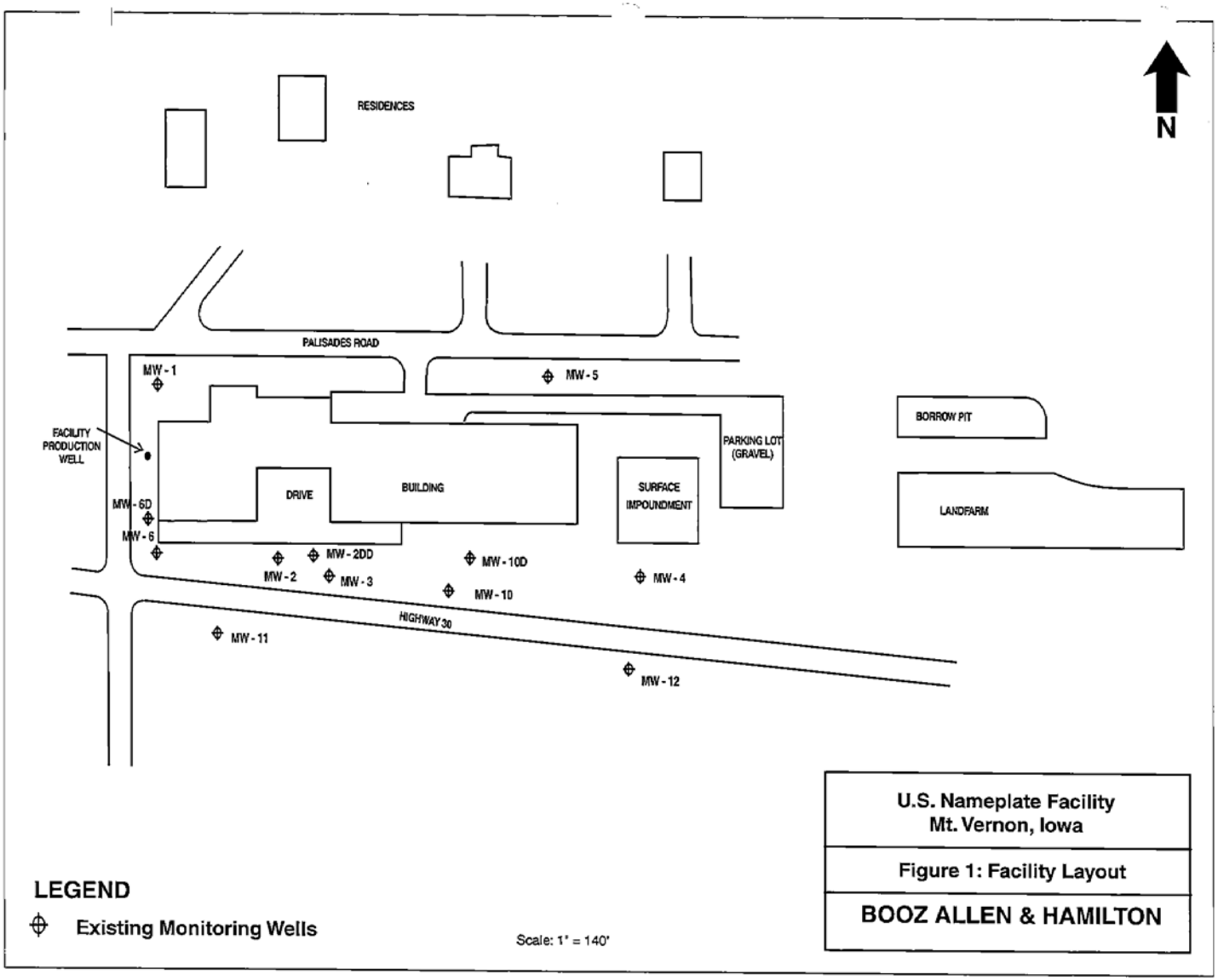
2019:

- April, 2019: EPA review and approval of Work Plan for Impoundment Sampling, Well Abandonment and Installation.

- June, 2019: Submittal of monitoring well abandonment and new well installation report

2020:

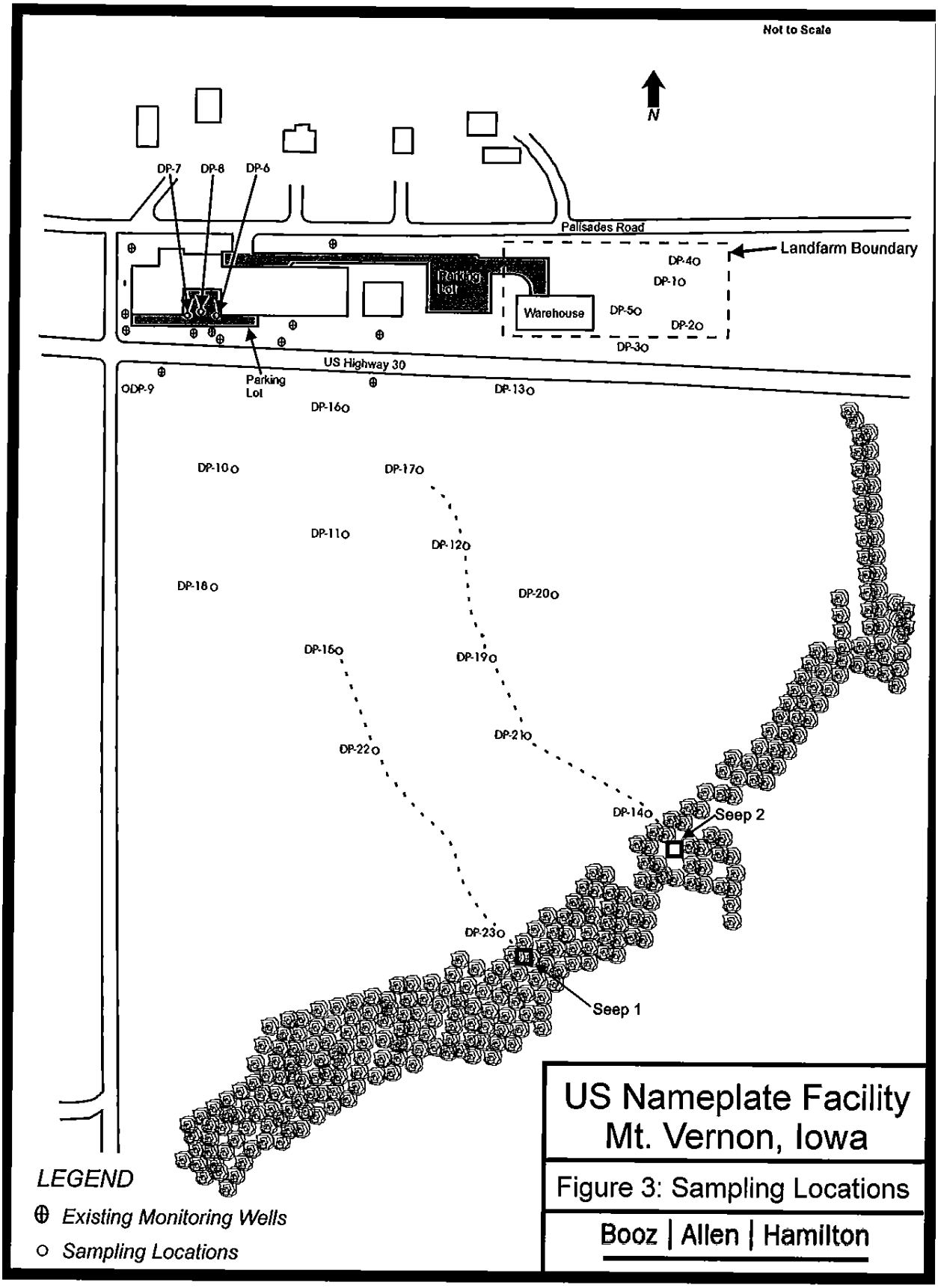
- Well testing for three wells for possible styrene contamination
- **Lagoon Closure?**



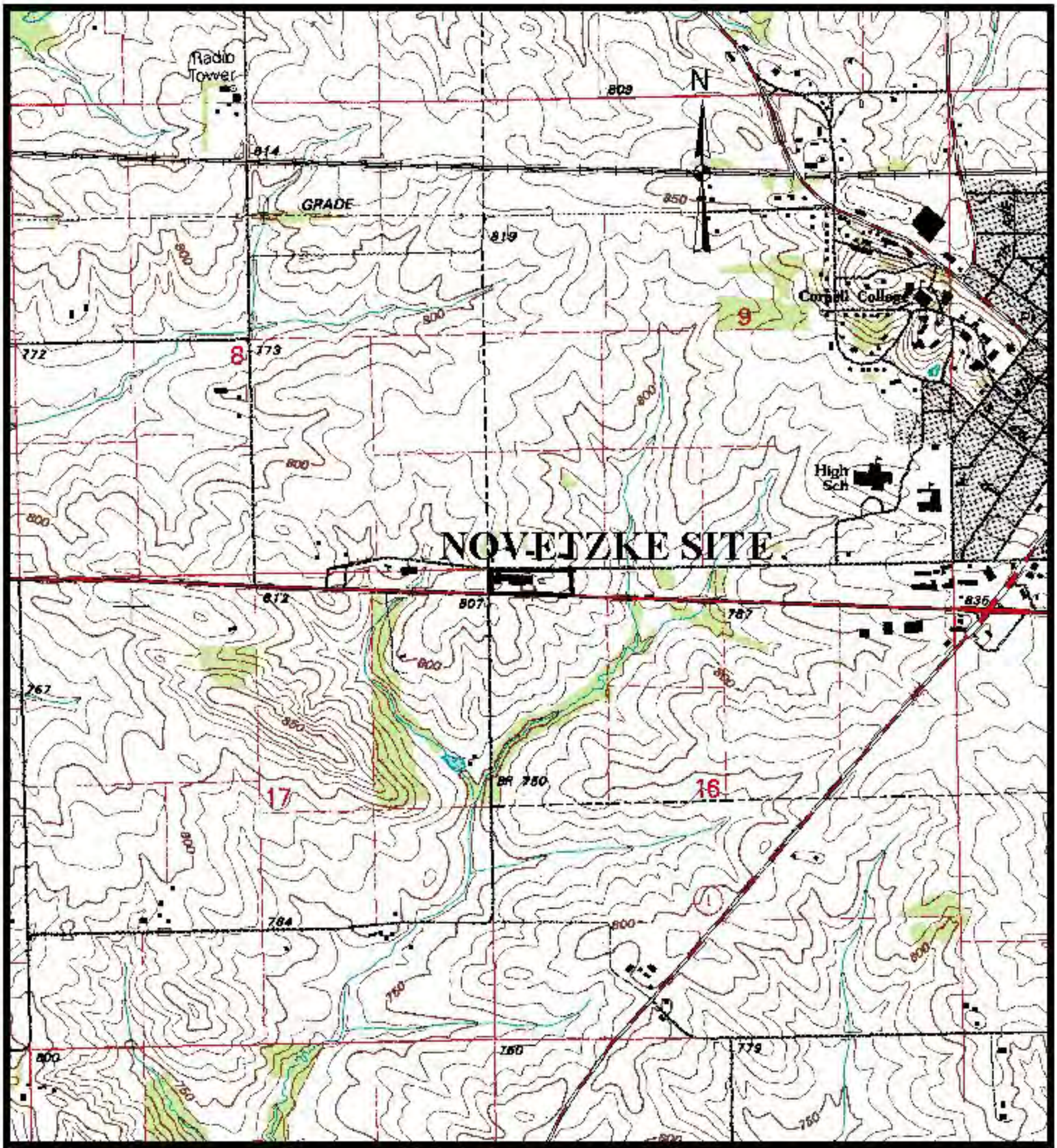
U.S. Nameplate Facility
Mt. Vernon, Iowa

Figure 1: Facility Layout

BOOZ ALLEN & HAMILTON


Not to Scale
N
DP-7
DP-8
DP-6
Palisades Road
Landfarm Boundary
DP-4
DP-1
Parking lot
Warehouse
DP-5
DP-2
DP-3
US Highway 30
Parking Lot
DP-9
DP-13
DP-16
DP-10
DP-17
DP-11
DP-12
DP-18
DP-20
DP-15
DP-19
DP-21
DP-22
DP-14
Seep 2
DP-23
Seep 1
LEGEND
Existing Monitoring Wells
Sampling Locations
US Nameplate Facility
Mt. Vernon, Iowa
Figure 3: Sampling Locations
Booz | Allen | Hamilton

(Novetzke, Richard & Sally - U.S. Nameplate)



Contour Interval 10 Feet

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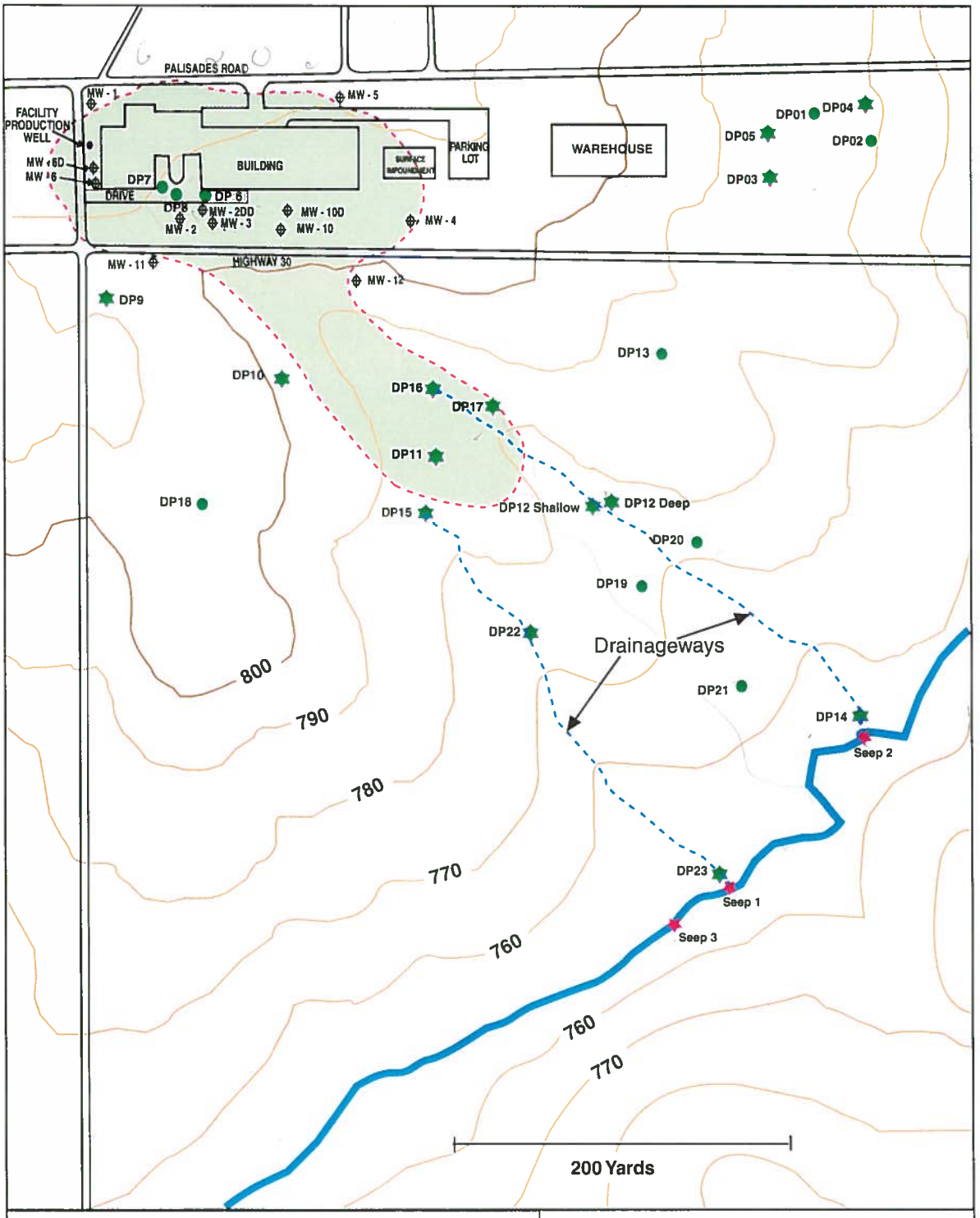


LEGEND

- Existing Monitoring Wells
- Direct Push Locations
- Seeps
- Piezometers

N

U.S. Nameplate Facility
Mt. Vernon, Iowa

Figure 12: Extent of TCE in Shallow Aquifer

BOOZ | ALLEN | HAMILTON

UNITED HYDRAULICS

(Hampton, Iowa)

GENERAL DESCRIPTION

The 22.4-acre site is located in the southeast corner of Section 33, T92N, R20W, on the south side of the city of Hampton, Iowa in Franklin County. The United Hydraulics Corporation manufactured hydraulic cylinders at the site from 1971 until early 1987. Activities at the facility included the machining of metal stock, chromium electroplating, and painting. The site is currently owned by Tower, LLC and is used for general warehousing and office space. Requests to divide and sell two parcels in the southwest corner of the property were approved by the Department in 2004 and 2010. The site was entered on the Registry in September 1989.

SITE CLASSIFICATION

In 2007 this site was re-classified "d" in accordance with 455B.427.3. The site is properly closed but requires continued management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- **The types of hazardous waste were identified as Metals and VOCs**

TABLE 1
Groundwater Contamination

Compound	**Highest Value** (ug/L)	**Compound**	**Highest Value** (ug/L)
Chromium	**390,000**	Ethylbenzene	**930**
1,1-Dichloroethane	**81**	1,2-Dichloroethylene (Cis-)	**300**
1,1-Dichloroethylene	**25**	1,2-Dichloroethylene (Trans-)	**1,700**
1,1,1-Trichloroethane	**280**	Tetrachloroethylene (PCE)	**32**
1,2-Dichlorobenzene	170	Trichloroethylene (TCE)	**29**
1,2-Dichloroethane	**700**	Toluene	140
1,4-Dichlorobenzene	**140**	Xylenes	1,900
1,2-Dichloropropane	**20**	Naphthalene	**10,000**
Benzene	**95**	Cyanide	7

* Data in shaded /**Bold** exceed statewide standards for protected ground water

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The primary public health concern is for exposure to contaminated drinking water**

The site is located on the south side of Hampton, Iowa. Four residences located near the site had water supply wells in a shallow aquifer. Because these wells were threatened with contamination by chromium in the shallow groundwater they have been connected to the Hampton municipal water system. The city of Hampton has four water supply wells. Three of the wells are 55 feet deep or less and draw water from the same aquifer. They are located from 1.6 to 2.1 miles southwest of the site. The fourth well is 1,763 feet deep and draws water from the Jordan aquifer. The deep well is located 0.6 miles from of the site. None of the Municipal wells appear to be threatened by the contamination from the site.

STATUS OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The state is the lead agency at the site.

The quantity of hazardous waste released from this site is undetermined. The site's owner began conducting investigations of potential soil and groundwater contamination in 1987. A combination of monitoring wells and soil borings revealed an area of chromium contamination in the groundwater at the southeast corner of the facility and an area of hydrocarbon contamination at other locations near the main building.

Further investigations in 1988 and 1989 found the chromium contamination in the shallow groundwater extends at least 1300 feet east-southeast of the site. Another investigation was conducted in 1991 in conjunction with the development of a remedial action plan. A total of 34 monitoring wells have been installed and sampled during these investigations. The maximum groundwater contamination levels for chromium and volatile organic compounds (VOCs) appear in Table 1.

1992 Remedial Actions

Numerous permanent and temporary wells or borings were used to continue the investigation of the nature and extent of chromium and VOC contamination. This activity includes attempting to identify the means of horizontal dispersion, specifically the role of sand layers or lenses in contaminant transport. This activity was also focused on attempting to identify the vertical extent of contamination. In addition, work was begun on the initial phases of the groundwater extraction system to remove chromium contaminated groundwater southeast of the plant. Test trenches are being installed to determine hydrologic properties that in turn will be used to design and install the full-scale interception (extraction) system.

1993 Remedial Actions

Investigation phases related to defining the extent of contamination are essentially complete and a long-term monitoring plan is in place. Further evaluation of the existing test trenches, coupled with additional monitoring results, have resulted in proposed alterations to the trench recovery

system for the chrome plume. The implementation of the system has been delayed by the extremely wet conditions prevalent in 1993.

1994 & 1995 Remedial Actions

Monitoring of existing wells continued as per agreement. The department approved a pilot study to evaluate the possibility of using in situ biological treatment to reduce chromium in the groundwater from the hexavalent to the trivalent state. The pilot study is underway.

1996 Remedial Actions

The evaluation of the pilot biological treatment for the reduction of chrome VI to chrome III was completed and determined to be ineffective. The operation of the interception system for the chromium plume continues. A sump was installed on the west end of the building for the removal of floating hydrocarbon product on the water table.

1998/1999 Remedial Actions

Efforts were undertaken to clarify the activities required at the site, in order to ease the transfer of ownership of the site. Monitoring will continue per earlier agreements and no change is proposed for recovering the limited amount of floating organic contamination west of the plant. The interceptor trench was "closed down" in 1999, as it seems to have little impact on constituent migration.

Through 1998, remedial actions were aimed at interception of chromium contaminated groundwater, and the removal of free product organic contaminants. An environmental easement was placed on the plant property and the area of chromium contamination to the southeast, which will prevent well installations in both areas and control some activity / uses in the immediate vicinity of the plant. The purpose of the easements is to prevent exposure of persons to levels of contamination deemed unsafe.

2006 to 2013 Groundwater Monitoring

Annual ground water monitoring through June 2006 for total volatile organic compounds (TVOC) and chromium indicated generally declining concentration trends; however, chromium concentrations in MW-7A started to increase in the 2007 sampling event. In 2008, the groundwater monitoring program was reduced by limiting the groundwater analysis to chromium and collecting samples from 13 monitoring wells and two private wells. In 2012, the Hemmen well was dropped from the sampling protocol as the well pump becoming nonoperational and Mr. Hemmen has no plans on replacing the pump. Chromium concentrations in MW-7A continued to increase to the all time high in June of 2013.

2013: Golden Triangle sold the site to Tower, LLC in November 2013. Tower, LLC will continue to use the property for storage and office rental. The sale was approved by the DNR on November 26, 2013.

2014: Chromium contamination in groundwater decreased in the 2014 sampling, reversing a trend for the past several years. 2015 sampling continued the decreasing trend however chromium concentrations increased. Because of the chromium increase in 14A, monitoring

wells MW-20A and MW-22A, downgradient from MW-14A, are to be included for the 2016 sampling event.

2015: The Annual Monitoring report was received and approved by DNR.

2016: The Annual Groundwater Monitoring Report was received September 30.

2017: Long term monitoring results show no real decreasing trend in the chromium in the groundwater plume. United Hydraulics will be required to develop a more aggressive remedial plan in 2018.

2018: The current remedy of 'monitoring natural attenuation' was declared a failure because the long-term monitoring was not showing any chromium VI reduction in the groundwater. A new remedial action work plan will need to be submitted for review by February 2019.

2019: Prior to submitting the remedial action work plan United Hydraulics completed additional site assessment activities to more clearly define the chromium contaminated source area. The site assessment report was approved in October 2019. The remedial action plan is expected in early 2020.

2020: Due to COVID 19 issues the remedial actions have been scheduled for 2021. Ongoing groundwater sampling shows the chromium plume stable confirming the need for additional source area remediation.

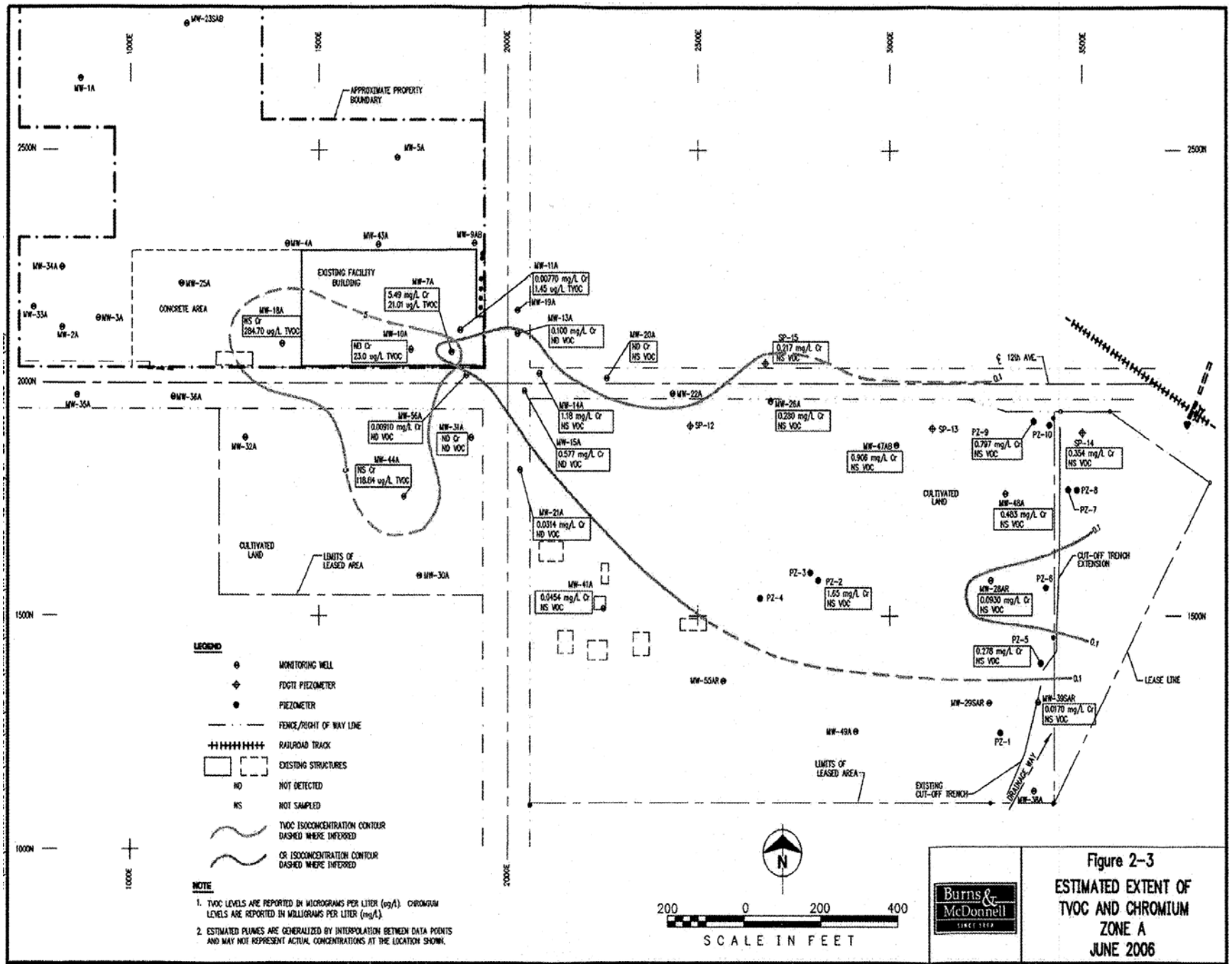
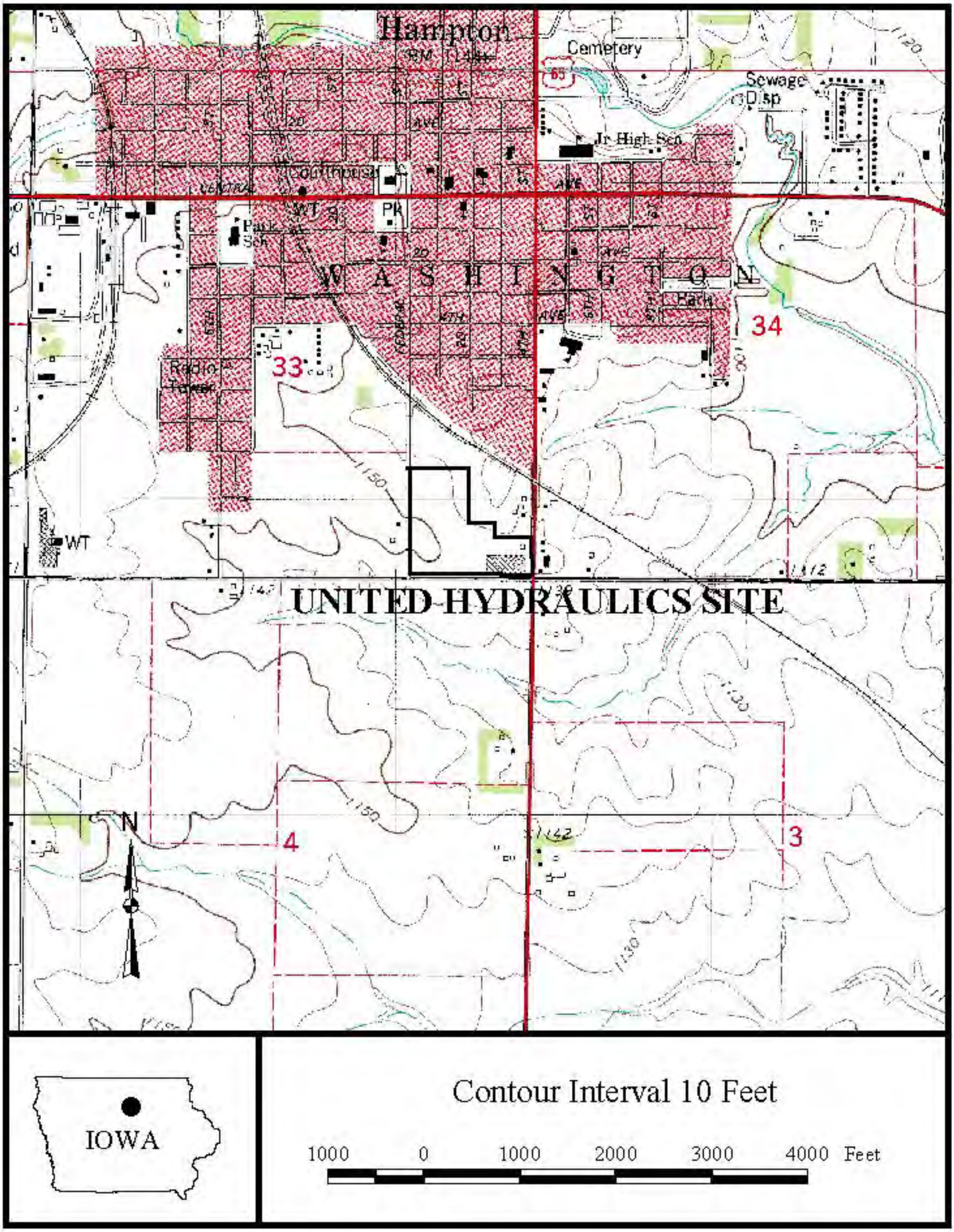


Figure 2-3
ESTIMATED EXTENT OF TVOC AND CHROMIUM ZONE A
JUNE 2006

(United Hydraulics)



UNITED STATES OF AMERICA (*IAAAP*)

(Middletown, Iowa)

GENERAL DESCRIPTION

The Iowa Army Ammunition Plant (IAAAP) is owned by the United States Army and operated by a private contractor. The 19,127-acre secured facility (30 square miles) is in a rural setting. The facility is located in Sections 34, 35, 36, T70N, R4W; Sections 31, 32, 33, 34, T70N, R3W; Sections 1, 2, 3, 10, 11, 12, 13, 14, 15, 23, 24, T69N, R4W; Sections 3, 4, 5, 6, 7, 8, 9, 10, 15, 16, 17, 18, 19, 20, 21, 22, T69N, R3W, in Des Moines County, Iowa. The IAAAP was included on the National Priority List (NPL) in August 1990.

Production of war supplies for World War II began in September 1941 and ended in August 1945. Production of munitions was resumed in 1949 and has continued to the present. From 1947 to 1973, the former Atomic Energy Commission operated facilities at the site, which reverted to Army control in 1973. Line 8 was used from 1946 until 1950 to produce nitrogen fertilizer in support of the Marshall Plan.

Only a few of the IAAAP production lines are currently operating to load, assemble, and pack (LAP) various ammunition items. These include projectiles, mortar rounds, warheads, demolition charges, anti-tank mines, anti-personnel mines, and the components of these munitions such as primers, detonators, fuses, and boosters. The LAP operations use explosive material and lead-based initiating compounds.

Registry Sites: Three areas within the army facility were listed on the Registry. The names and locations of each of the four sites on the Registry are generally described as follows:

- **Pink Water Lagoon (Line 800)**: It is located in the S ½ of Section 8, T69N, R3W, Des Moines County, Iowa.
- **RDX Brush Creek Site (Former Line #1 Impoundment)**: It is located in the N ½ of Section 5, T69N, R3W, Des Moines County, Iowa and is on the Brush Creek channel.
- **Herbicide/Pesticide Pit**: It was located in the SW ¼ of Section 8, T69N, R3W, Des Moines County, Iowa.

SITE CLASSIFICATION

Classifications assigned for the three individual operable units or OU's:

Pink Water Lagoon: It is classified **"d"** in accordance with 455B.427.3. The site is properly closed, but requires continued groundwater monitoring.

RDX Brush Creek Site: It is classified **"b"** in accordance with 455B.427.3. The contamination of surface water and groundwater poses a significant threat to the environment. Further action is required.

Herbicide/Pesticide Pit: It is classified **"d"** in accordance with 455B.427.3. The site is properly closed, but requires continued groundwater monitoring.

TYPE AND QUANITY OF HAZARDOUS WASTE

The IAAAP facility has many areas with soil, surface water, or groundwater contamination. Most of these areas were not identified or evaluated by investigation activities until 1991. The site was used by IAAAP as a landfill from 1941 until 1991. The landfill consists of six trenches, which were used for the disposal of approximately 3,000 tons of sanitary waste a year. From November 1980 to October 1983, a portion of Trench 5 also received ash from open burning explosives and waste from a "contaminated" waste processor and from an explosive waste incinerator. This cell was capped and closed in accordance with RCRA guidelines in 1988. This area also included a sludge drying bed

and a clay lined holding area (Blue Sludge Lagoon) formerly used to store sludge generated from metal cleaning operations. This blue sludge (600 cubic yards) was removed from the drying bed and placed in Trench 6 in 1997.

The contaminants of concern include TNT, lead azide, barium nitrate, fulminate of mercury, PBX, RDX, and antimony sulfate, explosives and metal wastes associated with past and current munition production. In addition, the contaminants of concern include PCBs, radionuclides, and pesticides that are associated with other base activities.

HEALTH AND ENVIRONMENTAL IMPACTS

There are several recreation areas both on-site and in the immediate area surrounding the site. Mathes Lake (also called Long Lake) is on the south central part of the site. The lake had small Boy Scouts of America campsite and was used by local fisherman. The Skunk River runs along the southwest side of the site. The river has two boat access areas and a small park located along its banks.

The IAAAP facility has 43 on-site residences used by contract employees and their families. Middletown, Iowa is on the northwest side of the facility. Augusta is an unincorporated town on the south side of the facility with a population of approximately 50. West Burlington, Iowa and Burlington, Iowa are east of the site.

The draft RI report includes an assessment of the threats to human health and the environment posed by the various areas of soil, surface water, and groundwater contamination at site. Exposure to RDX and 2,4,6-T contributed most of the estimated risk to off-site residents and on-site workers. This includes the estimated risks from both the carcinogenic and non-carcinogenic effects of these chemicals.

Contamination was most widespread at six of the 30 sites. These sites were four of the production lines (Line 1, Line 2, Line 3 & Line 3A), the explosive disposal area and the fire training pit. RDX was the most common groundwater contaminant, with the highest value of 1,600 ug/L from a monitoring well at Line 2. Chlorinated solvent compounds and other volatile organic compounds (VOCs) were found in the groundwater at the fire training pit. These VOCs included 1,1-dichloroethene (3,040 ug/L), 1,1,1-trichloroethane (5,000 ug/L), toluene (15,800 ug/L), and benzene 520 ug/L).

- **Surface Water**

Surface water samples taken from Brush Creek have shown RDX contamination as high as 82 ug/L. An RDX value of 29 ug/L was found in Brush Creek at the southern border of the plant. A groundwater sample near the site had RDX contamination at 330 ug/L. A well at the plant's southern border showed an RDX contamination level of 41 ug/L. The plant has an NPDES permit for discharging RDX from several outfalls into Brush Creek. Therefore, some of the RDX in the creek may come from the permitted outfalls.

- **Ground Water**

Contamination of off-site private wells on the south side of the facility has recently been documented and has occurred previously. Five private wells were contaminated with TNT. Activated carbon filters were installed on these wells and maintained by the plant until 1973 when the installation of the industrial wastewater treatment equipment decreased TNT concentrations in Brush Creek. Sampling in 1992 and 1993 at 53 residences showed RDX contamination above the HAL in three wells in the Brush Creek watershed and two wells near the town of Augusta. The highest RDX contamination level was 27.5 ug/L.

The Department of Public Health performed a health survey for a family who lives down gradient of the plant. The family had experienced many illnesses and was concerned the plant had affected their drinking water. The Department of Public Health concluded the plant did not cause the illnesses of the family, but they will continue to observe and periodically re-evaluate the situation.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA is the lead agency for the IAAAP facility, including the four sites on the Registry. The first comprehensive facility-wide investigation, (Site Investigation) was completed in 1991. In addition to the evaluation of new information, the SI incorporated findings and recommendations from previous studies.

A Remedial Investigation/Feasibility Study (RI/FS) was initiated in July 1992 for 30 of 43 identified solid waste management units at the IAAAP facility. The draft Remedial Investigation (RI) report was submitted for review in October 1993. Additional field work for the RI was planned for April through June 1995. A draft Revised RI report was submitted for review in November 1995. A draft Final Revised RI report was submitted for review in May 1996.

The sites at IAAAP have been divided into Operable Units.

Operable Unit #1: The Soil OU#1addresses contamination in soils. The Remedial Investigation for the Soils OU is complete. The Final FS report was submitted in November 1997. EPA signed the Record of Decision (ROD) for Operable Unit #1 on September 29, 1998. The selected remedy includes:

1. Remove soils from the CAMU (Trench 7).
2. Transport SVOC-contaminated soils to an off-site treatment/disposal facility.
3. Transport explosives-contaminated and explosives plus metals contaminated soils to a temporary on-site treatment facility.
4. Process the explosive contaminated soils through a low temperature thermal desorption unit or a temporary Biological Treatment unit.
5. Process the explosives plus metals contaminated soils through a solidification/stabilization unit.
6. Dispose of the treated soils in the Soil Repository (Trench 6), under another synthetic landfill cap, or elsewhere on-site as appropriate.

Operable Unit #2: In 1994, the Army proposed more immediate removal actions for several of the contaminated areas at the facility. Nine removal actions have been started or completed by the end of 1998. This included removal actions for all the registry sites, which began in 1995 at the herbicide pit and in 1996 at the other three sites. Removal actions were completed at two other non-registry sites prior to the ROD. EPA signed the Record of Decision (ROD) for Operable Unit #2 on March 4, 1998. The selected interim remedy includes:

1. Excavation of contaminated soils from 15 remediation areas and restoration of the excavated areas. Removal actions were completed at three of these areas in 1998.
2. Segregation of excavated soils according to contaminant type and concentration.
3. Temporary storage of the most highly contaminated soils in the on-site CAMU (Trench 7).
4. Permanent disposal of soils contaminated at lesser levels in the on-site Soil Repository (Trench 6) or in the on-site Inert Landfill.
5. Permanent disposal of metals-contaminated soils that require Solidification/stabilization in Trench 6.

Operable Unit #3: The Groundwater OU#3 addresses contamination of groundwater within the IAAAP boundaries and potentially off-site. The Final Supplemental Groundwater RI was submitted in December 199. EPA has requested additional data to complete the RI/FS.

As an interim measure, the Army is providing bottled water to off-site residences with contaminated well water. The Army has offered to pay to connect the residents on the south side of the facility to the public water supply currently being constructed in the area.

Operable Unit #4: The Installation-Wide OU#4 addresses other unacceptable risks not addressed in OU#1 or OU#3. EPA has requested additional data to complete the RI/FS.

Registry Site Removal Actions:

Removal actions that have been conducted at the four registry sites include.

> **Installation Landfill (Inert Landfill)**: The removal action at the landfill was initiated in March 1996 will continue for several years. The remaining open part of Trench 6 was reconstructed in 1996 as a RCRA disposal cell. Approximately 38,000 cubic yards of material have been disposed in Trench 6 through 1998. A temporary stockpile (Trench 7) was constructed in 1996 just west of the Trench 6. Soils treated to reduce toxicity and disposed on-site after the interim soil removal activities are completed at the site. Approximately

8,000 cubic yards of material have been placed in Trench 7 through 1998. The used part of landfill (including the previously capped part of Trench 5) was capped in 1997 according to the requirements of RCRA. The random fill used to complete the surface included approximately 62,000 cubic yards of lightly contaminated soil and sediment excavated from the Line 800 Lagoon and former Line 1 Impoundment. This landfill cover includes geosynthetic layers together with a clay cap.

Pink Water Lagoon: The Line 800 Pink water Lagoon was an unlined five-acre impoundment, four feet deep, and surrounded by an earthen berm. A leaching field and evaporation furrows were originally constructed in 1943 and received wastes until 1955. In 1960, the leaching field was converted to a lagoon by construction of the berm. This site received explosive-contaminated wastewater from Line 800 and sludge from other IAAAP operations until 1970. The red/pink wastewater from TNT operations is listed as K047. About 4.1 million gallons of water were contained in the five-acre lagoon prior to the removal action. An RI/FS was conducted at this site in 1989, but some additional investigation and assessment were required as part of the ongoing RI/FS. After dewatering the lagoon, approximately 74,730 cubic yards of contaminated soil were excavated from March to December 1997. Approximately 6,800 CY were placed in Trench 7 for further treatment. Trench 6 received 12,130 CY and the remaining 55,800 CY were used as random fill in the landfill. After the soil excavation the lagoon was developed as a wetland.

In 1998 a berm was constructed to separate the southwestern end from the main lagoon. The southwestern end was segregated from the main lagoon because hot spots of explosives were detected in both surface water and soil in this area. In 1999, RDX levels in the main part of the lagoon varied from 30 ug/l in the winter to 2 ug/l in the summer.

During the installation of monitoring wells downstream from lagoon, high levels of TNT were discovered in soil at depth at the location of former settling basin. Assessment of the extent of deep soil contamination in four downstream settling basins in October 1999. An estimated 1,000 CY will need to be excavated and taken for treatment in Trench 7 of the IDA.

RDX Brush Creek Site (Line 1 Impoundment): Line 1 generated the greatest volume of explosive waste and pink water at IAAAP from 1948 through 1975. The impoundment was created by the construction of an earthen dam across Brush Creek in 1948. The impoundment extended from 1,300 to 2,400 feet upstream, depending on flow conditions. Explosive-contaminated water (K047) was routed to the containment area. Explosive material was settled out in the containment area. Fly ash and activated carbon were added to the effluent from the containment area to treat the remaining explosive material. In 1957 a treatment system was installed and the use of the impoundment was eliminated. The embankment was breached in 1975.

An RI/FS was conducted at this site in 1989, but some additional investigation and assessment were required as part of the ongoing RI/FS. Approximately 8,270 cubic yards of contaminated soil were excavated in February and March 1997. Approximately 620 CY were placed in Trench 7 for further treatment. Trench 6 received 1,230 CY and the remaining 6,420 CY were used as random fill in the landfill. After the soil excavation the area was developed as a wetland. Baseline monitoring of sediment, plant tissues, and water was conducted in October 1998.

Sedimentation ponds are though to have existed above the Line I Impoundment**.** Further investigation in October 1999 to determine the location and extent of soil contamination in these areas.

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Herbicide/Pesticide Pit: This site was constructed in 1968 by excavating a small six-by-six foot pit. Heavy polyethylene was used to line the three-foot deep pit. The pit was filled with coarse limestone and had an overhead rain shelter. The disposal of pesticides was discontinued in 1974 and the rain shelter was removed in 1976. A complete removal action was completed in the spring of 1995. Approximately 150 cubic yards of pesticide-contaminated soil were excavated in 1995 and transported to an off-site incinerator for proper disposal.

In 2000, the Department of Energy (DOE) and the Army conducted supplemental investigation concerning the potential release of radioactive compounds during operations by the Atomic Energy Commission.

2002: Department of Energy (DOE) and the Army performed a radiological fly-over of the entire 30 square miles using a helicopter equipped with gamma radiation detectors. Results will be published in June 2003.

2003: Received Supplemental Remedial Investigation Plan for the Incendiary Disposal Area, Fly Ash Waste Pile, Possible Demolition Area, and Line 3A Pond. Received the results for the Aerial Radiological Survey and they indicated no other areas of radiation contamination other than the coal pile and the depleted uranium storage area. Formerly Utilized Sites Remedial Action Program (FUSRAP) funding began for the Department of Energy (DoE) sites formerly known as the Atomic Energy Commission. The DoE has delegated the Army Corps of Engineers as the federal agency to administer the FUSRAP program. A new federal facility agreement will be negotiated to cover this new funding source. The Off-Site Feasibility Study was submitted. The Baseline Ecological Risk Assessment was submitted.

In 2004 the Iowa Army Ammunition Plant awarded Tetra Tech Inc. with a performance-based contract to complete the Superfund assessment and remedial efforts until the site is removed from the National Priorities List.

The process sites within the Iowa Army Ammunition Plant used by the Former Atomic Energy Commission have been removed from the responsibility of the U.S. Army and now are the responsibility of the U.S. Department of Energy. A new Superfund Federal Facility Agreement has been drafted for these specific sites and the Army Corps of Engineers have been tasked by the Department of Energy to assess and if needed remediate these specific locations.

2007: Soil remediation at the Pink Water Lagoon (Line 800), RDX Brush Creek Site (Former Line #1 Impoundment), and Herbicide/Pesticide Pit have been completed and groundwater monitoring results continue to show decreasing trends in the level of RDX. Both the Pink Water Lagoon and the Brush Creek operable units (OUs) will be soon be reclassified as a 'D Site'.

2009: Groundwater monitoring continues to indicate decreasing trends in the contaminated groundwater in and around the site.

2010: Groundwater monitoring continues to indicate decreasing trends in the contaminated groundwater in and around the site. The Brush Creek groundwater and surface water RDX/TNT contamination investigation is just getting started.

2012: Formerly Utilized Sites Remedial Action Program (FUSRAP) finalized the Proposed Plan and Feasibility Study for the areas of IAAAP used by former Atomic Energy Commission (AEC). The draft Remedial Design/Remedial Action plan was submitted in September 2012 for the remediation of the depleted uranium contaminated soil and structures at the IAAAP. FUSRAP also continues to removes soil contaminated with the explosives RDX and TNT at the process buildings used by the former AEC (now the U.S. Department of Energy).

Military Munitions Response Program (MMRP) finalized the Engineering/Cost Analysis plan for the closed military ranges within the boundaries of the IAAAP. The draft Proposed Plan was submitted in November of 2012 describing possible remedial actions to clean up unexploded ordnance and fragments found at the IAAAP.

Installation Restoration (IR) completed the cap at the inert disposal area (IDA) which was used for the disposal of soil contaminated with low levels of explosive (Sub Title D waste only). The Army chose a more protective Sub Title C cap for the landfill. Now that the majority of the explosive contaminated soil has been removed the Army is now submitting plans to find the extent of the contaminated groundwater plume.

2013: Land use control negotiations continue for the off-site groundwater plume. IAAAP is pursuing rule making as the mechanism to prevent private wells from being placed in the area impacted with the explosive RDX.

2014: Groundwater monitoring continues for the three sites in the Registry, the Pink Water Lagoon, Line 1 Brush Creek Site, and the Herbicide/Pesticide Pit. The groundwater monitoring at the Herbicide/Pesticide Pit is post closure monitoring. The Pink Water Lagoon and Line 1 Brush Creek Site are currently in the feasibility study phase heading towards the groundwater remedial phase.

2015: No progress has been made for the three sites in the Registry, the Pink Water Lagoon, Line 1 Brush Creek Site, and the Herbicide/Pesticide Pit. Groundwater monitoring continues but the development of a groundwater assessment plan has been placed on hold because the 'performance based contract' with the lead consultant (Tetra Tech) expired and the temporary 'bridge' contract only allows maintenance of currant activities. The land use control development has stalled due to lack of IAAAP actions.

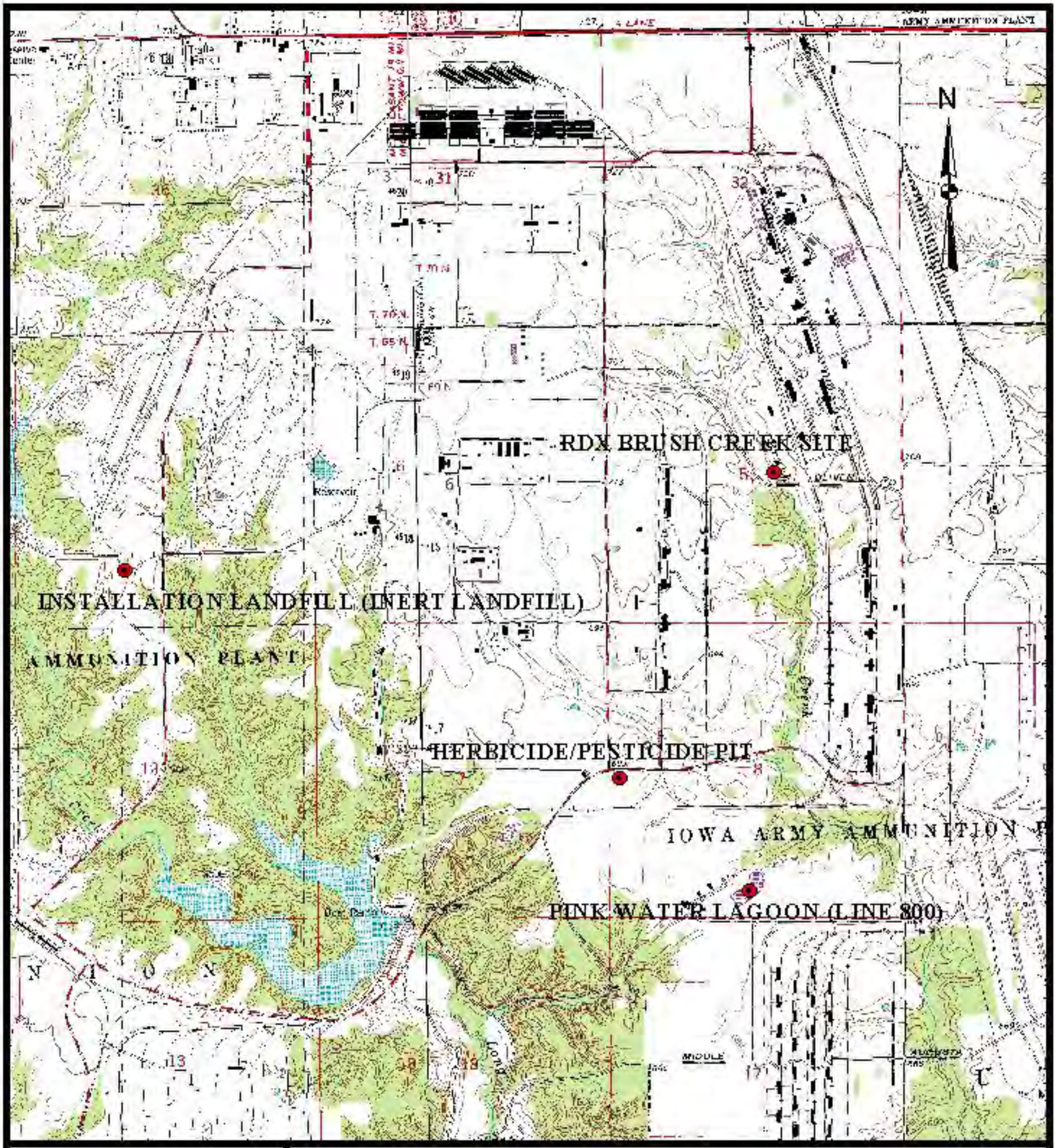
2016: No progress has been made for two of the three sites in the Registry, the Pink Water Lagoon and Line 1 Brush Creek Site. The Herbicide/Pesticide Pit is in post closure monitoring. CH2M Hill has been awarded the contract as the new lead consultant for IAAAP CERCLA actions and will be updating the work schedule for the Registry sites.

2017: No additional progress to report.

2018: The groundwater Remedial Investigation (RI) Quality Assurance Project Plan was finalized on February 20, 2018 for the Line 800 Pink Water Lagoon and Line 1. Additional monitoring well installation will be completed during the summer of 2019 to fill data gaps in order to complete RI. The final RI is due in 2020.

2020: No additional progress to report.

(United States of America - IAAP)



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VOGEL PAINT AND WAX COMPANY
(Orange City, Iowa)

GENERAL DESCRIPTION

The five-acre site is located in the W 1/2 of the NW 1/4 of Section 29, T94N, R45W, Sioux County, Iowa about two miles south and one mile west of Maurice, Iowa. The Vogel Paint and Wax Company is the owner of record. The site was placed on the Registry in 1984. The EPA placed the site on the National Priorities List (NPL) in June 1986. Disposal trenches (8-12 feet deep) were first operated in the area south of an abandoned gravel quarry in 1972.

SITE CLASSIFICATION

The site is classified as "d" in accordance with 455B.427.3. Active remedial measures have been completed and continued groundwater monitoring will be conducted to ensure that off-site migration of contaminants do not pose a significant threat to the environment.

TYPE AND QUANTITY OF HAZARDOUS WASTE

The Vogel plant in Orange City, Iowa used the site for disposal of paint sludge, resins, solvents and other solid wastes. These wastes contained zinc, lead, chromium, mercury, toluene, xylenes, naphtha, methyl ethyl ketone, and methyl isobutyl ketone. It is estimated 143,000 cubic feet of solid waste were disposed at the site, with 123,000 gallons being liquid waste. These wastes have leached from the disposal pits into the groundwater and have migrated from the disposal area. Waste liquids were poured into trenches from 55-gallon drums. Miscellaneous plant debris was used to top off the trenches. When the level of the waste approached the original ground surface, the trench was covered with one to two feet of cover.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The primary public health concern *was* the potential exposure to contaminated groundwater**

The site is adjacent to an unnamed tributary to the West Branch of the Floyd River. About two river miles downstream from the site is the well field for a rural water system. In November 1980 the Department of Public Health initiated a review of cancer incidents in the area. No statistically significant elevation of cancer incidence was found. In 1988 the Department of Public Health performed a Health Assessment of the site. They concluded there does not appear to be an immediate public health threat, but the site was a concern because of the possibility of off-site migration of contaminants in the groundwater.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The state is the lead agency for the site.

Remedial Investigation, Feasibility Study, (RI/FS) and Endangerment Assessment (EA) were completed in August 1989. The state and the EPA signed a Record of Decision (ROD) in September 1989 requiring remedial action including;

- On-site, aboveground bio-remediation of the contaminated soils from the original disposal area,

- Treatment of the contaminated groundwater by pumping, air stripping, and surface discharge, and

Remedial design activities began in November 1989 and construction began in September 1990. The soil remediation was begun in October 1991. Debris (mainly paint containers) was manually sorted from excavated material prior to placing the excavated soils in the soil treatment cells. Sorted containers were emptied prior to off-site disposal. About 65,000 cubic yards of contaminated soils were excavated, treated, and placed back into the

excavation. Soils containing elevated levels of metals were isolated, placed a minimum of five feet above the water table, stabilized with lime, and covered with a minimum of four feet of soil. The area of placement of soils with elevated levels of metals is not to be disturbed. Soil remediation was completed in 1998.

The groundwater remedial facilities were put into operation in early 1991 and operation was ceased in 2002. About 15,000 gallons of free product were removed in conjunction with the groundwater remediation.

In 2000 additional excavation was conducted of soils containing free product that had migrated off the original disposal area. The excavated soil was repositioned above the groundwater with venting pipe installed to facilitate soil vapor extraction and/or bioventing (i.e., enhanced natural bioremediation by increasing the subsurface air supply).

In 2002 studies were completed that evaluated methods for enhancing cleanup of the repositioned soils. It was concluded that natural processes were nearly as effective as processes involving introduction of forced air. Some manual free product recovery may continue.

In 2003, the IDNR entered into a Consent Order (CO) with Vogel, which called for discontinuation of active remediation and continued ground water monitoring. The CO called for reactivation of the remedial system if evidence of off site contamination was discovered. New monitoring wells required under the CO revealed off-site contaminant migration to the south. Therefore, the ground water remedial system was re-activated in August of 2003.

In 2004 a Superfund 5-year review was completed. The 5-year review concluded that the remedy at Vogel site was protective of human health and the environment because there was no exposure to site-related contaminants. However, a need for determining the potential for off-site migration of contamination, and controlling if necessary, was identified to ensure long-term protectiveness.

Operation of the ground water remedial system was again discontinued in 2005. Subsequent groundwater sampling has been conducted and will continue. In 2007 additional remedial measures were initiated in an attempt to reduce off-site migration of contamination in groundwater. Measures included pumping from 2 wells with the resulting water used for irrigation of poplar trees in the area of the 2000 excavation. In the summer of 2008 the irrigation area was expanded and pumping from an additional well was included.

In 2009 a third Superfund 5-year review was completed. The 5-year review concluded that the remedy at Vogel site was protective of human health and the environment in the short term because there was no exposure to site-related contaminants. Continued monitoring actions were recommended to confirm long-term protectiveness. No pumping has been conducted since the fall of 2010. Semi-Annual groundwater monitoring was begun in 2012.

In 2013 some southerly migration of the groundwater plume was observed. Additional sampling has been instituted to monitor this condition. No receptors are threatened. The fourth Superfund five-year review was initiated in December 2013 and is scheduled for completion in September 2014.

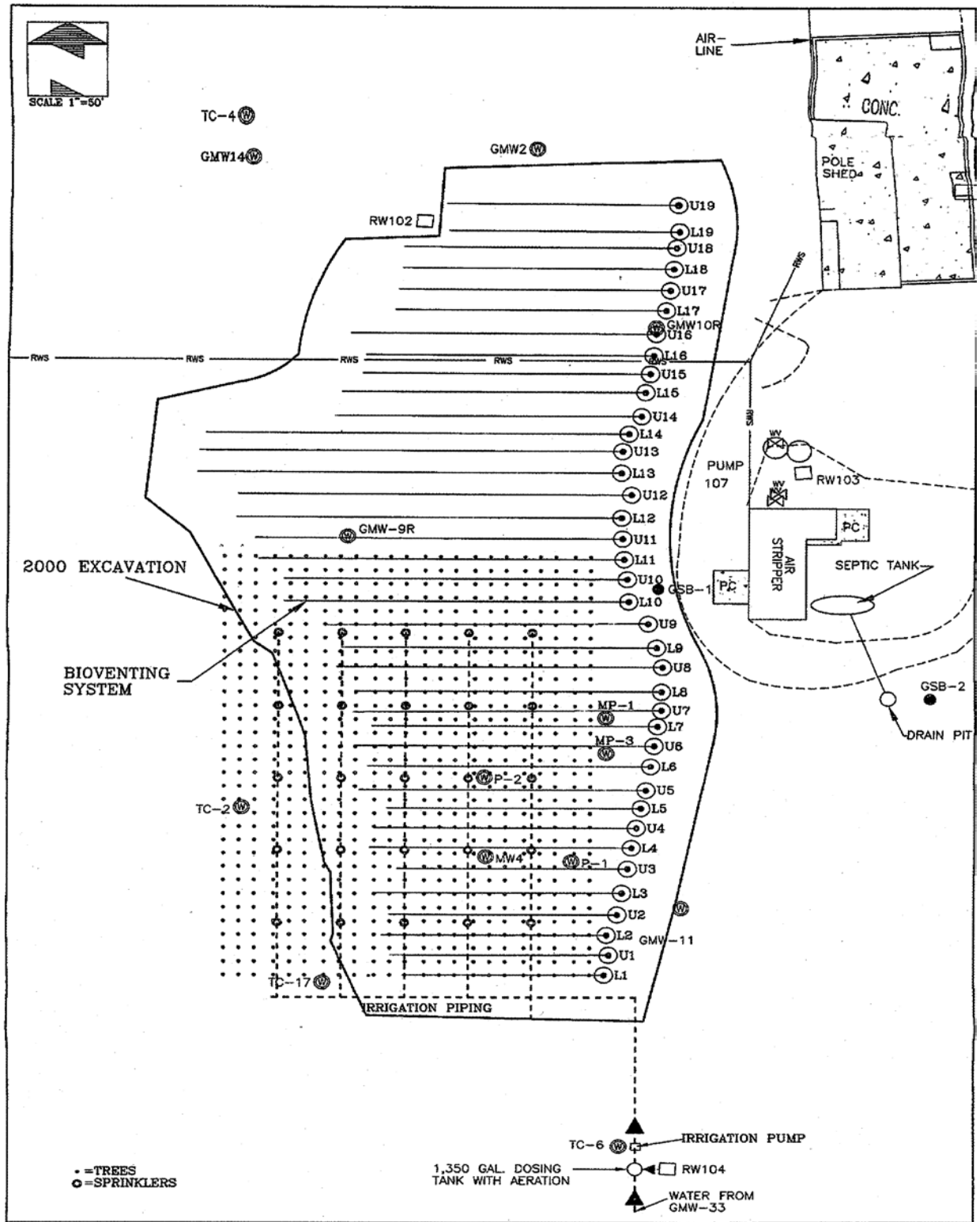
2014 The fourth Superfund five-year review was initiated in December 2013 and completed in September 2014. Comments included restarting remediation (discontinued in 2004). Discussion between IDNR and EPA ongoing.

2016; The DNR continues to be the lead oversight agency for the Vogel site with the EPA in the support agency role.

2018: The Semi-Annual report was submitted. This report provides the results of activities completed at the Vogel Paint & Wax Company site near Maurice, Iowa from January 2018 through July 10, 2018. Activities included continued groundwater recovery and treatment, the completion of groundwater sampling events for BTEX and metals, and field measurement of geochemical parameters.

2019: A Site-Wide Pilot Study has been initiated at the site. The pilot study will determine whether enhanced bioremediation will reduce the contaminant concentrations in the on-site source area. EPA completed the final version of the Fifth 5 Year Review (signed on Sept. 10, 2019. The Iowa DNR and Vogel both contest the content of the 5YR.

2020; First round of post-pilot GW results have been collected. After EPA completed the final version of the Fifth 5 Year Review (signed on Sept. 10, 2019). The Iowa DNR and Vogel both contest the content of the 5YR. EPA has been drafting a 5YR Memorandum to help define some of the issues in the 5YR.



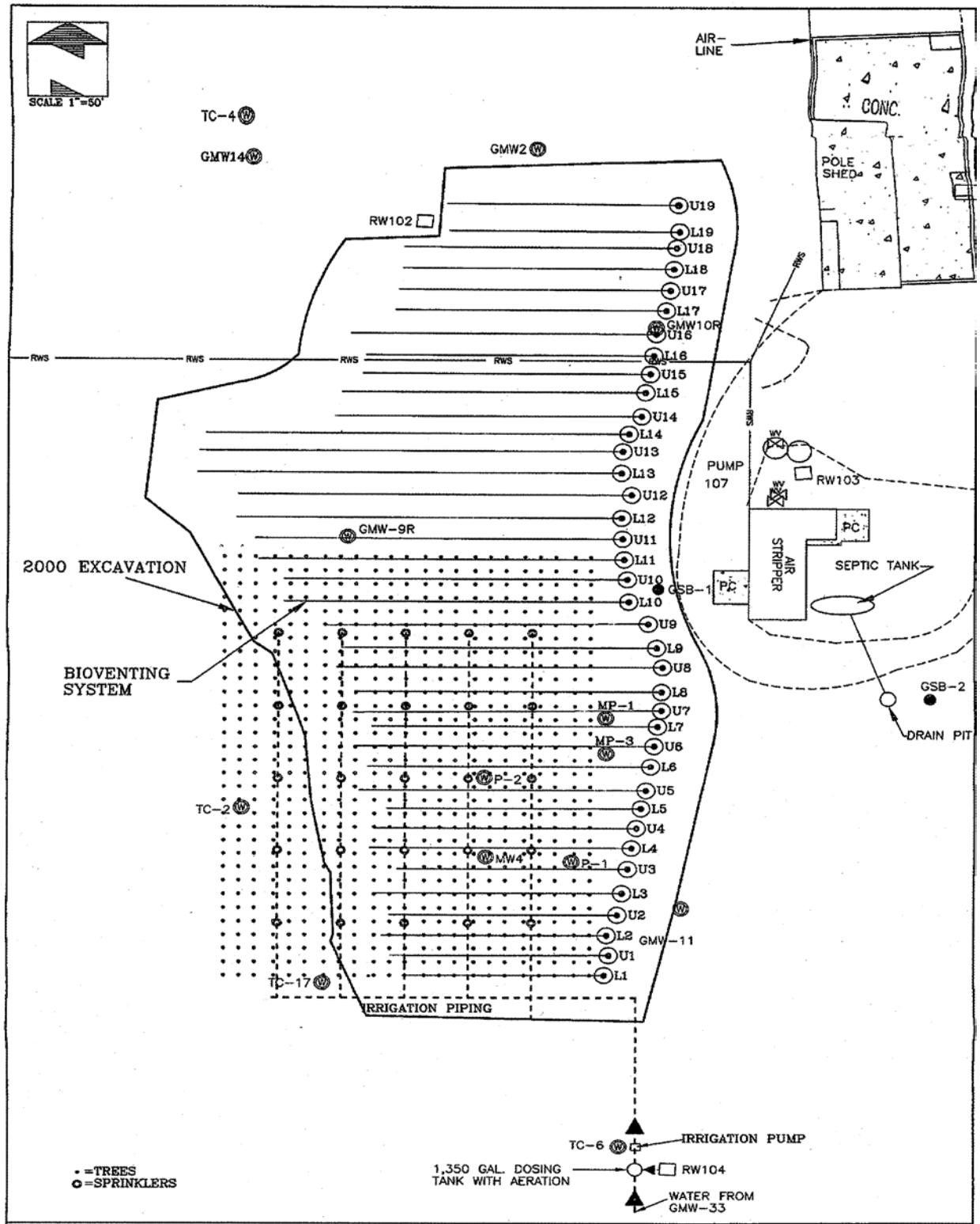
ORIGINAL DRAWING FURNISHED BY DGR & ASSOCIATES CO.

FIGURE 2
BIOVENTING PIPING LAYOUT
VOGEL PAINT WASTE SITE
MAURICE, IOWA

ACAD\GEOTEK\TOM\91-400-SITEREMD

PROJECT #: 91-400	DATE: 8/29/07
DRAWN BY: BWE	CHECKED BY:

GEOTEK ENGINEERING & TESTING SERVICES, INC.



ORIGINAL DRAWING FURNISHED BY DGR & ASSOCIATES CO.

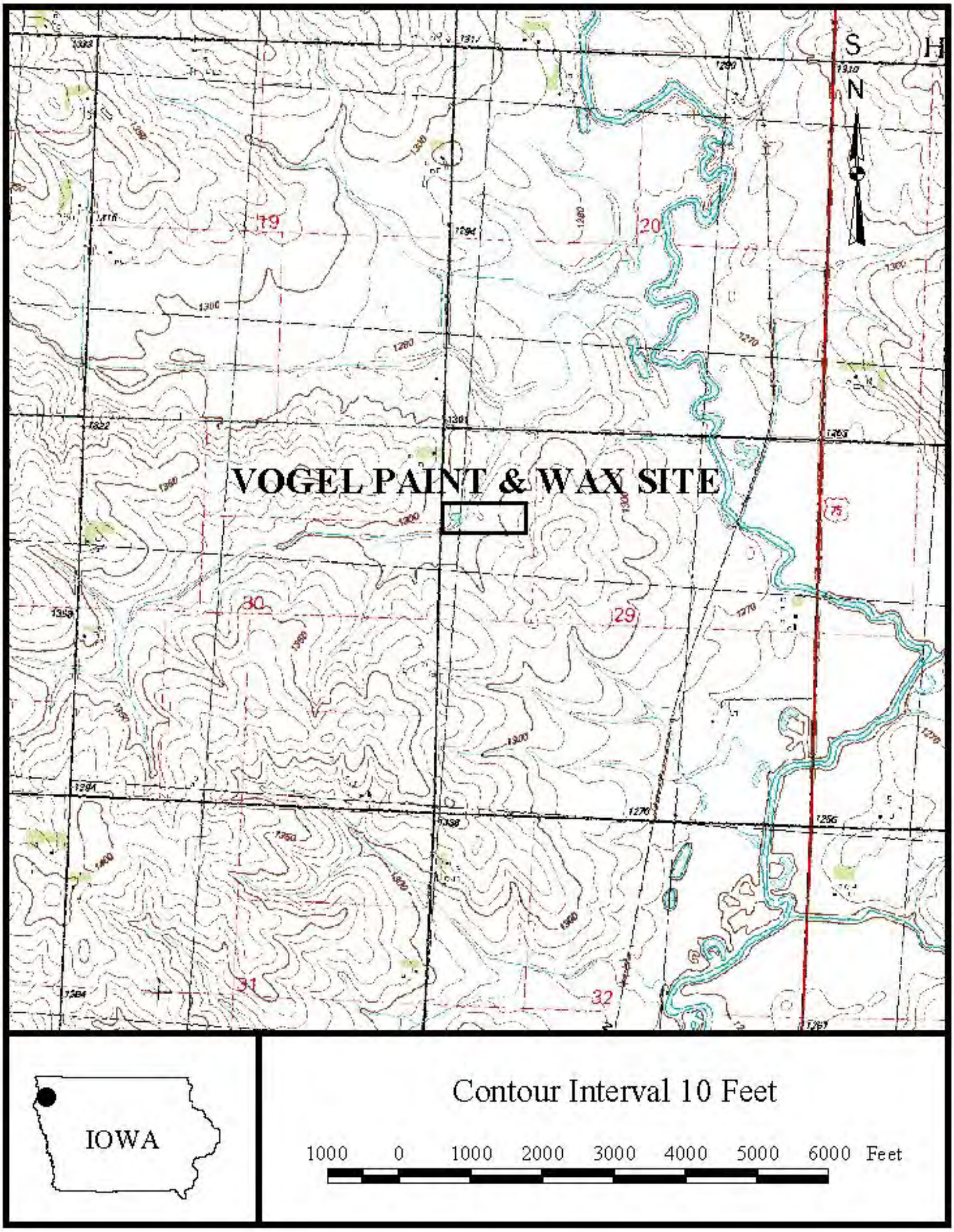
FIGURE 2
BIOVENTING PIPING LAYOUT
VOGEL PAINT WASTE SITE
MAURICE, IOWA

ACAD\GEOTEK\TOM\91-400-SITEREMD

PROJECT #: 91-400	DATE: 8/29/07
DRAWN BY: BWE	CHECKED BY:

GEOTEK ENGINEERING & TESTING SERVICES, INC.

(Voegl Paint & Wax Company)



WELLMAN/FANSTEEL CORPORATION
(Creston, Iowa)

GENERAL DESCRIPTION

The Wellman Dynamics (Fansteel) Corporation is a 15.3 acre site located in the SE 1/4 of the NE 1/4 of Section 7, T72N R 20W on the southeast side of the city of Creston in Union County, Iowa. The site was entered on the Registry of Hazardous Waste Sites in May 1992.

SITE CLASSIFICATION

In accordance with 455B.427.3 the site is classified "c" Not a significant threat to the Environment, Action May Be Deferred.

TYPE AND QUANTITY OF HAZARDOUS WASTE

Wellman Dynamics Corporation manufactures light metal castings for the aerospace industry using a non-ferrous foundry. A predecessor to Wellman Dynamics Corporation owned and operated the facility from 1965 until 1991. During these years of operation, waste acids consisting of a mixture of hydrofluoric, nitric, sulfuric and chromic acids were disposed of in a waste dump pit on-site. When disposal in the pit stopped in 1971, the pit was filled with sand and capped with concrete. It is not known if the pit was lined.

Wellman Dynamics also has an on-site landfill, which has been in operation since 1965. The landfill is located directly east of the plant. The landfill was permitted (88-SDP-04-86P) in 1986 for the disposal of foundry castings and sand wastes, machine cuttings and baghouse/dust collector waste generated at the facility.

SUMMARY OF HEALTH AND ENVIRONMENTAL CONCERNS

Radiological Waste:

According to the Radiological Bureau of the Iowa Department of Public Health (DPH) to Wellman Dynamics, the site leachate does not pose a significant radiological threat to the public health or environment. Authorization was given to discharge leachate to the city of Creston sewer system, subject to batch discharge monitoring for radiological level compliance. The IDPH required the submittal of a Site De-commissioning plan. The Plan was completed and accepted by IDPH in 2008

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

In 1986, Oak Ridge Associated Universities, under contract with the NRC, conducted a detailed evaluation of thorium waste disposal conditions at the Wellman site. Also, intensified management of off-site NRC waste disposal by Wellman Dynamics was mandated. Site soil and water quality testing showed the presence of low gamma and gross beta contamination, but not enough to require remediation.

After completing the 1986 investigation the NRC referred the site to the State of Iowa authority for regulatory control. Since then, the Iowa Department of Public Health (IDPH) has been the lead agency for the radioactive waste and the Solid Waste Section of IDNR is the lead agency for the landfill.

In August 1998, the IDPH required Wellman to conduct a comprehensive groundwater quality site sampling and testing program to determine if thorium is migrating beyond the landfill. The report (October 28, 1998) concluded concentrations of U-238 and TH-230 were present in perimeter monitoring wells but below regulatory limits and immediate further remedial action was not required. The DPH accepted the report conclusion, but further off-site investigation is pending.

Landfill Leachate Treatment:

1993: RCRA Facility Assessment completed by Metcalf and Eddy, Inc. on behalf of EPA.

In 1998, the IDNR required leachate within the landfill be removed and disposed in the municipal wastewater treatment works. The city of Creston requires leachate evaluation for radionuclides before discharge to the wastewater treatment facility under a treatment agreement. The leachate evaluation tests in February 1999 indicated the radionuclide levels were within allowable limits if the leachate is filtered on-site to remove solids before discharge to the sewer. A treatment agreement was signed in March 1999, which included limits on metals, BOD, sulfides, sulfate, fluoride and suspended solids levels.

In January 1999, the DPH advised Wellman that state regulations under IAC Chapter 641-40 require "decommissioning" of the NRC disposal site after July 1, 1999 to allow release of the site for an "unrestricted use" designation. A decommissioning plan was required for approval by DPH by July 1, 1999, which includes an evaluation of radionuclide levels off-site via water and soil pathways.

The IDNR required Wellman to complete a groundwater assessment in 1999 to determine the sources and extent of fluoride and sulfate contamination above MCLs at perimeter monitoring wells and the extent of off-site migration. The USEPA has assumed the lead for the groundwater (fluoride and sulfate) assessment. The scope of remediation will be determined when off-site ground water contamination is defined.

2006: EPA approval of the RCRA Facility Investigation Work Plan and an annual water quality report for the landfill was submitted to IDNR Solid Waste Section for approval.

- 2003: EPA acknowledges closure certification for the former WWT sludge container hazardous waste storage unit.
- 2004: RCRA Corrective Action Administrative Order on Consent issued by EPA became effective.
- 2006: EPA approval of the RCRA Facility Investigation Work Plan and an annual water quality report for the landfill was submitted to IDNR Solid Waste Section for approval.

- 2008: RCRA Facility Inspection conducted May 2008
- 2009: RCRA Facility Investigation Phase II Addendum submitted to EPA for review and approval.
- 2010: Semi-annual engineering and water quality reports submitted for landfill.

- 2011: The facility has been placed under a Corrective Action Order by EPA.
- 2011: EPA conducted RCRA compliance evaluation on site.
- 2012: (landfill permit #88-sdp-043-86p) renewed for three years (2015); included a provision to construct a lined waste disposal unit with leachate collection by July 1, 2014.

2014: Wellman ceased disposal at their permitted industrial waste landfill. All newly-generated nonhazardous industrial wastes are now transported to a permitted sanitary landfill (South Central Iowa Sanitary Landfill, Winterset, Iowa). They are exhuming approximately 11,000 tons of non-hazardous waste per year for transport to the sanitary landfill. It is expected that all non-hazardous wastes will be removed from the permitted industrial landfill by 2024. They are required to submit remaining landfill life estimates biennially, with the next one due in 2016.

2015: Fansteel is continuing to transport newly-generated foundry wastes, and approximately 11,000 tons per year of previously-landfilled wastes in the permitted landfill, to the South Central Iowa Sanitary Landfill, as described in the 2014 Registry. In 2015, Wellman Dynamics, USEPA, and DNR tentatively agreed to the scope of the off-site investigation described in the Addendum to the RCRA Facility Investigation Phase II Work Plan. The investigation commenced in 2016.

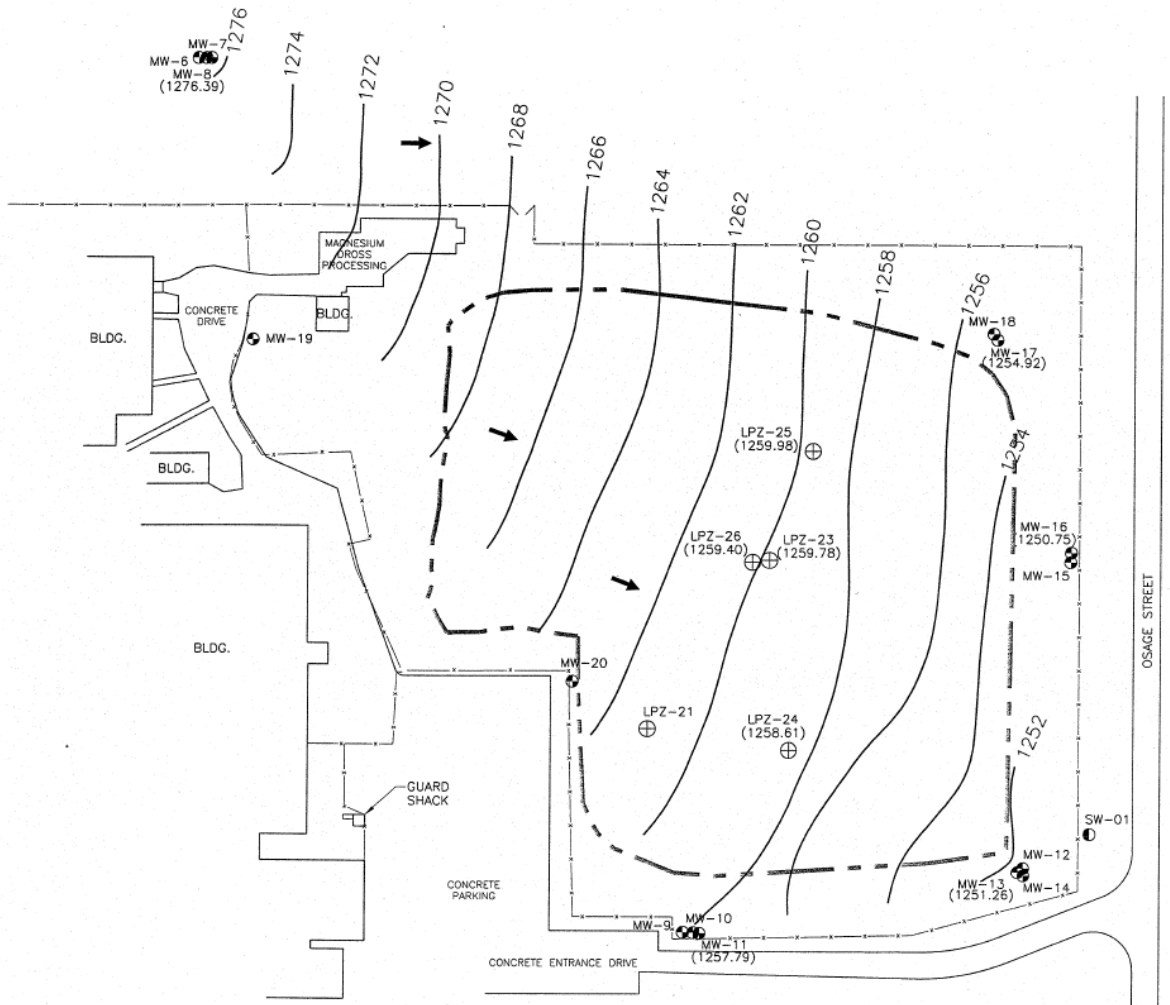
2017: As part of the bankruptcy agreement and the terms to be accepted by the new owner of the facility, The Iowa DNR executed an environmental covenant (EC) to prohibit, among the other things that EPA RVII-RCRA needs, the construction of water supply wells on the property and prohibition of residential land use.

2018: A settlement agreement determining environmental liability was completed and the facility was sold to new owner with approval of the Iowa DNR as required for sites listed on the Registry of Hazardous Waste Disposal Sites.

2019: The RCRA Facility Investigation report and risk assessment is near completion for the RCRA Subtitle C areas. A resurvey of the site is scheduled for 2020 to determine proposed final contours for the RCRA Subtitle D landfill. According to the most recent estimate performed in 2018, they are scheduled to reach final waste grades in 2021.

2020: The following actions were completed

The RCRA Facility Investigator is continuing and the onsite landfill is now expected to close in 2022.



LEGEND

SW-01	SURFACE WATER MONITORING POINT (APPROXIMATE LOCATION)
MW-16	MONITORING WELL
LPZ-21	LEACHATE PIEZOMETER
	APPROXIMATE LANDFILL BOUNDARY
	CHAIN LINK FENCE
(1277.23)	SHALLOW GROUNDWATER/LEACHATE ELEVATION, FEET ABOVE MEAN SEA LEVEL
—1276—	GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
→	GROUNDWATER FLOW DIRECTION

SCALE - FEET
0 100

NOTE

GROUNDWATER LEVELS WERE OBTAINED ON SEPTEMBER 20, 2006.

REFERENCE

TAKEN FROM GREEN ENVIRONMENTAL SERVICES, INC. "HYDROGEOLOGIC INVESTIGATION REPORT" JANUARY 25, 1993.

FIGURE 4
SHALLOW GROUNDWATER CONTOUR MAP
SEPTEMBER 2006
WELLMAN DYNAMICS CORPORATION
CRESTON, IOWA

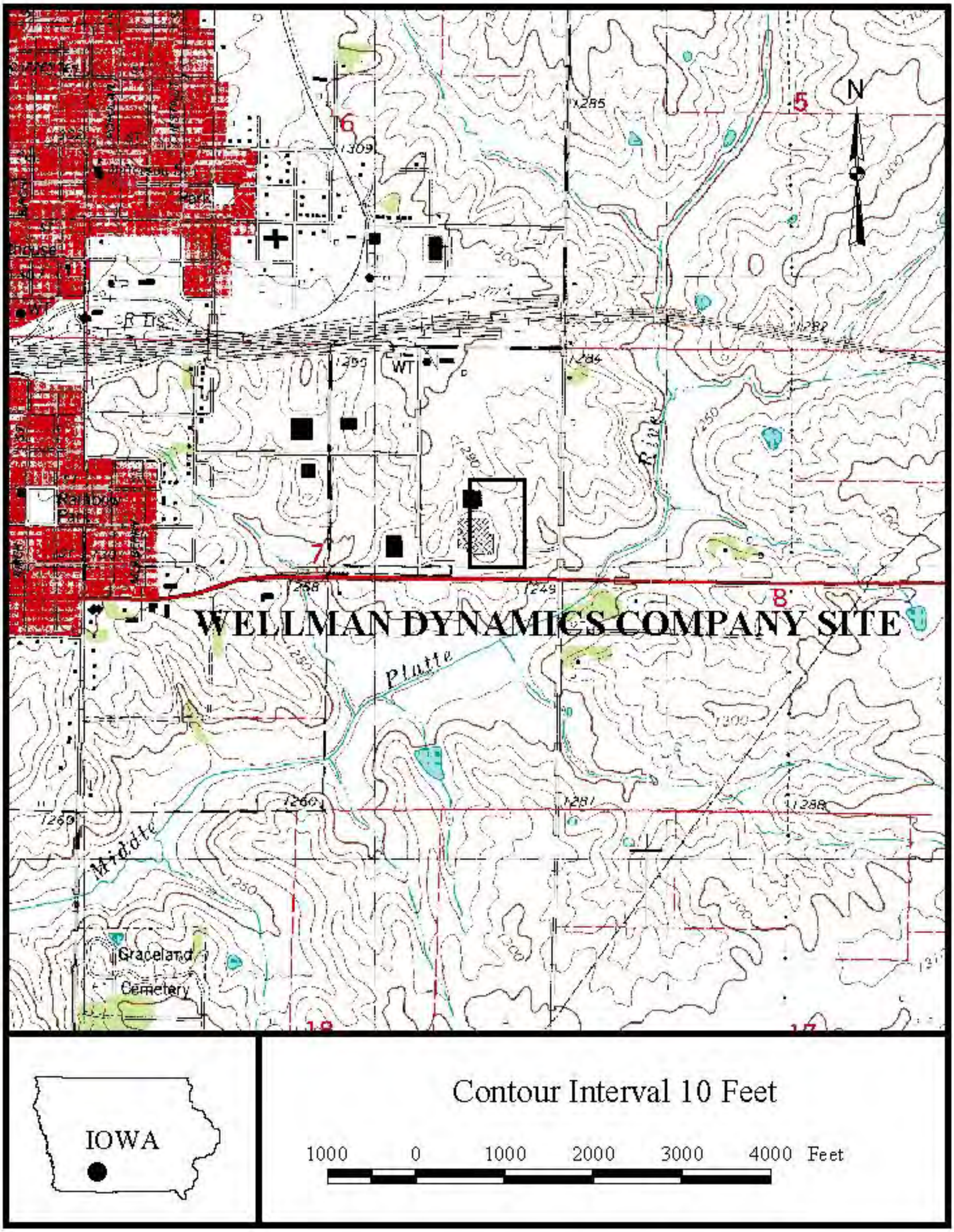
PREPARED FOR
WELLMAN DYNAMICS CORPORATION
CRESTON, IOWA

APPROVED	RFV 11/14/06
CHECKED	CMJ 11/14/06
DRAWN	DEB 11/14/06

DRAWING NUMBER
PA4275202

Penn E&R
Environmental & Remediation, Inc.

(Wellman Dynamics Company)



HAZ WASTE REMEDIAL FUND

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Hazardous Substance Remedial Fund

Fees payable to the fund did not begin to accrue until July 1985 and were not payable to the state until April 1986. Although the fund began to receive revenue in Fiscal Year 1986, there were no expenditures until Fiscal Year 1988. If you have any questions, please contact Angie Clark at 515-725-8301 or Angie.Clark@dnr.iowa.gov .

Hazardous Substance Remedial Fund Summary

This summary is a brief discussion of fund expenditures and non-hazardous substance fee revenues for the past five years.

- **2020 Hazardous Waste Remedial Fund -** Over the life of the fund, more than 60% of the total cumulative revenues of $13,114,896.96 have come from hazardous waste fees. Total cumulative program expenditures of the fund are $10,923,938.06. On July 1, 2019, the fund had a beginning balance of $419,066.25. On June 30, 2020, the fund had an ending balance of $394,943.31
- **2019 Hazardous Waste Remedial Fund -** Over the life of the fund, more than 62% of the total cumulative revenues of $12,475,791.50 have come from hazardous waste fees. Total cumulative program expenditures of the fund are $10,679,348.06. On July 1, 2018, the fund had a beginning balance of $429,872.00. On June 30, 2019, the fund had an ending balance of $419,066.25
- **2018 Hazardous Waste Remedial Fund -** Over the life of the fund, more than 63% of the total cumulative revenues of $11,840,231.51 have come from hazardous waste fees. Total cumulative program expenditures of the fund are $10,463,324.51. On July 1, 2017, the fund

had a beginning balance of $458,032.11. On June 30, 2018, the fund had an ending balance of $429,872.00

- **2017 Hazardous Waste Remedial Fund -** Over the life of the fund, more than 65% of the total cumulative revenues of $11,145,713.86 have come from hazardous waste fees. Total cumulative program expenditures of the fund are $10,198,678.83. On July 1, 2016, the fund had a beginning balance of $272,709.65. On June 30, 2017, the fund had an ending balance of $458,032.11
- **2016 Hazardous Waste Remedial Fund -** Over the life of the fund, more than 68% of the total cumulative revenues of $10,369,704.59 have come from hazardous waste fees. Total cumulative program expenditures of the fund are $9,880,701.64. On July 1, 2015, the fund had a beginning balance of $214,260.46. On June 30, 2016, the fund had an ending balance of $272,709.65

Hazardous Substance Fund Balance

The Hazardous Substance Fund Balance table shows the annual revenues, expenditures, and year-end balances for each fiscal year starting July 1 and ending June 30. The annual revenues and expenditures started in Fiscal Year 1986. The small and large quantity generator fee was not imposed until Fiscal Year 1989.

- Hazardous Substance Fund Balance From 7/1/85 to 6/30/20

Hazardous Substance Fee Revenues

The Hazardous Substance Fee Revenues table shows the revenue sources related to the collection of hazardous substance fees collected each fiscal year starting July 1 and ending June 30. The small and large quantity generator fee was not imposed until Fiscal Year 1989.

- Hazardous Substance Fee Revenues From 7/1/85 to 6/30/20

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To conserve and enhance our natural resources in cooperation with individuals and organizations to improve the quality of life in Iowa and ensure a legacy for future generations.

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Hazardous Waste Fund Balance

The Fund Balance table shows the annual revenues, expenditures, and year-end balances as well as total revenues and expenditures through June 30, 2020.

Fiscal Year	Revenues	Expenditures	Ending Balance
1986	251,845.05	0.00	251,845.05
1987	136,809.23	0.00	388.654.28
1988	111,510.93	433,227.74	66,937.47
1989	164,005.65	1,057.00	229,886.12
1990	147,365.93	121,474.37	255,777.68
1991	153,941.84	95,709.02	314,010.50
1992	1,118,807.72	556,959.62	875,858.60
1993	254,682.96	124,323.11	1,006,218.45
1994	235,525.73	68,807.24	1,172,936.94
1995	302,283.70	160,443.43	1,314,777.21
1996	263,724.09	215,166.97	1,363,334.33
1997	347,926.54	650,391.78	1,060,869.09
1998	385,350.91	613,344.19	832,875.81
1999	515,911.86	848,807.68	499,979.99
2000	406,405.44	557,939.67	348,445.76
2001	376,244.74	548,949.92	175,740.58
2002	478,333.41	516,596.72	137,477.27
2003	336,135.99	365,122.00	108,491.26
2004	379,231.05	311,965.00	175,757.31
2005	341,251.80	214,697.00	302,312.11
2006	497,044.95	302,809.29	496,547.77
2007	305,882.21	367,544.40	434,855.58
2008	303,509.06	459,650.55	278,744.12
2009	396,035.13	230,760.72	444,018.53
2010	373,574.50	366,932.00	450,661.03
2011	278,693.98	488,517.36	240,837.65
2012	233,627.21	429,829.00	44,635.86
2013	244,433.05	210,211.00	78,857.91
2014	250,953.93	255,689.00	74,122.84
2015	310,519.00	168,348.54	214,260.46
2016	468,136.97	195,427.32	272,709.65
2017	776,009.30	317,977.19	458,032.11
2018	694,559.99	264,645.68	429,872.00
2019	635,089.80	216,023.55	419,066.25
2020	639,533.31	244,590.00	394,943.31
TOTAL	**13,114,896.96**	**10,923,938.06**	**394,943.31**

Hazardous Waste Fee Revenues

The Hazardous Waste Fee Revenues table shows the revenue sources related to the collection of hazardous waste fees through June 30, 2020. The small and large quantity generator fee was not imposed until Fiscal Year 1989.

Fiscal Year	Late Fee Payment Penalties	Transportation Treatment & Disposal Fees	Small & Large Quantity Generator Fees	Total
1986	22,533.33	92,976.72	--	115,510.05
1987	9,395.21	120,472.68	--	129,867.89
1988	0.00	109,154.19	--	109,154.19
1989	0.00	114,955.65	24,050.00	139,005.65
1990	0.00	89,335.93	58,030.00	147,365.93
1991	0.00	75,501.68	62,902.00	138,403.68
1992	0.00	92,364.95	83,250.00	175,614.95
1993	0.00	138,807.64	89,115.00	227,922.64
1994	0.00	122,235.03	63,350.00	185,585.03
1995	0.00	144,808.44	97,050.00	241,858.44
1996	0.00	115,464.55	94,865.00	210,329.55
1997	559.03	137,566.12	101,546.40	239,671.55
1998	440.90	184,642.51	98,150.00	283,233.41
1999	499.67	214,231.88	94,710.00	309,441.55
2000	2,031.86	189,975.64	115,453.75	307,461.25
2001	4,353.97	200,377.41	79,497.50	284,228.88
2002	1,963.69	206,148.72	80,050.00	288,162.41
2003	813.08	182,000.22	75,200.00	258,013.30
2004	1,388.26	167,791.32	66,885.00	236,064.58
2005	590.11	193,341.50	57,550.00	251,481.61
2006	2,286.58	239,965.40	61,648.25	303,900.23
2007	1,448.93	228,374.76	54,435.55	284,259.24
2008	3,929.67	238,338.14	56,141.25	298,409.06
2009	1,775.83	219,626.88	56,613.75	278,016.46
2010	950.73	180,958.38	51,886.50	233,795.61
2011	938.81	162,641.49	42,400.00	205,980.30
2012	583.98	154,703.41	53,868.71	209,156.10
2013	1,496.23	154,304.45	61,267.07	217,067.75
2014	676.81	165,641.47	58,489.30	224,807.58
2015	697.25	203,032.46	60,708.71	264,438.42
2016	456.34	183,574.58	63,681.91	247,712.83
2017	831.40	187,994.66	60,077.31	248,903.37
2018	1,246.71	148,103.61	65,387.68	214,738.00
2019	2,596.23	134,657.63	59,897.57	197,151.43
2020	665.19	163,920.02	51,956.85	216,542.06
TOTAL	**65,149.80**	**5,657,990.12**	**2,200,115.06**	**7,923,254.98**