

Recommend Classification 'b'

CON 12-15
Doc #19719

1) The site has used for the disposal of from 200 - 450 lbs of mirex (chlordane or parathion). Other pesticides may have been disposed of at the site.

2) A well near the site has been closed because of contamination with atrazine and alachlor above their proposed MCL's. This well may be upgradient from the site during conditions of normal groundwater flow.

INFORMATION PACKAGE
RUTHVEN FARMERS CO-OP

GENERAL DESCRIPTION

REF: 92420040

LOCATION

The Ruthven Farmers Co-op site, also known as the Old Government Bin site is located 1/8 mile north of the town of Ruthven, in the SE 1/4 of the NE 1/4 of Section 18, T96N, R34W, Palo Alto County, Iowa. The site location is shown in Figure 1.

SITE DESCRIPTION

In 1976, 200 to 450 pounds of the pesticide Niran were buried in a disposal pit at the Ruthven Farmers Co-op (Carleton, 1986c). Niran is a trade name for a pesticide containing as its active ingredient either chlordane or parathion depending on the manufacturer (Carleton, 1986a). The Co-op manager was uncertain about the manufacturer (IDWAWM, 1986b). In addition to Niran, other substances may have also been buried at or near the site (Carleton, 1986c and E&E, 1989a).

The Ruthven Farmers Co-op includes a number of garages, storage buildings, grain elevators, and storage tanks (Figure 2). The burial site is located on the western edge of the Co-op facility and is now covered with gravel. Fences separate the Co-op facility from an empty pasture located to the west and south. A county garage and water well are located approximately 500 feet southeast of the burial area. An old city dump is located approximately 500 feet northwest of the burial area. Workers at the county garage report that the Co-op has buried materials in the old city dump in the past. This old dump site is presently a vacant field (E&E, 1989b).

CURRENT OWNER

The site is being sold by land contract to the Ruthven Cooperative Elevator Company (Ruthven Farmers Co-op) by Mr. Marvin Goff. The site property is described as follows:

That property commencing at a point 225 feet South and 200 feet East of the NE corner of the SE 1/4 of NE 1/4 of Section 18, Township 96 N, Range 34 W, Palo Alto County Iowa; thence west 700 feet; thence South 460 feet; thence East 425 feet; thence North 495 feet along the right-of-way line of primary Road No. 341 to the point of beginning.

(RUTHVEN FARMERS CO-OP)

GEOLOGIC AND HYDROGEOLOGIC SETTING**GEOLOGY**

The topography in western Palo Alto County is characterized by a complex of short uneven slopes with many small, indistinct drainage patterns and many landlocked depressions (USDA, 1977). The area of the site is relatively flat, with a slope of less than 3 % (E&E, 1989b). Surface soils in the immediate vicinity of the Ruthven Co-op are classified as Clarion loam. These soils are formed in glacial till, and are typically located on the high parts of uplands. Clarion loam soils are well drained, moderately permeable, with high available water capacity (USDA, 1977).

The Ruthven area is underlain by Quaternary glacial till known as Cary Till. It is comprised of poorly sorted, fine textured glacial sediments interbedded with sand or sand and gravel (Munter et al, 1983).

Directly underlying the glacial drift, at approximately 400 feet below the surface, is the Cretaceous-age Dakota Formation. The Dakota Formation in the Ruthven area consists of the Nishnabotna Member. This member is predominantly sandstone with some shale, claystone, and conglomerate interbeds. The Dakota Formation in the vicinity of the site is estimated to be approximately 175 feet thick (Munter et al, 1983).

The Dakota Formation is unconformably underlain by the Ordovician-age Galena Formation. This formation is composed of dolomite and limestone, and is approximately 245 feet thick (Munter et al, 1983).

SURFACE WATER

Most of the drainage in Ruthven appears to flow northwest into Barringer Slough and Lost Island Lake (Figure 1). These water bodies are part of the Barringer Slough State Game Management area, a large, state-managed wetland area. Other large wetland areas, including Round Lake, Smith's Slough, Dewey's Pasture, Oppedahl, Blue Wing Marsh, Virgin Lake, and Elm Lake State Game Management Areas, are all present within three miles of Ruthven (E&E, 1989b). None of these wetlands are fed by significant surface water streams. It is likely that there is considerable interaction between groundwater and surface water in the area. The wetlands and lakes near Ruthven are a significant recreational and environmental resource.

Surface drainage at the site is to a private farm pond located approximately 800 feet northwest of the site.

(RUTHVEN FARMERS CO-OP)

GROUNDWATER

The uppermost aquifer is the glacial drift aquifer which occurs irregularly in beds of sand or sand and gravel that are interbedded within the glacial drift. The aerial extent and thickness of these beds are not predictable. Wells depths within three miles of the site vary from 20 to 235 feet below the surface (E&E, 1989b).

The Dakota bedrock aquifer consists primarily of sandstone with some shale, claystone, and conglomerate interbedding. The aquifer is recharged throughout the site area by downward percolation through the glacial drift and by lateral inflow from southern Minnesota (Munter et al, 1983). A regional groundwater divide trending north-south exists approximately 20 miles west of Ruthven. Regional groundwater flow east of the divide appears to be southward, although local variations may occur (Munter et al, 1983).

The town of Ruthven obtains its water from two wells located approximately 3,800 feet southwest of the site (Figure 1). These wells are 468 feet and 511 feet deep. Both wells are finished in the Dakota Sandstone (Carleton, 1986c). The nearest well is located 500 feet southeast of the site at the Palo Alto County's Ruthven maintenance garage. The well is approximately 50 feet deep. The pump capacity is estimated to be 20 gallons per minute (IDWAWM, 1986).

HISTORY

In 1976, the manufacturer of the pesticide Niran advised everyone who was selling the chemical to dispose of it. According to the manager of the Ruthven Farmers Co-op, he contacted the Iowa Department of Agriculture by phone for information on proper disposal of Niran. They recommended burying the Niran. The Co-op buried the pesticide (IDWAWM, 1986b).

On January 31, 1978, The Iowa Department of Environmental Quality received a complaint that 2,000 pounds of Niran and other materials had been buried by the Ruthven Farmers Co-op (Metcalf, 1978). The Co-op manager claimed that he disposed of only 200 pounds of Niran (Carleton, 1986b). The manager later stated that nine 50-pound bags of Niran were buried at the site, indicating the disposal of 450 pounds of Niran (Carleton, 1986a).

On February 1, 1978, a letter was sent to the Ruthven Farmers Cooperative Elevator Company expressing concern over the possible adverse effects posed by the disposal of Niran at the site (IDEQ, 1978). No other action was taken at that time due to lack of legal authority (Carleton, 1986b).

In January 1986, the Iowa Department of Water, Air, and Waste Management (IDWAWM) received a complaint that a well at the Palo Alto County garage was "foaming". The Palo Alto

(RUTHVEN FARMERS CO-OP)

 $19 \times 20 \times 60 = 22,800 \text{ gal}$

County employees who use the well expressed concern about the well being contaminated (IDWAWM 1986a).

On January 16, 1986, the IDWAWM sampled the well at the county garage during routine use. The well was sampled again the next day following 19 hours of continuous pumping (IDWAWM, 1986a). The well was found to be contaminated with alachlor, atrazine, and dimethoate (Carleton, 1986b). "No Drinking" notices have been posted at the garage.

On October 20, 1988, Ecology and Environment, Inc. (E&E) conducted a site reconnaissance visit and prepared a Preliminary Assessment Report for the Ruthven Farmers Co-op site. The site was given a projected HRS score of 33.93. E&E recommended that a site investigation be conducted at the site. The investigation would identify all burial areas present or adjacent to the Co-op facility, and determine if contaminants are migrating off-site through either groundwater or surface water pathways (E&E, 1989b).

WASTES

In Summer 1976, the Ruthven Farmers Co-op buried a quantity of the pesticide Niran on its property. According to the Co-op manager nine 50-pound bags of Niran were buried. Each bag consisted of an inner plastic bag and an outer paper bag. The bags were buried at a depth of about four feet (IDWAWM, 1986b).

Buried in the hole with the bags was the metal debris from a 40-foot by 100-foot metal building. The bags were placed in the hole first, and then a layer of sheet metal from the metal building was placed over the bags to protect them from being punctured (IDWAWM, 1986b). Due to construction at the Co-op, several feet of fill material has since been placed on the disposal area. The depth of the chemicals is now estimated to be six feet (IDWAWM, 1986b).

Niran is a trade name for a pesticide containing chlordane or parathion depending on the manufacturer. The Co-op manager was unsure of the manufacturer or the type of Niran disposed (Carleton, 1986b).

Although the quantity of waste in the Niran burial pit is known, there are other potential areas of concern at or near the site. Unknown quantities of other pesticides may have been disposed of on the Co-op property during its years of operation. Figure 1A, identifies the property owned or under the control of the Co-op. County workers have reported seeing Co-op workers burying materials in the old city dump northwest of the Co-op. A former county worker has stated that in 1980, a storage shed near the county garage containing several pounds of the herbicide Tordon was demolished, pushed into its foundation, and buried (E&E, 1989b; IDWAWM, 1986b).

NONE FOUND

(RUTHVEN FARMERS CO-OP)

ACTUAL OR POTENTIAL CONTAMINANT LEVELS IN VARIOUS MEDIA**SURFACE WATER**

No surface water investigation has been done for the site.

Over 1,000 acres of state-managed wetland game management areas are located within four miles of the site. These wetlands are recharged primarily through groundwater and surface water interaction, and are likely to be affected by any groundwater contamination leaving the site (E&E, 1989b).

GROUNDWATER

Two water samples were collected from the Palo Alto County garage well. One sample was collected after normal use; another was collected after 19 hours of continuous pumping. The samples were analyzed for 2,4-D, silvex, Tordon (picloram), Niran (parathion and chlordane), atrazine, Lasso (alachlor), and dimethoate. The sample results are shown in Table 1. The analytical results identified atrazine (16 ug/l), alachlor (6.2 ug/l) and dimethoate (0.12 ug/l). No Niran or other pesticides were found in the well. The contamination in the county well cannot be positively attributed to the site without further sampling due to other potential contaminant sources in the area. *may h.v. been caused by other waste disposal on*

No on-site groundwater investigations have been conducted at the site. There exists potential for groundwater contamination from the material buried at the site.

FIGURE THREE

SOILS

No on-site soil investigation has been conducted at the site.

The soils are likely to be contaminated. Both chlordane and parathion are insoluble in water. Once in the ground both compounds rapidly bind onto the soils. Residues in the soil may persist for years.

TOXICITY AND ENVIRONMENTAL FATE OF CONTAMINANTS

The pesticide Niran is known to have been buried in a pit at the site. Niran is the trade name for a pesticide containing as its active ingredient the compound chlordane or parathion depending on the pesticide manufacturer. The Co-op manager is unsure about the manufacturer or the type of Niran disposed. Therefore, informational summaries concerning the toxicity, including the health effects, and the environmental fate of both chlordane and parathion are presented in Appendix A.

Other pesticides may have been *disposed* buried at the site as well; however, the other contaminants cannot be substantiated at this time. Nevertheless, because of the close proximity of

(RUTHVEN FARMERS CO-OP)

the contaminated well to the site, informational summaries for atrazine and alachlor are also presented in Appendix A.

POPULATION AND LOCATION OF SIGNIFICANT FEATURES

The site is located within two miles of a well field providing water to the town of Ruthven. According to the 1980 census, the population of Ruthven is 769. Approximately 400 rural residents are living within four miles of the site depend on private wells for drinking water (E&E, 1989b). The nearest residence is located approximately 0.25 mile northwest of the Co-op facility.

Over 1,000 acres of state-managed wetlands are located within four miles of the site. These areas are important wildlife habitat and are used for recreational fishing, hunting, boating, and swimming.

(RUTHVEN FARMERS CO-OP)

REFERENCES

REF: 92420052

Carleton, Jean. 1986a. "Memo to Tim O'Connor, Regarding Ruthven Coop. IDNR Files: Con 12-15 Ruthven Farmers CO-OP.

Carleton, Jean. 1986b. "Preliminary Assessment Narrative, Old Government Bin Site - Ruthven, Iowa." IDNR Files: Con 12-15 Ruthven Farmers CO-OP.

Carleton, Jean. 1986c. "Potential Hazardous Waste Site, Site Identification." IDNR Files: Con 12-15 Ruthven Farmers CO-OP.

Carleton, Jean. 1986d. "Preliminary Assessment Revision." IDNR Files: Con 12-15 Ruthven Farmers CO-OP.

Ecology and Environment, Inc. (E&E). 1989a. "Memo to Pete Culver, Regarding Ruthven Farmers CO-OP Site, Ruthven, Palo Alto County, Iowa." IDNR Files: Con 12-15 Ruthven Farmers CO-OP.

Ecology and Environment, Inc. (E&E). 1989b. "Preliminary Assessment, Ruthven Farmers CO-OP Site." IDNR Files: Con 12-15 Ruthven Farmers CO-OP.

Iowa Department of Environmental Quality (IDEQ). 1978. "Letter to the Farmers Cooperative Elevator Company, Regarding Disposal of Hazardous Substances." IDNR Files: Con 12-15 Ruthven Farmers CO-OP.

Iowa Department of Water, Air, and Waste Management (IDWAWM). 1986a. "Report of Investigation, Regarding Well Contamination, County Maintenance Shed, Ruthven, Iowa." IDNR Files: Con 12-15 Ruthven Farmers CO-OP.

Iowa Department of Water, Air, and Waste Management (IDWAWM). 1986b. "Report of Investigation, Regarding Information on How a Quantity of the Pesticide Nirvan was Buried in 1976." IDNR Files: Con 12-15 Ruthven Farmers CO-OP.

Metcalf, John. 1978. "Department of Environmental Quality Report on Pesticide Burial." IDNR Files: Con 12-15 Ruthven Farmers CO-OP.

Munter, James., Ludvigson, Greg., and Bunker, Bill. 1983. Hydrogeology and Stratigraphy of the Dakota Formation in Northwest Iowa, Water Supply Bulletin #13. Iowa Geological Survey, Iowa City, Iowa.

University of Iowa Hygienic Laboratory (UHL). 1986. "Analytical Results, Palo Alto County, Ruthven Well; Samples #1 and #2." IDNR Files: Con 12-15 Ruthven Farmers CO-OP.

(RUTHVEN FARMERS CO-OP)

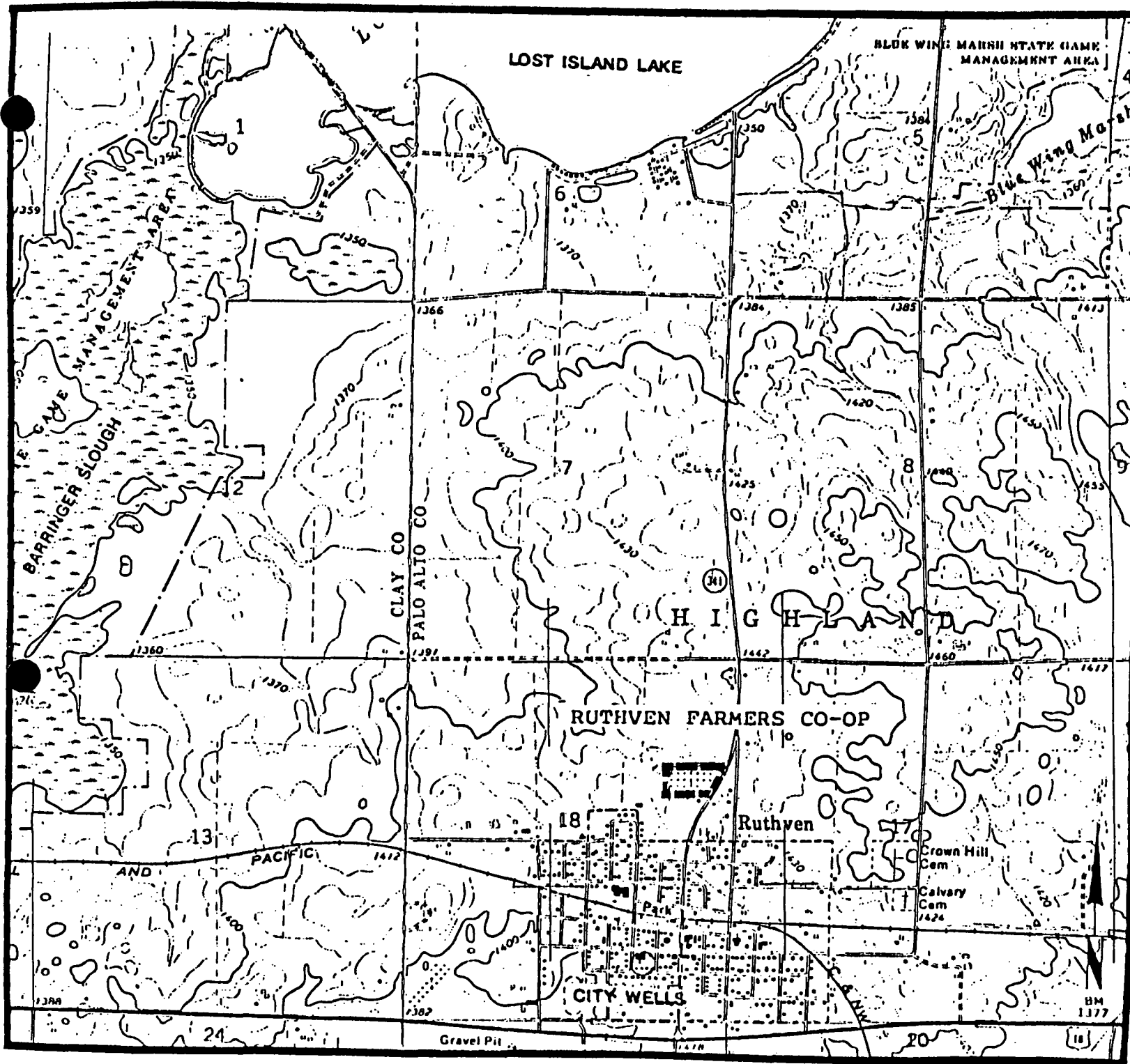
U.S. Department of Agriculture (USDA). 1977. Soil Survey
of Palo Alto County, Iowa. Washington, D.C.

TABLE 1

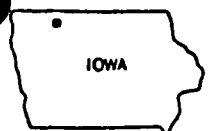
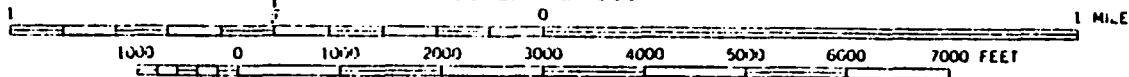
PESTICIDE ANALYSIS
PALO ALTO COUNTY GARAGE WELL INVESTIGATION
(ppb)

<u>COMPOUND</u>	<u>SAMPLE 1</u> <u>1-16-1986</u>	<u>SAMPLE 2*</u> <u>1-17-1986</u>
2,4-D	<0.1	<0.1
Silvex	<0.1	<0.1
Picloram (Tordon)	<0.1	<0.1
Chlordane	<0.2	<0.2
Parathion	<0.1	<0.1
Atrazine	11.0	16.0
Alachlor (Lasso)	3.9	6.2
Dimethoate	0.12	<0.1

* Sample collected after 19 hours of continuous pumping.
Well location shown in Figure 2.



SCALE 1:24 000

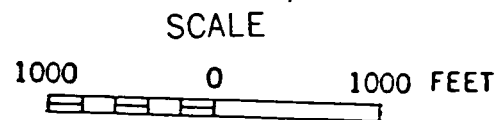
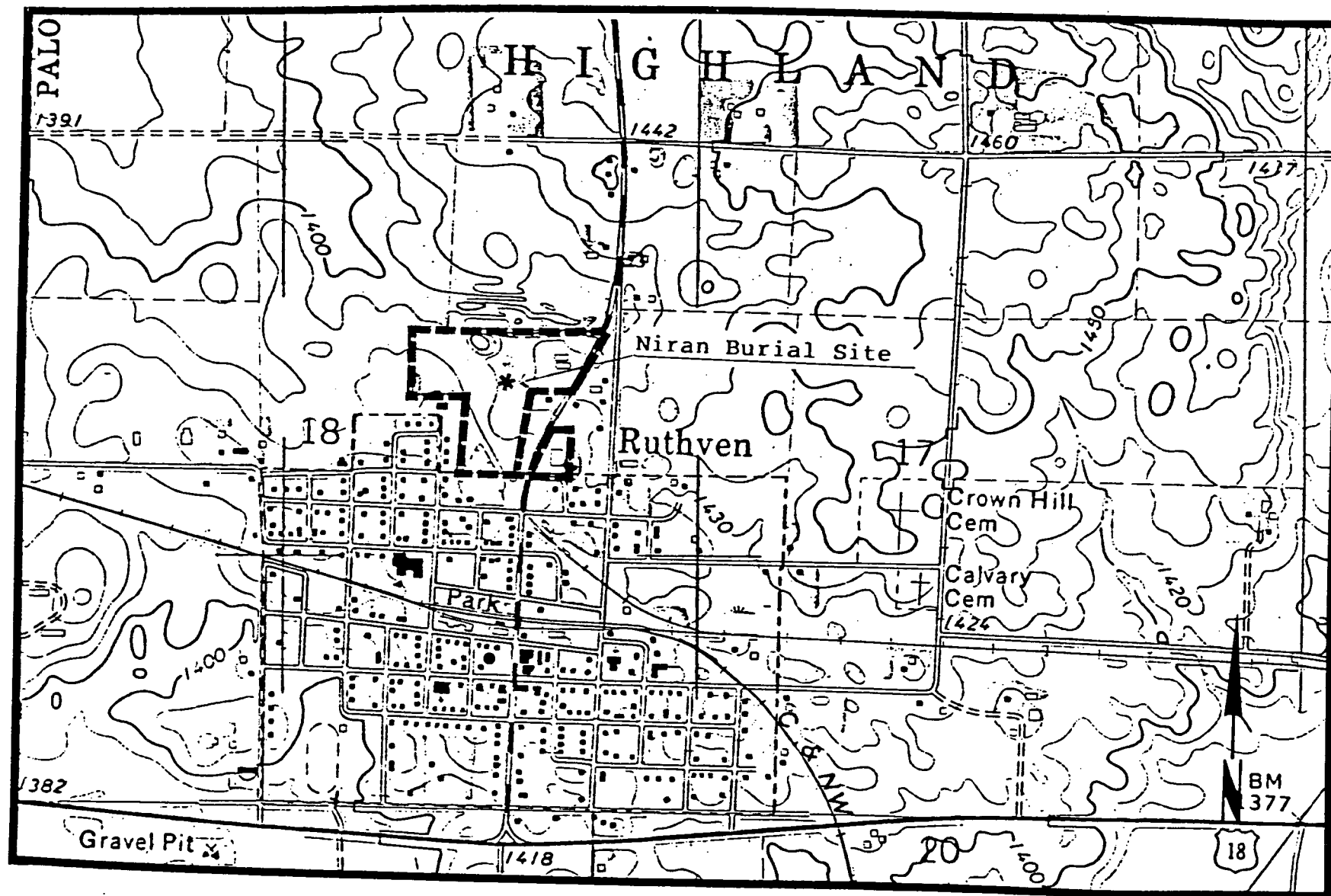


QUADRANGLE LOCATION

RUTHVEN FARMERS CO-OP
RUTHVEN, IOWA

SITE LOCATION MAP

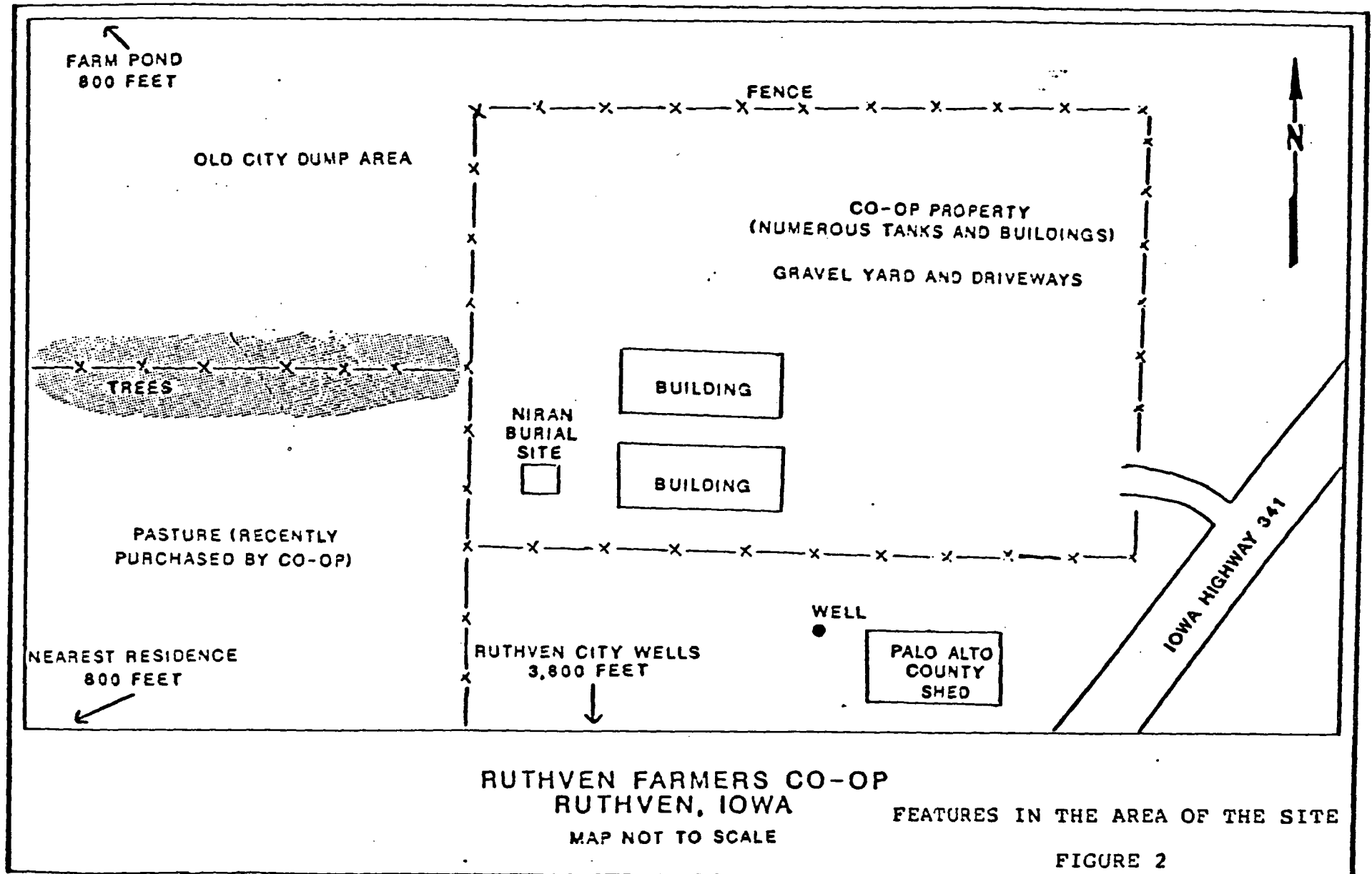
FIGURE 1



----- Area Under the Control of the Ruthven Farmers Co-op.

RUTHVEN FARMERS CO-OP
PROPERTY LOCATION
FIGURE 1A

RUTHVEN FARMERS CO-OP
FIGURE 2



ECOLOGY AND ENVIRONMENT, INC. FIT. JAN 1989
SOURCE: E & E/FIT SITE RECON. NOV. 1988

APPENDIX A
TOXCITY AND ENVIRONMENTAL FATE SUMMARIES

ATRAZINE

ALACHLOR

CHLORDANE

PARATHION

IOWA DEPARTMENT OF NATURAL RESOURCES
Solid Waste / Abandoned Uncontrolled Sites

DATE: August 29, 1989

TO: Morris Preston

FROM: Ruth A Rosdail

SUBJECT: SAUSR Eligibility Determination: Ruthven Farmers
CO-OP

The Ruthven Farmers CO-OP Site, also known as the Old Government Bin Site, is eligible for the SAUSR.

SITE LOCATION: The site is located in the SE 1/4 of the NE 1/4 of Section 18, T96N, R34W, Palo Alto County, Iowa. The site is located 1/8 mile north of Ruthven on Iowa Highway 341.

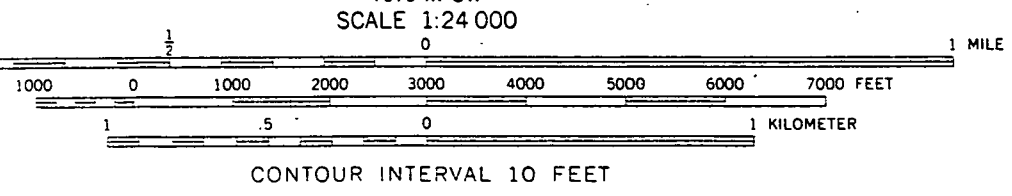
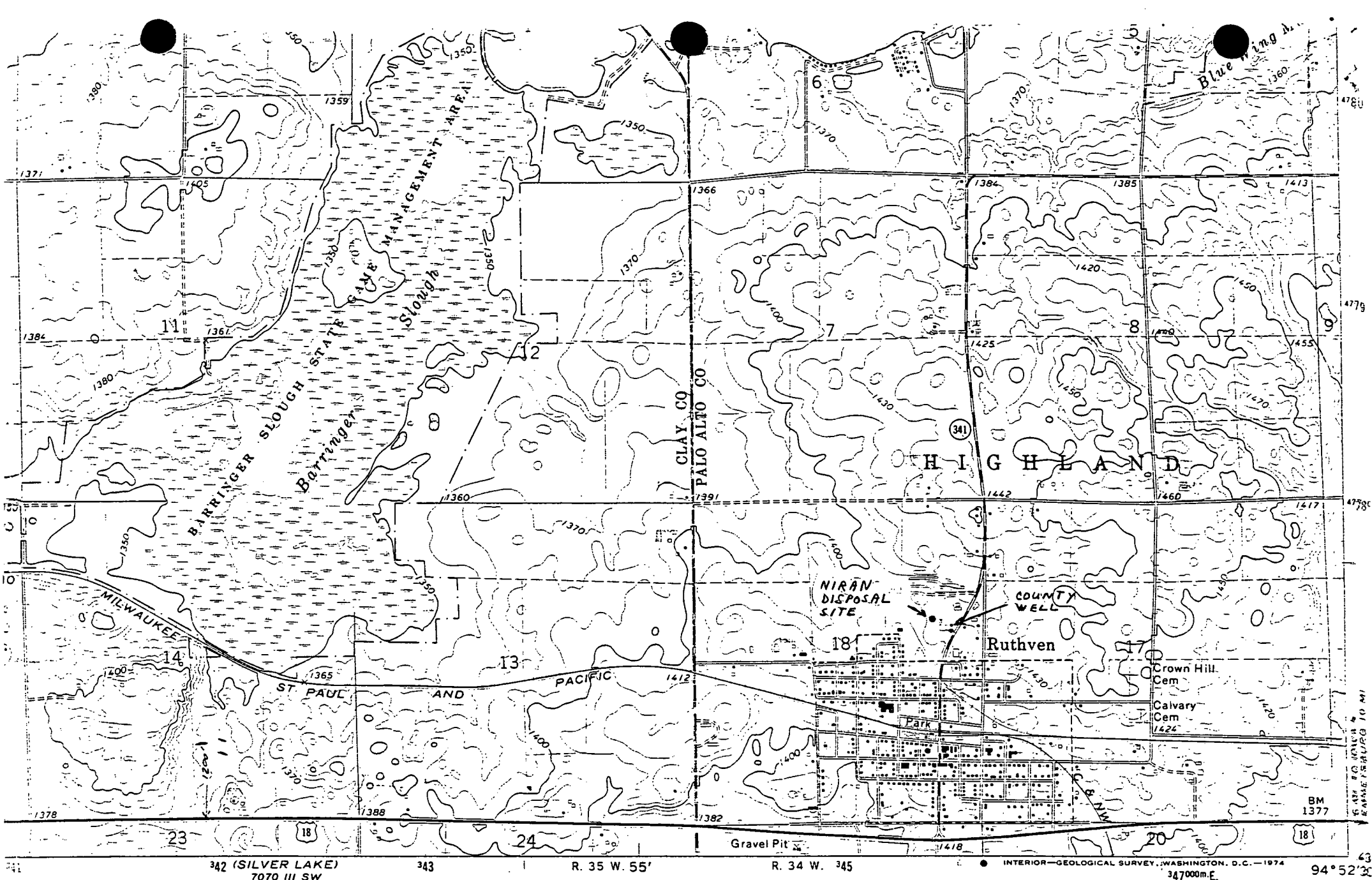
BACKGROUND: In 1976, 200 to 400 pounds of the pesticide Niran were buried in a disposal pit at the Ruthven Farmers CO-OP. Niran is a trade name for a pesticide containing chlordane (U036) or parathion (P089) depending on the manufacturer. Unknown quantities of other pesticides may also have been buried at the site.

In 1978, the Iowa Department of Environmental Quality (DEQ) requested that the CO-OP unearth and properly dispose of the Niran. However, the CO-OP declined and the DEQ did not pursue the matter at that time.

In 1986, the Palo Alto county garage water well, approximately 600 feet east of the site, was reported to be "foaming". The Iowa Department of Water, Air, and Waste Management sampled the well, and found 16 ug/l atrazine, 6.2 ug/l alachlor, and 0.12 ug/l Dimethoate (P044). The well was subsequently closed to drinking. A preliminary investigation identified several potential sources of contamination in the area of the well, including the Ruthven Farmers CO-OP.

Further investigation is required to determine if the waste disposed of at the CO-OP site has entered the groundwater and has migrated off-site.

ATTACHMENT



ROAD CLASSIFICATION

Primary highway, hard surface	Light-duty road, hard or improved surface
Secondary highway, hard surface	Unimproved road

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D.C.—1974

94°52'30"