

Final Report
Site Investigation
Bruno Coop Association, Bruno, Nebraska
TDD #F-07-8809-030 PAN #FNE0136SA
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May 8, 1989

Site Bruno PWS
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5-8-89

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SUPERFUND RECORDS

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TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
1	INTRODUCTION	1-1
2	SITE LOCATION AND DESCRIPTION	2-1
	2.1 SITE LOCATION	2-1
	2.2 SITE DESCRIPTION	2-1
	2.3 SITE CONTACTS	2-1
3	SITE BACKGROUND	3-1
	3.1 SITE HISTORY AND POTENTIALLY RESPONSIBLE PARTIES	3-1
	3.1.1 Chain of Ownership	3-1
	3.1.2 Leases	3-3
	3.2 DESCRIPTION OF POTENTIALLY RESPONSIBLE PARTIES	3-3
	3.3 PREVIOUS INVESTIGATIONS	3-5
4	WASTE INFORMATION	4-1
	4.1 WASTE TYPE	4-1
	4.2 WASTE CHARACTERISTICS	4-1
	4.2.1 Carbon Tetrachloride	4-1
	4.2.2 Chloroform	4-3
	4.2.3 1,2-Dichloroethane	4-4
5	PHYSICAL AND CULTURAL SETTING	5-1
	5.1 CLIMATOLOGY AND DEMOGRAPHY	5-1
	5.2 TOPOGRAPHY AND DRAINAGE	5-1
	5.3 SOILS	5-2
	5.4 STRATIGRAPHY	5-2
	5.5 HYDROGEOLOGY	5-3

TABLE OF CONTENTS (CONT.)

<u>Section</u>		<u>Page</u>
6	FIELD ACTIVITIES	6-1
	6.1 WATER SAMPLING	6-1
	6.2 SOIL-GAS SURVEY	6-2
	6.3 ON-SITE OBSERVATIONS AND INTERVIEWS	6-6
7	ANALYTICAL RESULTS	7-1
	7.1 WATER SAMPLING	7-1
	7.2 SOIL-GAS SURVEY	7-2
8	DISCUSSION OF RESULTS	8-1
	8.1 ATTRIBUTION OF CONTAMINANTS	8-1
	8.2 ENVIRONMENTAL CONSIDERATIONS	8-2
9	SUMMARY	9-1
10	BIBLIOGRAPHY	10-1

APPENDICES

<u>Appendix</u>		<u>Page</u>
A	Technical Directive Document	A-1
B	EPA Site Inspection Form 2070-13	B-1
C	Address, Owner, and Operator Information For Potentially Responsible Parties	A-1
D	Data Transmittal	D-1
E	Field Sheets and Chain-of-Custody Sheets	E-1
F	Plat 1: Soil-Gas Survey Results	F-1
G	Well Logs	G-1

TABLE OF CONTENTS (CONT.)

LIST OF FIGURES

<u>Figure</u>		<u>Page</u>
2-1	Site Location Map	2-2
3-1	Plat Map of Warehouse Lots 1-28, Bruno, Nebraska	3-2
5-1	North South Geologic Section through the Eastern Part of Butler County	5-5

LIST OF TABLES

<u>Table</u>		<u>Page</u>
3-1	Sampling Summary of the Bruno PWS	3-7
5-1	Inorganic Chemical Analysis of Bruno Well 15-4-10CAC ..	5-6
6-1	Water Sample Summary	6-3
6-2	Soil-Gas Sample Location Descriptions	6-4
7-1	Summary of Water Sample Analytical Results	7-2
7-2	Soil-Gas Carbon Tetrachloride Concentrations	7-4

TABLE OF CONTENTS (CONT.)

LIST OF FIGURES

<u>Figure</u>		<u>Page</u>
2-1	Site Location Map	2-2
3-1	Plat Map of Warehouse Lots 1-28, Bruno, Nebraska	3-2
5-1	North South Geologic Section through the Eastern Part of Butler County	5-5

LIST OF TABLES

<u>Table</u>		<u>Page</u>
3-1	Sampling Summary of the Bruno PWS	3-7
5-1	Inorganic Chemical Analysis of Bruno Well 15-4-10CAC ..	5-6
6-1	Water Sample Summary	6-3
6-2	Soil-Gas Sample Location Descriptions	6-4
7-1	Summary of Water Sample Analytical Results	7-2
7-2	Soil-Gas Carbon Tetrachloride Concentrations	7-4

SECTION 1: INTRODUCTION

The U.S. Environmental Protection Agency (EPA) tasked the Ecology and Environment, Inc., Field Investigation Team (E & E/FIT) under Technical Directive Document (TDD) #F-07-8809-030 (Appendix A) to perform a soil-gas survey to evaluate the source(s) of the Bruno Public Water Supply (PWS) contamination. Carbon tetrachloride, chloroform, and 1,2-dichloroethane have been detected in the PWS wells.

The soil-gas survey was to define the approximate geographic extent of the subsurface plume associated with the carbon tetrachloride identified in the two village wells at various times.

Previously, the exact source of the volatile organic contamination was unknown. Several potential sources had been identified and were investigated. It was the objective of this investigation then to determine the sources(s) and approximate extent of the contamination in the Bruno PWS. Presently, the suspected potential source is owned by the Bruno COOP Association. Appendix B contains completed EPA site inspection form (2070-13).

SECTION 2: SITE LOCATION AND DESCRIPTION

2.1 SITE LOCATION

The village of Bruno is located in the northeast section of Butler County, Nebraska, approximately 60 miles west of Omaha. The approximate legal location of the village is the SW 1/4, S 1/2. Sec. 10, T. 15 N., R. 4 E., Bruno, Nebraska Quadrangle (USGS 1968).

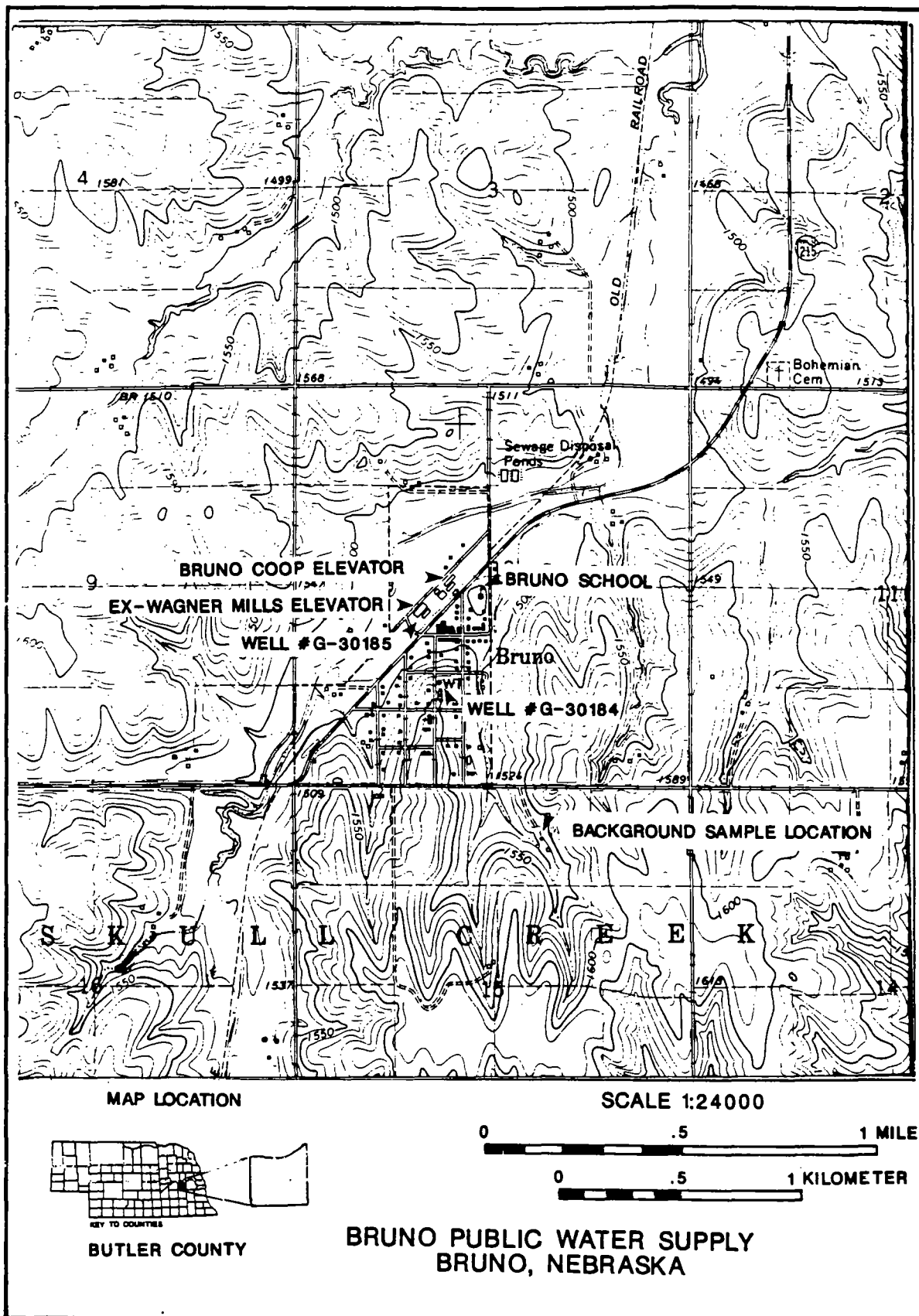
2.2 SITE DESCRIPTION

Bruno is a small farming community governed by a village council. The population of Bruno is 154. The public water supply system consists of two wells: one drilled in July 1965 (registration #G-30184) and the other completed in the mid-1930s (registration #G-30185). Both of Bruno's wells draw water from very fine sands deposited during the Pleistocene Era (E & E/FIT, April 1987)

The older well, #G-30185, is located adjacent to a grain storage shed presently owned by the Bruno COOP Association. Bruno's second well, #G-30184, is located approximately 50 feet north of the water tower. Both wells are currently used and are the sole producers of domestic water for the village of Bruno (E & E/FIT, April 1987). Figure 2-1 shows the locations of the wells and grain elevators with respect to the village and surrounding area.

2.3 SITE CONTACTS

Bob Langhorst is the contact for the Bruno COOP. He can be reached at (402) 543-2226. Mr. Wilford Kozisek is the contact for the village of Bruno. He can be reached at (402) 543-2325.



WASTE SITE TRACKING NO.: NE0090
PREPARED BY A. MELIA

ECOLOGY & ENVIRONMENT FIT AUG. 1988
SOURCE: USGS 7.5' BRUNO, NE. QUAD., 1968

FIGURE 2-1: SITE LOCATION MAP

SECTION 3: SITE BACKGROUND

3.1 SITE HISTORY AND POTENTIALLY RESPONSIBLE PARTIES

In November 1984, the village of Bruno's water supply was initially identified by the Nebraska Department of Health (NDOH) as being contaminated with volatile organic chemicals (E & E/FIT, April 1987).

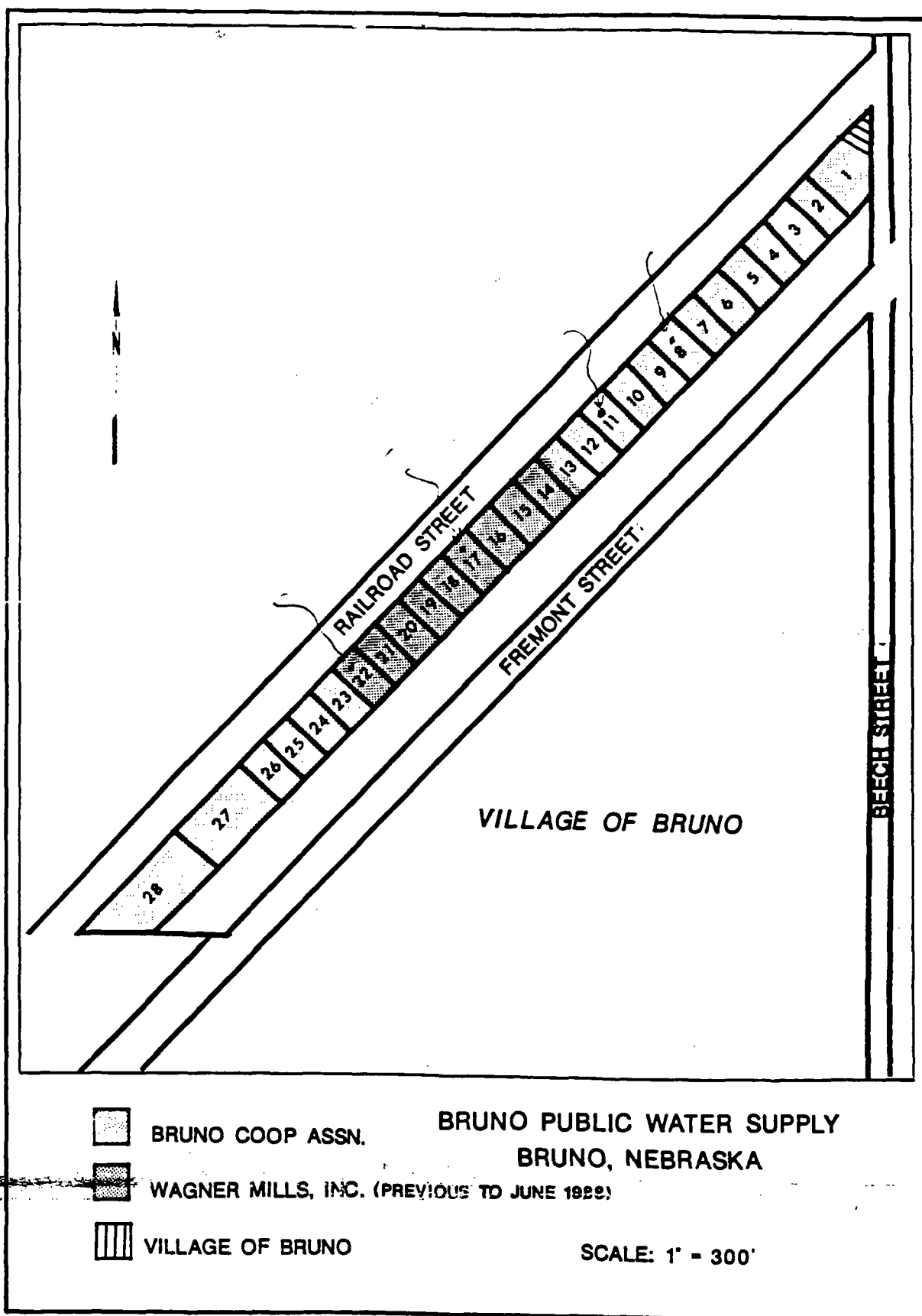
The village of Bruno was formerly the site of government grain storage bins from the late 1940s to the mid 1960s. All the bins but one were sold to local farmers and moved off site. The remaining corn crib bin was purchased by the Bruno COOP Association. Bruno currently has two functional grain bins. One is owned by the Bruno COOP Association and the other was recently purchased in June 1988 by the Bruno COOP from Wagner Mills in Schuyler, Nebraska (E & E/FIT April 1987, E & E/TAT May 1988).

The source or sources of Bruno's ground water contamination have not been identified, but the property now completely owned by the Bruno COOP Association has been the site of businesses which may have contributed to the public water supply contamination. The Norton Law Office of David City, Nebraska, conducted a title search over the last 50 years for property. The legal description of the property is warehouse lots 1 through 28 located in W 1/2 of Section 10, T. 15 N., R. 4 W. of the 6th prime meridian, in the village of Bruno, Butler County, Nebraska (Figure 3-1) (E & E/TAT May 1988).

3.1.1 Chain of Ownership

The following is the chain of ownership for warehouse lots 1 through 28 located in Bruno. On July 17, 1964, the Chicago and Northwestern Railway Company (C & NW Railway Co.) sold lots 1 through 5, part of 6, lots 7 through 13, and lots 23 through 28 to the Bruno COOP Association (E & E/TAT May 1988).

DRAFT



WASTE SITE TRACKING NO.: NE0080

ECOLOGY & ENVIRONMENT FIT AUG. 1988

PREPARED BY A. MELIA

FIGURE 3-1: PLAT MAP OF WAREHOUSE LOTS 1-28

- o On August 5, 1965, the C & NW Railway Company sold lots 14 through 22 to the R & W Grain Company (E & E/TAT May 1988).

- o On June 20, 1968, the Bruno COOP Association sold part of Lot 1 to the village of Bruno (E & E/TAT May 1988).

- o On December 31, 1968, R & W Grain Company sold lots 14 through 22 to Wagner Mills, Inc. (E & E/TAT May 1988).

- o On August 26, 1983, the Bruno COOP Association sold part of lot 13 to Wagner Mills, Inc. (E & E/TAT May 1988).

- o In June 1988 the Bruno COOP Association negotiated to purchase the Wagner Mills, Inc. property (Langhorst, 1988).

- o The Bruno COOP association now owns part of warehouse lot 1, all of warehouse lots 2 through 5, part of lot 6, and all of lots 7 through 28 in the village of Bruno (E & E/TAT May 1988, Langhorst August 26, 1988).

3.1.2 Leases

All or part of the property originally owned by the C & NW Railway Company was leased by the Agriculture Administration Act (AAA), a division of the United States Department of Agriculture (USDA), from 1947 to the mid 1960s for use as a grain storage facility. No record of the lease could be located, but a copy of the assignment of the lease to the Bruno COOP Association upon their purchase of the C&NW property in 1964 was obtained (E & E/TAT May 1988).

On February 6, 1969, Wagner Mills, Inc. leased lots 14 through 22 to the Agrico Chemical Company for a period of five years extending from February 1, 1969 to January 31, 1974 (E & E/TAT May 1988).

On March 24, 1980, the Bruno COOP Association leased part of warehouse lot 13 to Wagner Mills, Inc. for a period of five years extending from August 17, 1977 to August 16, 1982 (E & E/TAT May 1988).

3.2 DESCRIPTION OF POTENTIALLY RESPONSIBLE PARTIES

1. Bruno COOP Association - The Bruno COOP Association has been identified as a potential source as the owner of a facility that used fumigants that may have contained the contaminants

carbon tetrachloride, chloroform, and 1,2-DCA now occurring in the local ground water. The Bruno COOP Association was originally named Bruno Farmers' Grain and Livestock Company; on July 29, 1949, the company was renamed the Bruno Cooperative Association (E & E/TAT May 1988).

2. Wagner Mills, Inc. - Wagner Mills has been identified as a potential source as owner of a facility that used fumigants that may have contained carbon tetrachloride, chloroform, and 1,2-DCA. Wagner Mills, Inc. started business in Schuyler, Nebraska in 1913. The company was incorporated in Nebraska on June 13, 1973. In 1982, Wagner Mills became a wholly owned subsidiary of K.W. Corporation, a newly formed holding company (E & E/TAT May 1988).
3. R & W Grain Company - R & W Grain Company was a previous owner of the property owned by Wagner Mills, Inc. and recently purchased by the Bruno COOP. R & W Grain Company operated a grain storage facility which used grain fumigants that may have contained carbon tetrachloride, chloroform, and 1,2-DCA. Both owners of the company are now deceased and the company has been dissolved (E & E/TAT May 1988).
4. Agrico Chemical Company - The Agrico Chemical Company has been identified as a potential source as a generator of the contaminants now detected in the Bruno Public Water Supply. Agrico leased property owned by Wagner Mills from February 1, 1969 to January 31, 1974. Agrico manufactures phosphatic and nitrogenous fertilizers. The company leased the property from Wagner Mills to run a facility for the storage, blending, sale, and distribution of anhydrous ammonia and related products. Agrico was acquired by the Freeport-McMoran Resources Partners on March 12, 1987 (E & E/TAT May 1988).

5. United States Department of Agriculture (USDA) - The USDA has also been identified as a potential source as an operator of a Federal Grain Storage Facility. The Agriculture Administration Act (AAA) leased property from the C&NW Railway Company from 1947 to the mid 1960s. The AAA no longer exists and has been replaced within the USDA by the Agriculture Stabilization and Conservation Service (E & E/TAT May 1988).

According to Dave Hanis, who worked for the government facility from 1960 to the mid 1960s, 80/20 liquid grain fumigant containing carbon tetrachloride and 1,2-DCA was regularly used. The fumigant was also used to asphyxiate rodents by pouring it directly into animal burrows (E & E/TAT May 1988).

6. Chicago and Northwestern Transportation Company - This company has been identified as a potentially responsible party (PRP) as owner of the property during the period when the government operated their grain facility. The Chicago and Northwestern Transportation Company was once known as the C & NW Railway Company. Currently it is a subsidiary of C & NW Corporation, a railroad holding company (E & E/TAT May 1988).

Address, owner, and operator information for all Potentially Responsible Parties (PRPs) is given in Appendix C.

3.3 PREVIOUS INVESTIGATIONS

In November 1984 the NDOH identified the Bruno Public Water Supply (Bruno PWS) as being contaminated with carbon tetrachloride, chloroform, and 1,2-DCA. An unknown municipal well was sampled by the local well operator, and the sample was analyzed by the NDOH. The results showed 40.1 ppb carbon tetrachloride, 4.2 ppb chloroform, and 7.3 ppb 1,2-DCA (E & E/FIT April 1987).

Samples collected in December 1985, by the local well operator and analyzed by the NDOH, showed 4.5 ppb carbon tetrachloride in one well

and 3.9 ppb in another well. No other contaminants were detected, and the well identities are unknown (E & E/FIT April 1987).

In January 1986, the NDOH found 38.3 ppb carbon tetrachloride, 4.2 ppb chloroform, and 8.1 ppb 1,2-DCA in well #G-30185. Well #G-30184 contained 29 ppb carbon tetrachloride, 4.1 ppb chloroform, and 5.9 ppb 1,2-DCA (E & E/FIT April 1987).

E & E/FIT sampled the wells in March 1987 and again in September 1987. The March 1987 results showed 5.0 ppb carbon tetrachloride and qualitative results of 4.0 ppb of chloroform in well #G-30185 and 2.0 ppb carbon tetrachloride in well #G-30184 (E & E/FIT April 1987). The September 1987 sampling showed only a qualitative result of 3.0 ppb carbon tetrachloride in well #G-30185 and nothing in well #G-30184. A sample and a duplicate collected at the Bruno Public School showed quantitative results of 11.0 ppb and 8.0 ppb, respectively (E & E/FIT 1987).

The EPA sampled several Bruno wells in February 1988. Well #G-30184 contained 13 ppb carbon tetrachloride, 93.0 ppb chloroform, and 5.3 ppb 1,2-DCA. Distribution samples were also collected at the Yindrick Residence, the Post Office, and at the Bruno Public School. All past sampling results are summarized in Table 3-1.

TABLE 3-1
Sampling Summary
Bruno Public Water Supply

Date	Sampler	Wells/ Distribution Sample	Contaminants Detected in ppb		
			CCl ₄	CHCl ₃	1,2-DCA
Nov. 1984	Well operator/ NDOH	Unknown	40.1	4.2	7.3
Dec. 1985	Well operator/ NDOH	Unknown Unknown	4.5 3.9	----	----
Jan. 1986	NDOH	#G-30185 #G-30184	38.3 39	4.2 4.1	8.1 5.9
April 1987	E & E/FIT	#G-30185 #G-30184 Tap Background (Clarence Votava Residence)	5.0 2.0M ---- ---- ----	4.0M ---- ---- ----	---- ---- ---- ----
Sept. 1987	E & E/FIT	#G-30185 #G-30184 Bruno Public School Bruno Public School (Duplicate)	3.0M ---- 11.0 8.0	---- ---- ---- ----	---- ---- ---- ----
Feb. 1988	EPA	#G-30185 #G-30184 Yindrick Residence Post Office Bruno Public School Bruno Public School (Duplicate)	38 13 28 28 ---- 29	4.6M 93 3.9M 4.0M ---- 3.6M	16 5.3 11 13 ---- 13

M - Compound was qualitatively identified, however quantitation value is less than contract required detection limits.

MCL

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SECTION 4: WASTE INFORMATION

4.1 WASTE TYPE

Carbon tetrachloride, chloroform, and 1,2-DCA have been detected at various concentrations during several well sampling events in Bruno and vicinity. These three chemicals have all been identified as grain fumigants and could have been purchased and used as late as June 1985. These chemicals were used as fumigants on grain stored for an extended period of time in unaerated buildings. These chemicals were also used as rodenticides. The highly volatile fumigants, poured into rodent burrows displace oxygen in the rodent nests thus asphyxiating the rodents (E & E/FIT April 1987).

There are several different ways these chemicals were mixed to be used as fumigants. Carbon tetrachloride was mixed 80/20 with either 1,2-DCA or carbon disulfide. Carbon tetrachloride was less toxic to pests than carbon disulfide and 1,2-DCA, and its use therefore required longer contact times to kill pests. Carbon tetrachloride acted to suppress the fire hazard associated with carbon disulfide. Chloroform was also mixed with carbon disulfide. This mixture consisted of 73.2 percent chloroform and 26.8 percent carbon disulfide. Chloroform acted to reduce the fire hazard associated with the carbon disulfide as well as serving as an insecticide (Meister 1988).

4.2 WASTE CHARACTERISTICS

4.2.1 Carbon Tetrachloride

Carbon tetrachloride is a volatile halogenated hydrocarbon. At room temperature it is a clear heavy liquid with a sweet odor. It is used in refrigerants and propellants, mainly for Freon 11 and Freon 12; metal degreasing; the chlorination of organic compounds; production of semi-conductors; and as a grain fumigant. The use of carbon tetrachloride as a grain fumigant was banned in 1985 (ITII 1979; DHHS 1985).

Human exposure to carbon tetrachloride occurs through inhalation, skin adsorption, residual contamination in grain, and through drinking

contaminated water. It is estimated that 45 percent of all surface water and 25 percent of all ground water drinking water supplies are contaminated with carbon tetrachloride (DHHS 1985).

Acute exposure symptoms include irritation of eyes, nose, throat, headache, dizziness, nausea, vomiting, abdominal cramps, diarrhea, nervousness, unconsciousness, coma, and ventricular fibrillation; chronic exposure symptoms include dermatitis, anorexia, nausea, vomiting, mental confusion, apathy, headache, dizziness, fatigue, restriction of visual activity, loss of weight, jaundice, and renal damage (ITII 1979). Carbon tetrachloride has also been found to cause malignancies in mice, rats, trout, and hamsters. However, human evidence of carcinogenicity is inadequate (DHHS 1985).

The maximum contaminant level (MCL) for carbon tetrachloride in drinking water is 5 $\mu\text{g/l}$ (EPA July 1987). Its solubility is 785 mg/l and therefore carbon tetrachloride is moderately mobile in ground water. It is likely that carbon tetrachloride is adsorbed onto sediments rich in organic matter, although adsorption may not play a major role in the fate of carbon tetrachloride (EPA 1979).

The aquatic freshwater water quality criteria, chronic lowest observed effect level (LOEL), for carbon tetrachloride is 1,760 $\mu\text{g/l}$ (EPA 1986). Therefore carbon tetrachloride is not expected to be very toxic to aquatic life. The major aquatic fate for carbon tetrachloride is volatilization. The rate of volatilization depends on the concentration and mixing rate in water. Both hydrolysis and biodegradation occur slowly, if at all. Bioaccumulation is possible, but is not expected to occur to a significant degree (EPA 1979).

Because carbon tetrachloride is quite volatile it is likely to be an airborne contaminant. Carbon tetrachloride does not photodissociate in the atmosphere or troposphere. In the stratosphere it is degraded by higher energy, shorter wavelength light. It is thought that these degradation products are partially responsible for the destruction of the ozone layer. Some of the carbon tetrachloride that volatilizes into the atmosphere is washed out during precipitation events back into the lithosphere and hydrosphere (EPA 1979).

4.2.2 Chloroform

Chloroform, also known as trichloromethane, is a volatile halogenated hydrocarbon. It has been and in some cases is still used as an intermediate in the manufacture of fluorocarbon compounds, dyes, drugs, and pesticides; as a solvent in the extraction and purification of antibiotics, vitamins and flavors; and as an industrial solvent in photography and dry cleaning; and as a heat transfer medium. Its use as an anesthetic has been largely discontinued. A mixture of chloroform and carbon disulfide was used as a grain fumigant (DHHS 1985).

Many regulations for handling spills, water quality criteria, restriction of its use as a pesticide, and for disposal of waste material generated by the production of chloroform now exist. On June 29, 1976 the Food and Drug Administration banned the use of chloroform in food, drugs, and cosmetics. Before this ban, chloroform was used in cough preparations, liniments, toothpaste, cosmetics, and toothache drops (DHHS 1985).

Inhalation of chloroform can cause excitement, nervousness, delirium, staggering, unconsciousness, shortness of breath, vomiting, anorexia, and diureses (ITII 1979). There is experimental evidence supporting the carcinogenicity of chloroform in mice and rats, but human evidence is incomplete (DHHS 1985). In 1979 EPA set an MCL of 100 $\mu\text{g/l}$ for chloroform in drinking water. Chloroform is often found in drinking water supplies because it is a by-product of the water chlorination process. Chlorine reacts with the organic matter present in natural waters to form chloroform and other trihalomethanes (EPA 1979). The chronic aquatic LOEL for chloroform is 1,240 $\mu\text{g/l}$ indicating that it is not extremely toxic for aquatic life (EPA 1986).

Hydrolysis and oxidation in the aquatic environment are not significant fate pathways for chloroform which is lost mainly through volatilization. Photolysis does not occur below the ozone layer, but ultraviolet light in the stratosphere will photodissociate chloroform. The primary removal mechanism of chloroform from the atmosphere is the reaction with hydroxyl radicals.

It is likely that chloroform is sorbed onto sediments with high organic matter content and there is a tendency for chloroform to bioaccumulate in animals under constant exposure. However, there is no

evidence that chloroform biomagnifies through the food chain. The biotransformation and biodegradation of chloroform is possible; especially in a waste water treatment situation where the microbial populations have been slowly acclimatized (EPA 1979).

4.2.3 1,2-Dichloroethane

1,2-dichloroethane (1,2-DCA and ethylene dichloride) is also a volatile halogenated hydrocarbon. It is used in pharmaceuticals, as a solvent for extraction, and also as a fumigant (ITII 1979).

Human exposure to 1,2-DCA is expected to be through similar routes as carbon tetrachloride. The symptoms of exposure to 1,2-DCA should be similar to those of carbon tetrachloride and chloroform. At room temperature 1,2-DCA is a colorless, oily liquid with an odor similar to chloroform. It has a water solubility of 8,690 mg/l which makes it likely to migrate in ground water (ITII 1979, EPA 1979).

The drinking water MCL of 1,2-DCA is 5 µg/l (EPA July 1987). 1,2-DCA may be adsorbed onto sediments rich in organic matter, but adsorption is not likely to be significant (EPA 1979).

The freshwater chronic LOEL for 1,2-DCA is 20,000 µg/l. Which indicates that it is rather non-toxic to aquatic life. Like carbon tetrachloride and chloroform, the major aquatic fate of 1,2-DCA is volatilization. 1,2-DCA is likely to degrade, but should not bioaccumulate. 1,2-DCA is photodissociated in the troposphere. Therefore, it should not have as great a chance of returning to the lithosphere and hydrosphere during precipitation events as 1,2-DCA (EPA 1979).

SECTION 5: PHYSICAL AND CULTURAL SETTING

5.1 CLIMATOLOGY AND DEMOGRAPHY

Winters are fairly cold in Bruno due to excursions of continental air from the north, which bring frequent cold spells. The average minimum daily temperature is 15° F and the average winter temperature is 25° F. Snowfalls frequently but does not continuously cover the ground during the winter. Approximately 31 inches of snow falls per year (USDA 1982).

The summers are generally hot with occasional interruptions of cooler air from the north. The average summer temperature is 75° F with an average maximum temperature of 87° F. Roughly 70% of the 29-inch average annual rainfall occurs between the months of April to September. The average daily relative humidity is 60% to a high of 80% at dawn. The prevailing wind is from the south-southeast and reaches its highest average speed of 12 miles per hour (mph) in the spring.

Bruno is a small farming village with a population of 154. The grain elevators are located on the northwestern edge of the village.

5.2 TOPOGRAPHY AND DRAINAGE

Butler County is in the Interior Plains physiographic division of the United States. Both the Dissected Till Plain of the Central Lowland Province and the High Plains Section of the Great Plains Province are included in the county. Bruno is in the Hills Area geomorphic region. This area is composed of bluffs which lie along the south side of the Platte River Valley and of rolling hills, ridges, and steep valley-wall slopes in the eastern part of the county (Ginsberg 1983).

This geomorphic region can be further divided into the Loess Hills and the Drift Hills. The Loess Hills are generally north of U.S. Highway 92 and the Drift Hills are south of the highway. The maximum relief between hill tops and drainageways is 350 feet. Bruno is in the Loess

Hills area. This area is drained by small tributaries to the Platte River, some of which flow only in response to overland runoff (Ginsberg 1983).

5.3 SOILS

The soils in the Bruno area are a part of the Ponca-Sharpsburg association. These soils are nearly level to steep, well drained and moderately well drained soils that formed in loess and on uplands. The landscape is dissected by small intermittent drainages that join larger drainage ways. The association consists of 42% of Ponca soils, 16% Sharpsburg, and 42% minor soils (USDA 1982).

Ponca soils are found on narrow ridgetops and on long upland side slopes. The soils are well drained and moderately sloping to steep. The surface of the soil from zero to seven inches deep, is grayish-brown silty clay loam; the 7 to 22 inch subsurface soils are pale brown to light brownish gray silty clay loam; and from 22 to 60 inches, the soils consist of light gray and very pale brown silt loam (USDA 1982).

Sharpsburg soils are found on divides and side slopes of uplands. The soils are nearly level to strongly sloping and moderately well drained. The 0 to 12 inch surface layer is dark gray silty clay loam. The silty clay loam subsurface soils, from 12 to 46 inches, are dark grayish brown in the upper part to light yellowish brown in the lower part. From 46 to 60 inches, the soils are very pale brown silt to loam. Hobbs soils, which lie to the west of Bruno, are well drained soils on narrow bottom lands. Judson soils, found to the east of Bruno, are on colluvial foot slopes that border drainageways (USDA 1982).

5.4 STRATIGRAPHY

The oldest exposed bedrock in the region belongs to the undivided Dakota Group. The rocks in this group are of Early Cretaceous age and consists of sandstones and shale deposited in fluvial near-shore marine environments. The total thickness of these formations ranges from 500 to 600 feet (Ginsberg 1983).

Above the Dakota Group is Graneros Shale of Late Cretaceous age. This dark gray shale is about 65 feet thick and has a lower non-

calcareous and an upper calcareous zones. Immediately above the Graneros Shale is the Greenhorn Limestone also of Late Cretaceous age. This formation consists of limestones interbedded with shales. The formation is approximately 25 feet thick (Ginsberg 1983).

The youngest bedrock formation is the Late Cretaceous Carlile Shale. This formation is up to 90 feet thick and consists of two members, the Fairport and the Blue Hill. The Fairport member is calcareous and makes up the majority of the Carlile Shale (Ginsberg 1983).

During Early Tertiary time, much of the Cretaceous age material was removed by erosion to form an east-southeast sloping surface. Two major channels or paleovalleys were eroded by streams flowing across the county from the northwest. A sequence of fine sediments was deposited as Tertiary streams eroded Cretaceous material from higher land to the west (Ginsberg 1983).

During the Pleistocene Era continental glaciers advanced into eastern Nebraska from Canada and spread throughout Butler County. The geologic materials above the bedrock are composed of sand, sand and gravel, silt, and clay; deposited by water, wind, and glaciers. These deposits can be as thick as 455 feet. Till and till-related deposits are present in the eastern and central parts of the county, but not in the far western portion (Ginsberg 1983).

During the late stages of the Pleistocene Era, wind-deposited layers of silt known as loess, blanketed the older materials. The youngest material is referred to as the Peoria Loess. Erosion of the Peoria Loess led to the rolling topography of the region (Ginsberg 1983).

5.5 HYDROGEOLOGY

The majority of the ground water used in the Bruno area comes from the unconsolidated deposits above bedrock. The locations of the few large capacity wells in the area coincide with the eastern extension of paleovalleys. Thin sand and gravel layers can serve as small ground water resources for domestic and stock wells. The sand and gravel deposits are not very aerially extensive and test drilling must often be performed to find the deposits (Ginsberg 1983).

A fairly thick layer of sand overlies paleodivides and the sediment filled paleovalleys. This thick sand layer is known as the Pleistocene Aquifer System and is used to supply most domestic wells. The Pleistocene aquifer system consists of sand and gravel and interbedded silts and clays. These interbedded silts and clays yield a small amount of water through gravity drainage to wells screened in the deeper sand and gravel and are therefore included in the Pleistocene System. The thin sand and gravel lenses which are part of the till are not included in the Pleistocene system. Both confined and unconfined water table conditions exist in the area (Ginsberg 1983).

Perched aquifers occur where clay or silty clay layers underlie more permeable sediments above the principle saturated zone. Generally these aquifers do not contain enough storage to supply domestic or stock wells. These aquifers are recharged only by precipitation and possibly excess irrigation water. In dry periods these aquifers are depleted (Ginsberg 1983).

In the Bruno area, there is little exchange between the Platte River and Pleistocene aquifers. There are also no stream interconnections within the aquifers (Ginsberg 1983). Figure 5-1 provides a list of geologic units and their water bearing properties in Butler County.

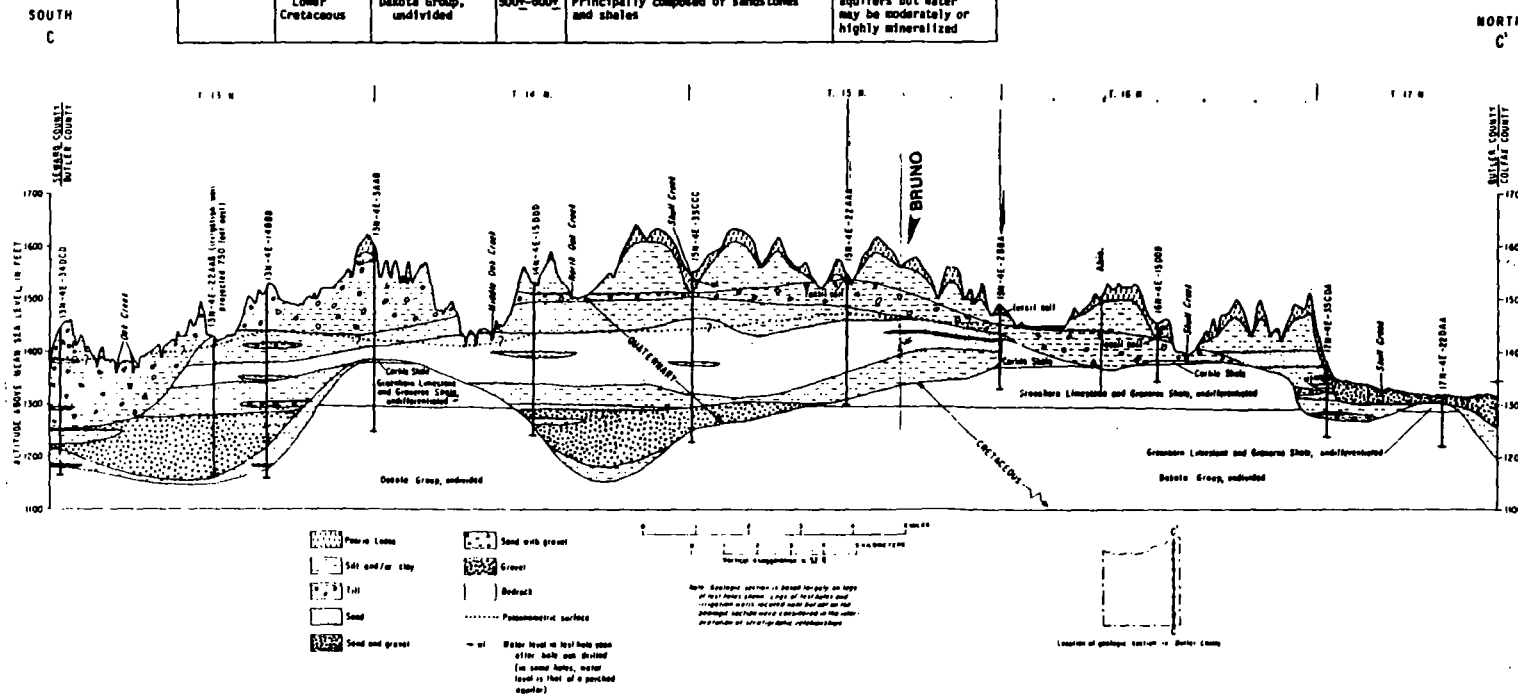
The natural chemical quality of the ground water in the Bruno area is generally good. It is low in dissolved solids, nitrate, sulfate, chloride, iron, and manganese. Table 5-1 shows inorganic chemical quality data for a well in Bruno. The legal location of the well is 15-4-10CAC, which is probably well #G-30184 (Ginsberg 1983).

Well #G-30184 is 138 feet deep and has a static water level of approximately 65 feet. Well #G-30185 is 66 feet deep and has a static water level of approximately 22 feet below ground surface. Well logs of these two wells appear in Appendix G.

Geologic units and their water-bearing properties, Butler County

System	Series	Stratigraphic unit	Thickness (feet)	Character and distribution	Water supply
Quaternary	Holocene (?)	Surficial flood-plain and terrace deposits and soil	0-10(?)	Unconsolidated stream-deposited sand, gravel, silt, and clay	May contribute water to wells
	Pleistocene	Unconsolidated deposits	25±-400±	Wind-deposited silt; stream-deposited sand, gravel, silt, and clay; ice-deposited till	Stream-deposited sand and gravel constitute the major reservoir in the county and yield water to large-capacity wells
Tertiary(?)	Pliocene(?)	Mostly unconsolidated silt	0-50±	May blanket Cretaceous bedrock at base and on side slopes of paleo-valleys	Generally too fine textured to yield water to wells
Cretaceous	Upper Cretaceous	Carlile Shale (Blue Hill and Fairport Members)	0-90±	Blue Hill Member is gray argillaceous shale Fairport Member is bluish-gray shale containing thin fossiliferous clay layers (Condra and Reed, 1959, p. 17)	Not known to supply water to wells
		Greenhorn Limestone	25±	Thin, medium soft, gray limestones interbedded with gray shales (Condra and Reed, 1959, p. 18)	Not known to supply water to wells
		Graneros Shale	65±	Dark-gray shale interbedded with thin calcareous layers; contains some sand and sandy shale, also carbonaceous material in basal part	Does not supply water to wells
	Lower Cretaceous	Dakota Group, undivided	500±-600±	Principally composed of sandstones and shales	Sandstones may be aquifers but water may be moderately or highly mineralized

BRUNO PUBLIC WATER SUPPLY
BRUNO, NEBRASKA



WASTE SITE TRACKING NO.: NE0080
PREPARED BY A. MELIA

ECOLOGY & ENVIRONMENT F17 AUG. 1988
SOURCE GINSBERG 1983

FIGURE 5-1 NORTH-SOUTH GEOLOGIC SECTION THROUGH THE EASTERN PART OF BUTLER COUNTY

TABLE 5-1
Inorganic Chemical Analysis of
Bruno Well 15-4-10CAC
August 19, 1977

Constituent	Concentration
Iron (Fe)	250 µg/l
Manganese (Mn)	20 µg/l
Bicarbonate (HCO_3^-)	200 mg/l
Sulfate (SO_4^{2-})	75 mg/l
Chloride (Cl^-)	17.0 mg/l
Nitrate-nitrogen ($\text{NO}_3^- \text{N}$)	0
Nitrite-nitrogen ($\text{NO}_2^- \text{N}$)	5.2 mg/l
Dissolved Solids	381 mg/l
Hardness as CaCO_3	250 mg/l
pH	7.2
Specific Conductance	563 umhos
Source: Ginsberg 1983	

SECTION 6: FIELD ACTIVITIES

The main emphasis of the Bruno COOP Association soil-gas investigation was to create a map of the carbon tetrachloride plume and to locate the source or sources of the volatile organic contamination detected in the Bruno PWS wells. Field work was conducted October 24 through 27, 1988. E & E/FIT members present were:

Anne Melia - Team Leader
Wesley McCall - Gas chromatograph operator
Jim Alldritt - Geoprobe operator
David Zimmermann - Site safety officer

All field work was performed in level D protection. Air monitoring did not show any readings above background. Twenty-seven soil-gas samples were obtained and analyzed during the survey. Water samples were collected on October 26, 1988, from two PWS wells, the Bruno School, and a background well location. The water sample activity number was TK9A4. The wells were sampled again on December 19 and 20, 1988 to resolve apparent discrepancies in the October 26, 1988 results. The sampling activity number was DC906.

6.1 WATER SAMPLING

Six ground water samples were collected during the Bruno soil-gas investigation. Sample 001 was collected from Bruno PWS well #G-30185, and sample 002 and duplicate sample 003 were collected from Bruno PWS well #G-30184. A distribution sample (004) was collected from the Bruno school drinking fountain. A background sample (005) was collected from the Clarence Votava residence. A field blank was prepared and submitted for analysis to fulfill quality control/quality assurance requirements. All samples were collected in accordance with EPA and E & E protocols.

Samples were collected directly into two, 40-ml VOA vials after purging each system for approximately five minutes. The samples were iced to 4°C and packed in coolers for transport. Samples were submitted to the Region VII laboratory in Kansas City, Kansas, on October 27, 1988, for volatile organic analysis. Sample locations are depicted on Figure 2-1 and Table 6-1 provides a sample summary.

Due to apparent discrepancies in the analytical results obtained from the October 26, 1988 sampling, the same wells were sampled on December 19 and 20, 1988. The sampling protocol was identical to that followed on October 26, 1988. These samples are also summarized in Table 6-1.

6.2 SOIL-GAS SURVEY

Soil-gas samples were collected by pushing a hollow probe and pipe extenders to a depth of 5 to 10 feet, approximately 3 to 5 feet above the phreatic zone. The Region VII E & E/FIT Geoprobe Unit (Geoprobe, Inc.) was used to insert and remove probes. A small amount of air (10 to 20 liters) was evacuated from the soil. A 5-ml sample of the soil-gas was collected in a glass syringe from the gas sampling bulb, and immediately analyzed in the mobile laboratory. A total of 27 soil-gas samples from 26 locations were analyzed during this survey. Table 6-2 summarizes the soil-gas sample locations.

A Tracor model 540 gas chromatograph (GC) equipped with a nickel 63 electron capture detector (ECD), a Spectra physics 4290 Integrator, and a 30-meter J & W Scientific DB-624 megabore capillary column were used to analyze the soil-gas samples for carbon tetrachloride. Instrument calibration consisted of injecting known masses of each carbon tetrachloride standard into the GC and measuring the corresponding instrument responses. A calibration curve was then determined by the integrator and subsequent sample concentrations (unknowns) were determined by the integrator based on the calibration curve. The instrument detection limit was ~8 ng/l of air of carbon tetrachloride. The sample detection limit, or confidence level, was set at five times the instrument detection limit, at 40 ng/l.

TABLE 6-1
 Water Sampling Summary
 Bruno Public Water Supply
 E & E/FIT, October 26, 1988
 Sample Series: TK9A4
 E & E/FIT, December 19 and 20, 1988
 Sample Series: DC906

Sample Number	Location
001	Bruno Well #G-30185
002	Bruno Well #G-30184
003	Bruno Well #G-30184 (Duplicate)
004	Bruno School Drinking Fountain
005	Background (Clarence Votava Residence)
006F	Field Blank

=====
 Note: All samples were submitted for volatile organic analysis (VOA).
 =====

Bruno Contacts:
 Mr. Wilford Kozisek
 Box 1
 Bruno, Nebraska 68014

Clarence Votava
 826 N.
 David City, Nebraska 68632

TABLE 6-2
Soil-Gas Sample Location Descriptions
Bruno COOP Association
E & E/FIT, October 24-27, 1988

Sample Number	Lot Number	Location
S-1	1	Extreme SE corner of Bruno COOP property
S-2	1	~175' north of S-1 on Bruno Village property
S-3	6	Along Railroad Road ~325' from S-2
S-4	8	~200' south of S-3
S-5	12	~300' south of S-4
S-6	9	~110' from S-3 along Railroad Road
S-7	11	~200' north of S-5
S-8	18	~50' southwest of well #G-30185
S-9	17	~7' southeast of well #G-30185
S-10	17	10 feet deep at location S-9
S-11	15	~125' southeast of S-9
S-12	10	~25' northeast of S-5
S-13	27	On northwest edge of wheat field on Bruno COOP property
S-14	22	~400' southwest of S-9 (~7' from set of 5 round storage bins)

TABLE 6-2 (Cont.)
Soil-Gas Sample Location Descriptions
Bruno COOP Association
E & E/FIT, October 24-27, 1988

Sample Number	Lot Number	Location
S-15	23	~40' east of S-14
S-16	19	~350' northeast of S-15
S-17	19	~135' south of S-16
S-18	21	~10' northwest of S-14
S-19	23	~75' south of S-14
S-20	11	~125' east of S-7 (directly south of a possible old grain storage bin foundation)
S-21	8	~250' northeast of S-20
S-22	9	~150' northeast of S-20
S-23	16	Directly behind a large flat grain bin ~225' southwest of S-20
S-24	10	~20' northeast of S-20
S-25	--	~6' northwest of well #G-30184
S-26	--	Southeast corner of Pine and 2nd Street intersection
S-27	--	Along Fremont Street ~50' northeast of Oak and Fremont intersection

6.3 ON-SITE OBSERVATIONS AND INTERVIEWS

During the October 26, 1988, sampling of Bruno PWS well #G-30184, a small plastic chemical addition tank was noted in the well house, though it was not readily apparent what type of chemical the tank contained or if chemical addition was taking place. A manufacturer's note observed near the tank indicated that someone had been out to fix a problem with the tank. Wilford Kozisek of the Bruno Village Council stated that the city had chlorinated the water from well #G-30184 for a short time. Because problems had developed with too much chlorine being added to the water, Kozisek said he thought that chlorine addition had been discontinued. The addition of chlorine to well #G-30184 could explain the 93 ppb chloroform detected in the March 1988 EPA sampling of the well. Chloroform was also detected, at 4.1 ppb, in the January 1986 sampling of the well.

SECTION 7: ANALYTICAL RESULTS

7.1 WATER SAMPLING

Analytical results for both the October 26, 1988 and the December 19 through 20, 1988 sampling events appear in Table 7-1. The positive results found during the October 26, 1988, sampling are "J" coded because the maximum sample holding times were exceeded before the samples were analyzed. Several of the positive results obtained from the December 19 through 20, 1988 sampling are "J" coded due to poor standard calibration results. A "J" code indicates that the associated numerical value is an estimated quantity. The method detection limit for chloroform, 1,2-dichloroethane, and carbon tetrachloride was 1.0 ng/l.

The apparent discrepancies in the October 26, 1988 results concern samples TK9A4001 and TK9A4005. It would seem, based on previous analytical results from these samples, that these two samples were switched during collection or analysis. TK9A4001 was expected to contain contaminant levels similar to samples TK9A4002 and 003. TK9A4005 was expected to be clean. The December 19 through 20, 1988 sampling was conducted to resolve these discrepancies. Because the apparent "switching" of TK9A4001 and TK9A4005 could not be verified, only the December 19 through 20, 1988 data will be considered valid. It should be noted, however, that aside from samples 001 and 005, the analytical results from the October and December sampling events are quite similar.

Sample 001 (Bruno well #G - 30185) contained 4.0 µg/l of chloroform, 12 J µg/l of 1,2-dichloroethane, and 37 J µg/l of carbon tetrachloride. Sample 002 (Bruno well #G-30184) contained 2.0 µg/l of chloroform, 3.0 µg/l of 1,2-dichloroethane, and 15 µg/l of carbon tetrachloride. Sample 003 (the duplicate of 002), contained identical concentrations of chloroform and 1,2-dichloroethane (1,2-DCA) and 14 µg/l of carbon tetrachloride. Sample 004, collected from the Bruno School drinking fountain, contained 3.0 µg/l of chloroform, 12 µg/l of 1,2-

dichloroethane, and 29 µg/l of carbon tetrachloride. Chloroform, 1,2-DCA and carbon tetrachloride were not detected in 005 (background) and 006 (field blank). The complete data transmittals from the October and December sampling events can be found in Appendix D.

7.2 SOIL-GAS SURVEY

Twenty-seven samples from 26 locations were analyzed during the soil-gas investigation. Sample results are summarized in Table 7-1. All samples were collected from a depth of 5 feet, except for sample S-10 which was collected from a depth of 10 feet at location S-9. Due to the tight silty clay soil conditions of the area and the relatively low carbon tetrachloride concentrations detected in the ground water, determination of a contaminant plume was difficult. Silty clay soils tend to retard the diffusion of volatile organic compounds and therefore may have adversely affected their detection in soil-gas. Plat 1 (Appendix B) shows the sample locations and approximate contaminant plumes. Samples S-14 and S-20 contained 144 ng/l and 370 ng/l of air of carbon tetrachloride, respectively. These two samples were the only samples with carbon tetrachloride levels above the 40 ng/l confidence level. Samples S-9 and S-21 contained 23 ng/l and 12 ng/l of air of carbon tetrachloride, respectively. These values are above the instrument detection limit (IDL) of 8 ng/l and are therefore quantifiable, but they are below the confidence level. Because tight silty clay soils tend to restrict volatile organic chemical diffusion, all peaks of carbon tetrachloride picked up by the GC and integrator during this survey are significant. Samples S-10, S-12, S-18, and S-24 had small carbon tetrachloride peaks. The values were below the 8.0 ng/l IDL and are therefore non-quantifiable and are reported as <8.0 ng/l. The remaining samples did not show any evidence of carbon tetrachloride contamination and are reported as non-detects (ND).

TABLE 7-1
Summary of Analytical Results for Water Samples
Bruno Public Water Supply
E & E/FIT, October 26, 1988
Sample Series: TK9A4
and
E & E/FIT, December 19 through 20, 1988
Sample Series: DC906
Results in µg/l

Sample Number	Contaminant					
	Chloroform		1,2-Dichloroethane		Carbon tetrachloride	
	Oct.	Dec.	Oct.	Dec.	Oct.	Dec.
001 (Bruno Well) G-30185	ND*	4.0	ND*	12 J	ND*	37 J
002 (Bruno Well) G-30184	4.0 J	2.0	12	3.0	27 J	15
003 002 DUP	4.0 J	2.0	4.0 J	3.0	29 J	14
004 BRUNO P.S.	4.0 J	3.0	4.0 J	12	31 J	29
005 G-GR.	4.0 J*	ND	12 J*	ND	32 J*	ND
006 BLANK	ND	ND	ND	ND	ND	ND

*Analytical results in question; thus the December resampling.

J - The associated numerical value is an estimated quantity.

TABLE 7-2
Soil-Gas Concentrations Carbon Tetrachloride
Bruno Public Water Supply
E & E/FIT, October 24-27, 1988

Sample Number	Concentration (ng/l)	Sample Number	Concentration (ng/l)
S-1	ND	S-15	ND
S-2	ND	S-16	ND
S-3	ND	S-17	ND
S-4	ND	S-18	<8.0
S-5	ND	S-19	ND
S-6	ND	S-20	370
S-7	ND	S-21	12
S-8	ND	S-22	ND
S-9	23	S-23	ND
S-10	<8.0	S-24	<8.0
S-11	ND	S-25	ND
S-12	<8.0	S-26	ND
S-13	ND	S-27	ND
S-14	144		

Notes: Confidence Level: 40 ng/l
Instrument Detection Limit: 8 ng/l
<8.0 ng/l: Concentration was below the instrument detection limit and is therefore non-quantifiable.
ND: No carbon tetrachloride peaks were detected by the instrument.

SECTION 8: DISCUSSION OF RESULTS

8.1 ATTRIBUTION OF CONTAMINANTS

Initial interpretation of the soil-gas results indicates that the source of the Bruno PWS volatile organic chemicals contamination is the area which is and has been the site of grain storage facilities since the late 1940s. The analytical results from the water samples collected December 19 through 20, 1988, indicate that the Bruno PWS continues to have chloroform, 1,2-dichloroethane, and carbon tetrachloride contamination.

Plat 1 shows four small separate carbon tetrachloride soil-gas plumes located on property which is now owned by the Bruno Coop Association. Sample S-20 contained the highest detected concentration of carbon tetrachloride at 370 ng/l. This sample is located on warehouse lot #11, directly south of a possible old grain storage bin foundation. A 1962 aerial photo shows a building where this foundation is currently located. Sample S-21 contained 12 ng/l of carbon tetrachloride and is located on lot #8. These properties have been owned by the Bruno Coop Association since 1964. It appears from a 1962 aerial photograph of the area, that the properties were used by the USDA for their grain storage facility operations previous to 1964. A copy of this 1962 aerial photo can be found in the E & E/FIT Bruno Coop Association site file. A suitable photo copy could not be obtained for inclusion in this report.

Sample S-14 contained 144 ng/l of carbon tetrachloride and is located on warehouse lot #22, directly east of a set of five round grain storage bins. Sample S-9 contained 23 ng/l of carbon tetrachloride and is located on lot #17. From the 1962 aerial photo of the area, it appears that these properties were also used by the USDA for the grain storage facility operations previous to 1964. The R & W Grain Company purchased these properties from the C & NW Railway Company in 1965. In 1968, these properties were purchased by Wagner Mills, Inc. who then

leased the lots to the Agrico Chemical Company from February 1, 1969, to January 31, 1974. The Bruno Coop Association purchased the lots from Wagner Mills, Inc. in June 1988.

8.2 ENVIRONMENTAL CONSIDERATIONS

The greatest concern associated with this site is the drinking water contamination. The maximum contaminant level (MCL) for 1,2-dichloroethane is 5 µg/l (EPA 1987). This level was surpassed in both samples DC906001, Bruno Well #G-3018S) and DC906004, the Bruno School drinking fountain, which contained 12 µg/l. The MCL for carbon tetrachloride is also 5 µg/l (EPA 1987). Samples DC9006001, 002, 003, and 004 contained carbon tetrachloride levels ranging from 14 µg/l to 37 µg/l; which are above the MCL.

The elevated chloroform concentration of 93 µg/l detected in Bruno well #G-30184 during the February 1988 sampling appears to have been a result of chlorination. Chlorination of the water has since been discontinued, and all the December 1988 water samples contained less than 4.0 ng/l of chloroform. The MCL for chloroform is 100 ug/l (EPA 1987).

SECTION 9: SUMMARY

The E & E/FIT performed a soil-gas survey of the Bruno Public Water Supply on October 24 through 27, 1988. Twenty-seven soil-gas samples were collected from 26 different locations and analyzed for carbon tetrachloride contamination. In addition, six water samples were collected on October 26, 1988 and submitted to the U.S. EPA for volatile organic chemical analysis on October 27, 1988. Due to discrepancies in the analytical results for the water samples, the wells were resampled on December 19 through 20, 1988.

The December analytical results showed that samples collected from the two Bruno PWS wells and the Bruno school contained chloroform, 1,2-dichloroethane, and carbon tetrachloride. The concentrations of 1,2-dichloroethane and carbon tetrachloride were above the EPA MCLs.

Carbon tetrachloride was detected in eight soil-gas samples in concentrations ranging from <8.0 ng/l to 370 ng/l. The results appear as four small separate soil-gas plumes. The source of this contamination is the area which is and has been the location of grain storage facilities since the 1940s.

A 1962 aerial photograph of the area indicates that this entire area was used by the USDA for their grain storage facility operations previous to 1964. This area is now owned by the Bruno Coop Association.

SECTION 10: BIBLIOGRAPHY

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Appendix A
Technical Directive Document

AM

01-2 TF

1A. Cost Center: FT 1307		FIT ZONE II CONTRACT Contract Number 68-01-7347 TECHNICAL DIRECTIVE DOCUMENT (TDD)			2. TDD Number: F-07-8809-030	
1B. Account Number: FNEØ136SA					2A. Amendment: <input checked="" type="checkbox"/> Administrative <input type="checkbox"/> Technical	
3A. Priority: <input checked="" type="checkbox"/> High <input type="checkbox"/> Medium <input type="checkbox"/> Low		3B. Key EPA Contact: Name: Cecilia Tapia Phone: (913) 236-2856				
4A. Estimate of Technical Hours: 662	4B. Subcontract: NONE	4C. Estimate of Subcontract Cost: NA	5A. SSID Number: unassigned	5B. CERID Number: NEØ986367839		
5C. EPA Site Name: Bruno COOP Association			5D. City/County/State: Bruno/Butler/NE			
6. Desired Report Format: <input checked="" type="checkbox"/> Formal Report <input type="checkbox"/> Standard Report <input type="checkbox"/> Other (Specify): <input type="checkbox"/> Letter Report <input type="checkbox"/> Formal Briefing			7A. Activity Start Date: 10/3/88		7B. Estimated Completion Date: * 7/31/89	
8A. Type of Activity: <input type="checkbox"/> PA <input type="checkbox"/> RCRA-PA <input type="checkbox"/> HRS Support <input type="checkbox"/> Enforcement Support <input type="checkbox"/> Training <input checked="" type="checkbox"/> SI <input type="checkbox"/> RCRA-SI <input type="checkbox"/> QA Support <input type="checkbox"/> Program Management <input type="checkbox"/> General Technical Assistance <input type="checkbox"/> ESI <input type="checkbox"/> Special Studies <input type="checkbox"/> Equipment Maintenance					8B. FIT/SCAP Goal: Will Deliverable Meet a Unit of the Goal? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
9. General Task Description: Conduct a site investigation of the Bruno COOP Association property/site, located in Bruno, NE.						
10. Specific Elements: 1) implement work plan prepared under TDD F-07-8808-021 (Bruno PWS) 2) prepare trip report within 4 weeks of field work 3) Include SI form with final report <input type="checkbox"/> Additional Scope Attached					11. Interim Deadlines: 2) 11/23/88 3) 5/31/89	
12. Comments: Under separate TDD, Submit trip report with *TDD amended to change due date						
13. Authorizing: <u>Peter Schubert</u> (Signature)					14. Date: <u>4/25/89</u> E & E K.C.K.	
15. Received by: <u>John D. White</u> (Contractor FITOM Signature)					16. Date: <u>4/26/89</u>	

Appendix B
EPA Site Investigation Form 2070-13

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 1 - SITE LOCATION AND INSPECTION INFORMATION		I. IDENTIFICATION 01 STATE NE 02 SITE NUMBER D986367829	
II. SITE NAME AND LOCATION			
01 SITE NAME (Legal, common, or descriptive name of site) Bruno Coop Association		02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER Main Street, Box 135	
03 CITY Bruno	04 STATE NE	05 ZIP CODE 68014	06 COUNTY Butler
07 COUNTY CODE		08 CONG DIST	
09 COORDINATES LATITUDE LONGITUDE 41° 17' 00".N 097° 57' 30".W		10 TYPE OF OWNERSHIP (Check one) <input checked="" type="checkbox"/> A. PRIVATE <input type="checkbox"/> B. FEDERAL <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input type="checkbox"/> F. OTHER <input type="checkbox"/> G. UNKNOWN	
III. INSPECTION INFORMATION			
01 DATE OF INSPECTION 10/24/88 MO/DAY/YR		02 SITE STATUS <input checked="" type="checkbox"/> ACTIVE <input type="checkbox"/> INACTIVE	
03 YEARS OF OPERATION 1964 UNKNOWN BEGINNING YEAR ENDING YEAR			
04 AGENCY PERFORMING INSPECTION (Check all that apply) <input type="checkbox"/> A. EPA <input checked="" type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. MUNICIPAL <input type="checkbox"/> D. MUNICIPAL CONTRACTOR (Name of firm) (Name of firm) <input type="checkbox"/> E. STATE <input type="checkbox"/> F. STATE CONTRACTOR <input type="checkbox"/> G. OTHER (Name of firm) (Specify)			
05 CHIEF INSPECTOR Anne Melia		06 TITLE Chemist	07 ORGANIZATION E & E/FIT
08 TELEPHONE NO. (913) 432-9961			
09 OTHER INSPECTORS Dave Zimmermann		10 TITLE Environmental Scientist	11 ORGANIZATION E & E/FIT
12 TELEPHONE NO. (913) 432-9961			
Wesley McCall		Geochemist	E & E/FIT
13 TELEPHONE NO. (913) 432-9961			
Jim Alldritt		Geographer	E & E/FIT
14 TELEPHONE NO. (913) 432-9961			
3 SITE REPRESENTATIVES INTERVIEWED Bob Langhorst		14 TITLE Manager, Bruno Coop	15 ADDRESS Box 135 Bruno, NE
16 TELEPHONE NO. (402) 543-2226			
Wilford Kozisek		Bruno City Council	Box 1 Bruno, NE
17 TELEPHONE NO. (402) 543-2325			
17 ACCESS GAINED BY (Check one) <input checked="" type="checkbox"/> PERMISSION <input type="checkbox"/> WARRANT		18 TIME OF INSPECTION 10/24 - 10/26/88	
19 WEATHER CONDITIONS Sunny, Cool 40° to 50°			
IV. INFORMATION AVAILABLE FROM			
CONTACT Cecilia Tapia		02 OF (Agency/Organization) EPA	
03 TELEPHONE NO. (913) 236-2856			
PERSON RESPONSIBLE FOR SITE INSPECTION FORM Anne Melia		05 AGENCY E & E	06 ORGANIZATION FIT
07 TELEPHONE NO. (913) 432-9961		08 DATE 04/13/89	

EPA

SITE INSPECTION REPORT

PART 2 - WASTE INFORMATION

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)	02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)	03 WASTE CHARACTERISTICS (Check all that apply)
<input type="checkbox"/> A. SOLID <input type="checkbox"/> E. SLURRY <input type="checkbox"/> B. POWDER, FINES <input checked="" type="checkbox"/> F. LIQUID <input type="checkbox"/> C. SLUDGE <input type="checkbox"/> G. GAS <input type="checkbox"/> D. OTHER _____ <div style="text-align: center;">(Specify)</div>	<div style="text-align: right;">TONS _____</div> <div style="text-align: right;">CUBIC YARDS _____</div> <div style="text-align: right;">NO. OF DRUMS <u>Unknown</u></div>	<input type="checkbox"/> A. TOXIC <input checked="" type="checkbox"/> E. SOLUBLE <input type="checkbox"/> I. HIGHLY VOLATILE <input type="checkbox"/> B. CORROSIVE <input type="checkbox"/> F. INFECTIOUS <input type="checkbox"/> J. EXPLOSIVE <input type="checkbox"/> C. RADIOACTIVE <input type="checkbox"/> G. FLAMMABLE <input type="checkbox"/> K. REACTIVE <input type="checkbox"/> D. PERSISTENT <input type="checkbox"/> H. IGNITABLE <input type="checkbox"/> L. INCOMPATIBLE <div style="text-align: right;"><input type="checkbox"/> M. NOT APPLICABLE</div>

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS	Unknown		
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

[illegible]

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Ecology and Environment, Inc., Bruno Public Water Supply (PWS) Site Files.

EPA

POTENTIAL HAZARDOUS WASTE SITE

SITE INSPECTION REPORT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE
NE02 SITE NUMBER
D986367829

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION 02 ☒ OBSERVED (DATE: 11/84) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: 154 04 NARRATIVE DESCRIPTION

The Nebraska Department of Health (NDOH) identified Bruno as having solvent contamination in their ground water in November 1984.

1 B. SURFACE WATER CONTAMINATION 02 OBSERVED (DATE:) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: 04 NARRATIVE DESCRIPTION

No surface water in the vicinity.

01 C. CONTAMINATION OF AIR 02 OBSERVED (DATE:) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: 04 NARRATIVE DESCRIPTION

None known

01 D. FIRE/EXPLOSIVE CONDITIONS 02 OBSERVED (DATE:) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: 04 NARRATIVE DESCRIPTION

None known

01 E. DIRECT CONTACT 02 OBSERVED (DATE:) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: 04 NARRATIVE DESCRIPTION

None known

01 F. CONTAMINATION OF SOIL 02 OBSERVED (DATE:) POTENTIAL ALLEGED
 AREA POTENTIALLY AFFECTED: 04 NARRATIVE DESCRIPTION

None known (Acres)

01 ☒ G. DRINKING WATER CONTAMINATION 02 ☒ OBSERVED (DATE: 11/84) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: 04 NARRATIVE DESCRIPTION

The NDOH initially identified the Bruno PWS as containing volatile organic (solvent) contamination in November 1984.

01 ☒ H. WORKER EXPOSURE/INJURY 02 OBSERVED (DATE:) POTENTIAL ALLEGED
 03 WORKERS POTENTIALLY AFFECTED: 04 NARRATIVE DESCRIPTION

None known - except for drinking the water.

01 I. POPULATION EXPOSURE/INJURY 02 OBSERVED (DATE:) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: 04 NARRATIVE DESCRIPTION

None known - except for drinking water.

POTENTIAL HAZARDOUS WASTE SITE

EPA

SITE INSPECTION REPORT

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
NE D986367829

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

II. HAZARDOUS CONDITIONS AND INCIDENTS (CONTINUED)

01 J. DAMAGE TO FLORA 02 OBSERVED (DATE:) POTENTIAL ALLEGED

04 NARRATIVE DESCRIPTION

None known

01 K. DAMAGE TO FAUNA 02 OBSERVED (DATE:) POTENTIAL ALLEGED

04 NARRATIVE DESCRIPTION (Include name(s) of species)

None known

01 L. CONTAMINATION OF FOOD CHAIN 02 OBSERVED (DATE:) POTENTIAL ALLEGED

04 NARRATIVE DESCRIPTION

None known

01 M. UNSTABLE CONTAINMENT OF WASTES 02 OBSERVED (DATE:) POTENTIAL ALLEGED

(Spills/runoff/standing liquids/leaking drums)

03 POPULATION POTENTIALLY AFFECTED: 04 NARRATIVE DESCRIPTION

None (presently) known

01 N. DAMAGE TO OFFSITE PROPERTY 02 OBSERVED (DATE:) POTENTIAL ALLEGED

04 NARRATIVE DESCRIPTION

None known

01 O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs 02 OBSERVED (DATE:) POTENTIAL ALLEGED

04 NARRATIVE DESCRIPTION

None known

01 P. ILLEGAL/UNAUTHORIZED DUMPING 02 OBSERVED (DATE:) POTENTIAL ALLEGED

04 NARRATIVE DESCRIPTION

Use of the fumigants in question was legal until 1985. They are no longer used.

5 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

The site has been the location of grain storage facilities since the late 1940s and includes both government and private operations.

V. SOURCES OF INFORMATION (Cite specific references. e.g., state files, sample analysis, reports)

Ecology and Environment, Inc., Bruno PWS Site Files.

EPA

POTENTIAL HAZARDOUS WASTE SITE

SITE INSPECTION REPORT

PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE
NE02 SITE NUMBER
D986367829

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
<input type="checkbox"/> A. NPDES				
<input type="checkbox"/> B. UIC				
<input type="checkbox"/> C. AIR				
<input type="checkbox"/> D. RCRA				
<input type="checkbox"/> E. RCRA INTERIM STATUS				
<input type="checkbox"/> F. SPCC PLAN				
<input type="checkbox"/> G. STATE (Specify)				
<input type="checkbox"/> H. LOCAL (Specify)				
<input type="checkbox"/> I. OTHER (Specify)				
<input type="checkbox"/> J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE	04 TREATMENT (Check all that apply)	05 Other
<input type="checkbox"/> A. SURFACE IMPOUNDMENT			<input type="checkbox"/> A. INCINERATION	<input type="checkbox"/> A. BUILDINGS ON SITE
<input type="checkbox"/> B. PILES			<input type="checkbox"/> B. UNDERGROUND INJECTION	
<input type="checkbox"/> C. DRUMS, ABOVE GROUND			<input type="checkbox"/> C. CHEMICAL/PHYSICAL	
<input type="checkbox"/> D. TANK, ABOVE GROUND			<input type="checkbox"/> D. BIOLOGICAL	
<input type="checkbox"/> E. TANK, BELOW GROUND			<input type="checkbox"/> E. WASTE OIL PROCESSING	06 AREA OF SITE
<input type="checkbox"/> F. LANDFILL			<input type="checkbox"/> F. SOLVENT RECOVERY	(Acres)
<input type="checkbox"/> G. LANDFARM			<input type="checkbox"/> G. OTHER RECYCLING/RECOVERY	
<input type="checkbox"/> H. OPEN DUMP			<input checked="" type="checkbox"/> H. OTHER None	
<input checked="" type="checkbox"/> I. OTHER sprayed on grain (Specify)	Unknown		(Specify)	

07 COMMENTS

The site was/is a grain storage facility. The solvents detected in the Bruno PWS wells were used as grain fumigants and rodenticides. They were sprayed on the grain and poured into rodent nests.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)				
<input type="checkbox"/> A. ADEQUATE, SECURE	<input type="checkbox"/> B. MODERATE	<input type="checkbox"/> C. INADEQUATE, POOR	<input type="checkbox"/> D. INSECURE, UNSOUND, DANGEROUS	
02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.				
None				

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
02 COMMENTS
Drinking water contamination

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

Ecology and Environment, Inc., Bruno PWS Site Files

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT						I. IDENTIFICATION	
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA						01 STATE NE	02 SITE NUMBER D9876367829
II. DRINKING WATER SUPPLY							
01 TYPE OF DRINKING SUPPLY (Check as applicable)			02 STATUS			03 DISTANCE TO SITE	
	SURFACE	WELL	ENDANGERED	AFFECTED	MONITORED		
COMMUNITY	A. _____	B. <u>X</u>	A. _____	B. <u>X</u>	C. <u>X</u>	A. <u>0</u> (mi)	
NON-COMMUNITY	C. _____	D. _____	D. _____	E. _____	F. _____	B. _____ (mi)	
III. GROUNDWATER							
01 GROUNDWATER USE IN VICINITY (Check one)							
<input checked="" type="checkbox"/> A. ONLY SOURCE FOR DRINKING <input type="checkbox"/> B. DRINKING (Other sources available) <input type="checkbox"/> C. COMMERCIAL, INDUSTRIAL IRRIGATION (Limited other sources available) <input type="checkbox"/> D. NOT USED, UNUSABLE COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available)							
02 POPULATION SERVED BY GROUND WATER <u>154</u>				03 DISTANCE TO NEAREST DRINKING WATER WELL <u>0</u> (mi)			
04 DEPTH TO GROUNDWATER <u>22</u> (ft)	05 DIRECTION OF GROUNDWATER FLOW <u>NW</u>		06 DEPTH TO AQUIFER OF CONCERN <u>22</u> (ft)	07 POTENTIAL YIELD OF AQUIFER <u>57,600</u> (gpd)	08 SOLE SOURCE AQUIFER <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
09 DESCRIPTION OF WELLS (Including usage, depth, and location relative to population and buildings)							
G-30185, back-up PWS well, well depth 66 ft, depth to 27 ft on Coop property. G-30184, main PWS well, depth 138 ft, depth to water 65 ft, located next to town water tower.							
10 RECHARGE AREA Unknown but expected				11 DISCHARGE AREA Unknown but expected			
<input checked="" type="checkbox"/> YES COMMENTS <input type="checkbox"/> NO Well G-36184 is in recharge				<input type="checkbox"/> YES COMMENTS <input type="checkbox"/> NO Well G-30185 is in discharge area			
IV. SURFACE WATER							
01 SURFACE WATER USE (Check one)							
<input type="checkbox"/> A. RESERVOIR, RECREATION DRINKING WATER SOURCE <input type="checkbox"/> B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES <input type="checkbox"/> C. COMMERCIAL, INDUSTRIAL <input type="checkbox"/> D. NOT CURRENTLY USED							
02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER							
NAME:			AFFECTED		DISTANCE TO SITE		
_____			_____		_____ (mi)		
_____			_____		_____ (mi)		
_____			_____		_____ (mi)		
V. DEMOGRAPHIC AND PROPERTY INFORMATION							
01 TOTAL POPULATION WITHIN					02 DISTANCE TO NEAREST POPULATION		
ONE (1) MILE OF SITE TWO (2) MILES OF SITE THREE (3) MILES OF SITE A. <u>196</u> B. <u>302</u> C. <u>465</u> NO. OF PERSONS NO. OF PERSONS NO. OF PERSONS					<u>0</u> (mi)		
03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE				04 DISTANCE TO NEAREST OFF-SITE BUILDING			
_____				<u>100 feet</u> (mi)			
05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)							
Bruno is a rural village with a population of 154. The main population lives to the southeast of the Bruno Coop.							

POTENTIAL HAZARDOUS WASTE SITE

SITE INSPECTION REPORT

PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE NE	02 SITE NUMBER D9876367829
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II. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

 A. $10^{-6} - 10^{-8}$ cm/sec X B. $10^{-4} - 10^{-6}$ cm/sec C. $10^{-4} - 10^{-3}$ cm/sec D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

 A. IMPERMEABLE X B. RELATIVELY IMPERMEABLE C. RELATIVELY PERMEABLE D. VERY PERMEABLE
(Less than 10^{-6} cm/sec) ($10^{-4} - 10^{-6}$ cm/sec) ($10^{-2} - 10^{-4}$ cm/sec) (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK

300 (ft)

04 DEPTH OF CONTAMINATED SOIL ZONE

Unknown (ft)

05 SOIL pH

Unknown

06 NET PRECIPITATION

-18 (in)

07 ONE YEAR 24 HOUR RAINFALL

2 (in)

08 SLOPE
SITE SLOPE

<1 %

DIRECTION OF SITE SLOPE

NW

TERRAIN AVERAGE SLOPE

3 to 8 %

09 FLOOD POTENTIAL

SITE IS IN YEAR FLOOD PLAN

10

SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE

OTHER

A. (mi)B. (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

(mi)

ENDANGERED SPECIES:

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL

RESIDENTIAL AREAS; NATIONAL/STATE PARKS,
FORESTS, OR WILDLIFE RESERVESAGRICULTURAL LANDS
PRIME AG LAND AG LAND

A. < 1/4 (mi)

B. < 1/4 (mi)

C. (mi) D. < 1/4 (mi)

4 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

The Bruno Coop site is located in a topographic low. The back-up well, #G-3018S is located on property owned by the Coop. Well #G-30184, the main Bruno PWS well, is located in a topographic high, south-southeast of the Bruno Coop. The entire Coop site is topographically flat, with a slope of <1%.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Ecology and Environment, Inc., Bruno PWS Site Files

Bruno Coop Association Site Investigation, October 24 through 26, 1988.

EPA		POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 6 - SAMPLE AND FIELD INFORMATION		I. IDENTIFICATION	
				01 STATE NE	02 SITE NUMBER D9876367829
II. SAMPLES TAKEN					
SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO		03 ESTIMATED DATE RESULTS AVAILABLE	
GROUNDWATER	6	U.S. EPA		Available	
SURFACE WATER					
WASTE					
AIR					
RUNOFF					
SPILL					
SOIL					
VEGETATION					
OTHER	28	Soil-gas		Available	
III. FIELD MEASUREMENTS TAKEN					
01 TYPE	02 COMMENTS				
IV. PHOTOGRAPHS AND MAPS					
01 TYPE <input checked="" type="checkbox"/> GROUND <input checked="" type="checkbox"/> AERIAL		02 IN CUSTODY OF <u>Ecology and Environment, Inc.</u> (Name of organization or individual)			
03 MAPS <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	04 LOCATION OF MAPS <u>Ecology and Environment, Inc.</u>				
V. OTHER FIELD DATA COLLECTED (Provide narrative description)					
A soil-gas survey was performed to detect carbon tetrachloride during the October 24 through 26, 1988. SI performed by E & E/FIT.					
VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)					
E & E/FIT October 24 through 26, 1988 Site Investigation					

POTENTIAL HAZARDOUS WASTE SITE

SITE INSPECTION REPORT

PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE NE	02 SITE NUMBER D9876367829
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EPA

II. CURRENT OWNER(S)

PARENT COMPANY (If applicable)

01 NAME Bruno Coop Association			02 D+B NUMBER			08 NAME			09 D+B NUMBER		
03 STREET ADDRESS (P.O. BOX, RFD #, ETC.) Box 135			04 SIC CODE			10 STREET ADDRESS (P.O. BOX, RFD #, ETC.)			11 SIC CODE		
05 CITY Bruno		06 STATE NE	07 ZIP CODE 68014			12 CITY		13 STATE	14 ZIP CODE		
01 NAME			02 D+B NUMBER			08 NAME			09 D+B NUMBER		
03 STREET ADDRESS (P.O. BOX, RFD #, ETC.)			04 SIC CODE			10 STREET ADDRESS (P.O. BOX, RFD #, ETC.)			11 SIC CODE		
05 CITY		06 STATE	07 ZIP CODE			12 CITY		13 STATE	14 ZIP CODE		
01 NAME			02 D+B NUMBER			08 NAME			09 D+B NUMBER		
03 STREET ADDRESS (P.O. BOX, RFD #, ETC.)			04 SIC CODE			10 STREET ADDRESS (P.O. BOX, RFD #, ETC.)			11 SIC CODE		
05 CITY		06 STATE	07 ZIP CODE			12 CITY		13 STATE	14 ZIP CODE		
01 NAME			02 D+B NUMBER			08 NAME			09 D+B NUMBER		
03 STREET ADDRESS (P.O. BOX, RFD #, ETC.)			04 SIC CODE			10 STREET ADDRESS (P.O. BOX, RFD #, ETC.)			11 SIC CODE		
05 CITY		06 STATE	07 ZIP CODE			12 CITY		13 STATE	14 ZIP CODE		
III. PREVIOUS OWNER(S) (List most recent first)						IV. REALTY OWNER(S) (If applicable; list most recent first)					
01 NAME Wagner Mills			02 D+B NUMBER			01 NAME			02 D+B NUMBER		
03 STREET ADDRESS (P.O. Box, RFD #, etc.) 1303 Colfax St.			04 SIC CODE			03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE		
05 CITY Schuyler		06 STATE NE	07 ZIP CODE 68661			05 CITY		06 STATE	07 ZIP CODE		
01 NAME Chicago Northwestern Transportation Co.			02 D+B NUMBER			01 NAME			02 D+B NUMBER		
03 STREET ADDRESS (P.O. Box, RFD #, etc.) 165 North Canal St.			04 SIC CODE			03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE		
05 CITY Chicago		06 STATE IL	07 ZIP CODE 60606			05 CITY		06 STATE	07 ZIP CODE		
01 NAME			02 D+B NUMBER			01 NAME			02 D+B NUMBER		
03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE			03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE		
05 CITY		06 STATE	07 ZIP CODE			05 CITY		06 STATE	07 ZIP CODE		

J. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Ecology and Environment, Inc., Bruno PWS Site Files.

POTENTIAL HAZARDOUS WASTE SITE

SITE INSPECTION REPORT

PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION

01 STATE
NE02 SITE NUMBER
D9876367829

EPA

II. CURRENT OPERATOR (Provide if different from owner)

OPERATOR'S PARENT COMPANY (If applicable)

01 NAME Bruno Coop Association			02 D+B NUMBER			10 NAME			11 D+B NUMBER		
03 STREET ADDRESS (P.O. BOX, RFD #, ETC.) Box 135				04 SIC CODE		12 STREET ADDRESS (P.O. BOX, RFD #, ETC.)				13 SIC CODE	
05 CITY Bruno		06 STATE NE	07 ZIP CODE 68014			14 CITY		15 STATE	16 ZIP CODE		
08 YEARS OF OPERATION 1964 - Present		09 NAME OF OWNER Bruno Coop									

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

01 NAME Agrico Chemical Co.			02 D+B NUMBER			10 NAME			11 D+B NUMBER		
03 STREET ADDRESS (P.O. Box, RFD #, etc.) Box 61119				04 SIC CODE		12 STREET ADDRESS (P.O. Box, RFD #, etc.)				13 SIC CODE	
05 CITY New Orleans		06 STATE LA	07 ZIP CODE 70161			14 CITY		15 STATE	16 ZIP CODE		
08 YEARS OF OPERATION 1969-1974		09 NAME OF OWNER DURING THIS PERIOD Wagner Mills									
01 NAME U.S. Department of Agriculture			02 D+B NUMBER			10 NAME			11 D+B NUMBER		
03 STREET ADDRESS (P.O. Box, RFD #, etc.) Unknown				04 SIC CODE		12 STREET ADDRESS (P.O. Box, RFD #, etc.)				13 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE			14 CITY		15 STATE	16 ZIP CODE		
08 YEARS OF OPERATION 1947-1964		09 NAME OF OWNER DURING THIS PERIOD Chicago & NW Railway Co.									
01 NAME			02 D+B NUMBER			10 NAME			11 D+B NUMBER		
03 STREET ADDRESS (P.O. Box, RFD #, etc.)				04 SIC CODE		12 STREET ADDRESS (P.O. Box, RFD #, etc.)				13 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE			14 CITY		15 STATE	16 ZIP CODE		
08 YEARS OF OPERATION		09 NAME OF OWNER DURING THIS PERIOD									

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Ecology and Environment, Inc., Bruno PWS Site Files.

POTENTIAL HAZARDOUS WASTE SITE

EPA

SITE INSPECTION REPORT

I. IDENTIFICATION

01 STATE NE	02 SITE NUMBER D9876367829
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PART 9 - GENERATOR/TRANSPORTER INFORMATION

II. ON-SITE GENERATOR

01 NAME None		02 D+B NUMBER		
03 STREET ADDRESS (P.O. BOX, RFD #, ETC.)		04 SIC CODE		
05 CITY	06 STATE	07 ZIP CODE		

III. OFF-SITE GENERATOR(S)

01 NAME None		02 D+B NUMBER		01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE		05 CITY	06 STATE	07 ZIP CODE	
01 NAME		02 D+B NUMBER		01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE		05 CITY	06 STATE	07 ZIP CODE	

IV. TRANSPORTER(S)

01 NAME None		02 D+B NUMBER		01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE		05 CITY	06 STATE	07 ZIP CODE	
01 NAME		02 D+B NUMBER		01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE		05 CITY	06 STATE	07 ZIP CODE	

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Ecology and Environment, Inc., Bruno PWS Site Files.

POTENTIAL HAZARDOUS WASTE SITE

SITE INSPECTION REPORT

PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE NE	02 SITE NUMBER D9876367829
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EPA

II. PAST RESPONSE ACTIVITIES

None

01	A. WATER SUPPLY CLOSED	02 DATE	03 AGENCY
04	DESCRIPTION		
01	B. TEMPORARY WATER SUPPLY PROVIDED	02 DATE	03 AGENCY
04	DESCRIPTION		
01	C. PERMANENT WATER SUPPLY PROVIDED	02 DATE	03 AGENCY
04	DESCRIPTION		
01	D. SPILLED MATERIAL REMOVED	02 DATE	03 AGENCY
04	DESCRIPTION		
01	E. CONTAMINATED SOIL REMOVED	02 DATE	03 AGENCY
04	DESCRIPTION		
01	F. WASTE REPACKAGED	02 DATE	03 AGENCY
04	DESCRIPTION		
01	G. WASTE DISPOSED ELSEWHERE	02 DATE	03 AGENCY
04	DESCRIPTION		
01	H. ON SITE BURIAL	02 DATE	03 AGENCY
04	DESCRIPTION		
01	I. IN SITU CHEMICAL TREATMENT	02 DATE	03 AGENCY
04	DESCRIPTION		
01	J. IN SITU BIOLOGICAL TREATMENT	02 DATE	03 AGENCY
04	DESCRIPTION		
01	K. IN SITU PHYSICAL TREATMENT	02 DATE	03 AGENCY
04	DESCRIPTION		
01	L. ENCAPSULATION	02 DATE	03 AGENCY
04	DESCRIPTION		
01	M. EMERGENCY WASTE TREATMENT	02 DATE	03 AGENCY
04	DESCRIPTION		
01	N. CUTOFF WALLS	02 DATE	03 AGENCY
04	DESCRIPTION		
01	O. EMERGENCY DIKING/SURFACE WATER DIVERSION	02 DATE	03 AGENCY
04	DESCRIPTION		
01	P. CUTOFF TRENCHES/SUMP	02 DATE	03 AGENCY
04	DESCRIPTION		
01	Q. SUBSURFACE CUTOFF WALL	02 DATE	03 AGENCY
04	DESCRIPTION		

POTENTIAL HAZARDOUS WASTE SITE

SITE INSPECTION REPORT

PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE NE	02 SITE NUMBER D9876367829
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EPA

II. PAST RESPONSE ACTIVITIES (Continued) None

01 R. BARRIER WALLS CONSTRUCTED	02 DATE	03 AGENCY
04 DESCRIPTION		

01 S. CAPPING/COVERING	02 DATE	03 AGENCY
04 DESCRIPTION		

01 T. BULK TANKAGE REPAIRED	02 DATE	03 AGENCY
04 DESCRIPTION		

01 U. GROUT CURTAIN CONSTRUCTED	02 DATE	03 AGENCY
04 DESCRIPTION		

01 V. BOTTOM SEALED	02 DATE	03 AGENCY
04 DESCRIPTION		

01 W. GAS CONTROL	02 DATE	03 AGENCY
04 DESCRIPTION		

01 X. FIRE CONTROL	02 DATE	03 AGENCY
04 DESCRIPTION		

01 Y. LEACHATE TREATMENT	02 DATE	03 AGENCY
04 DESCRIPTION		

01 Z. AREA EVACUATED	02 DATE	03 AGENCY
04 DESCRIPTION		

01 1. ACCESS TO SITE RESTRICTED	02 DATE	03 AGENCY
04 DESCRIPTION		

1 2. POPULATION RELOCATED	02 DATE	03 AGENCY
04 DESCRIPTION		

1 3. OTHER REMEDIAL ACTIVITIES	02 DATE	03 AGENCY
04 DESCRIPTION		

7. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Ecology and Environment, Inc., Bruno PWS Site Files.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION

01 STATE NE	02 SITE NUMBER D9876367829
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II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☐ YES ☒ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Appendix C

Address, Owner, and Operator Information
Potentially Responsible Parties

DIRECTORS, OFFICERS, AND CORPORATE ADDRESSES

Bruno COOP Association

Director: The Officers

Officers: Robert Langhorst, Manager
David Stara, President
David Kastl, V.P.
James Polivka, Sec-Treas.

Facility Address/Telephone Number

Main Street
Box 135
Bruno, NE 68014
(402) 543-2226

Accountants: Gardiner & Co., CPA

Wagner Mills, Inc.

Directors: The Officers

Officers: LeRoy Trofholz, President
Lenor F. Benesch, V.P.
Marjorie Gaeth, Sec-Treas.

Facility Address:

Main Street
Burno, NE 68014
(No telephone number in Bruno)

Corporate Headquarters:

1303 Colfax St.
Schuyler, NE 68661
(402) 352-2471

Auditors: Peat, Marwick, Mitchell (Lincoln, NE)

Business Insurance Broker: Alexander & Alexander (Lincoln, NE)

Bank: Norwest Bank (Omaha, NE)

Agrico Chemical Company

Directors: Unknown

Officers: R. B. Gwyn, President
Henry C. Hirsh, V.P.-Admin.
Bobby L. Latham, V.P.-Mfg.
Darrell D. Martin, V.P.-Intl. Mkg.
Harvey E. O'Neill, V.P.-Dom. Mkg.
Steven A. Savage, V.P.-Dom. Mkg.

Corporate Headquarters:

Box 61119
New Orleans, LA 70161
(504) 582-4000

1615 Poydras St.
New Orleans, LA 7011

United States Department of Agriculture

No information was obtained for the USDA.

Chicago North Western Transportation Company

Directors: J.R. Wolfe, CEO
John M. Bulter, CFO

Officers: J.R. Wolfe, President
G.R. Carr, V.P.-Contr.
J.E. Voldseth, Treas.
G.R. Charles, Treas.
R. Schmiede, Sr. V.P.-Admin.
R.L. Wilson, V.P.-Pers.
J.P. Dale, Sr. V.P.-Law & Real Estate
John M. Butler, Sr. V.P.-Fin.
Robert D. Smith, Sr. V.P.-Comm.
W.D. Anderson, A.V.P.-Fin.
R.L. Wilson, V.P.-Pers.
J. Eberhardt, Mgr.
R.W. Mickey, V.P.-Real Estate
L.G. Harrison, Mgr-Real Estate

Corporate Headquarters:

165 North Canal Street
Chicago, IL 60606
(312) 559-6000

Auditors: Arthur Anderson (Chicago, IL)

Business Insurance Broker: Marsh & McLennan (Chicago, IL)
Rollins Burdick Hunter (Chicago, IL)

Investment Bankers: Goldman, Sachs (New York, NY)
Salomon Bros. (New York, NY)

Legal Counsel: Sonnenschein, Carlin, Nath, & Rosenthal (Chicago, IL)

Major Banking Relationship: Continental Illinois (Chicago, IL)
First Chicago (Chicago, IL)

C & NW Coroporation

Directors: J.R. Wolfe
Robert E. Brooker
J.M. Butler
W.H. Clark
F.C. Langenberg
R.D. Leach
J.A. Zito
Louis T. Duerinck
R.W. Russell
J.V. Springrose
E.P. Berg
C.J. Gauthier

Officers: J.R. Wolfe, President
John M. Butler-Sr. V.P.
Jerome W. Conlon-Sr. V.P.
James P. Daley-Sr. V.P.
Robert W. Schmiede-Sr. V.P.
Robert D. Smith-Sr. V.P.

Corporate Headquarters:

One North Western Center
Chicago, IL 60606
(312) 559-7000

Appendix D
Data Transmittal



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7
25 FUNSTON ROAD
KANSAS CITY, KANSAS 66115

DATE: 11/23/88

MEMORANDUM

SUBJECT: Data Transmittal for Activity #: JK9A4
Site Description: Bruno PWS

FROM: Harold G. Brown, Ph.D. *W. Brown*
Acting Chief, Laboratory Branch, ENSV

TO: Robert L. Morby
Chief, Superfund Branch, WSTM

Attached is the data transmittal for the above referenced site. This should be considered a Partial or X Complete data transmittal (completes transmittal of). If you have any questions or comments, please contact Dee Simmons at 236-3881.

Attachments

cc: Data Files

EPA Region VII

Data Qualification Codes

- U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.
- M - Compound was qualitatively identified; however, quantitative value is less than contract required quantitation limits (CLP data); or value is less than limit of quantitation (EPA data) and is, therefore, an estimated value.
- J - The associated numerical value is an estimated quantity.
- I - The data are invalid (compound may or may not be present). Resampling and/or reanalysis is necessary for verification.
- O - Sample lost or not analyzed.
- L - Value known to be higher than value reported.
- N - Presumptive evidence of presence of material.
- NA - Sample was not analyzed for this compound.
- NJ - Presumptive evidence of the presence of the material at an estimated quantity.
- UJ - The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

Codes for Flash Point Data

- L - The sample did not ignite or "flash." This is the highest temperature at which the sample was tested. It is possible that the material may be ignitable at higher temperatures.
- K - The sample did ignite or "flash" at the lowest temperature tested. This is usually the ambient temperature at the time of the test. It is possible that the material may be ignitable at even lower temperatures.

ANALYSIS TYPE: VOLATILES

TITLE: WATER FOR VOLATILES

MATRIX: WATER

UNITS: UG/L

LAB: REGION VII EPA

METHOD: 8241W00

CASE:

SAMPLE PREP: ANALYST/ENTRY: DMEREVIEWER:

DATE: 11/22/88

DATA FILE : DE1

SAMPLES	TK9A4001	TK9A4002	TK9A4003	TK9A4004
CHLOROMETHANE	2.4 U	2.4 U	2.4 U	2.4 U
BROMOMETHANE	4.4 U	4.4 U	4.4 U	4.4 U
VINYL CHLORIDE	2.8 U	2.8 U	2.8 U	2.8 U
CHLOROETHANE	2.8 U	2.8 U	2.8 U	2.8 U
METHYLENE CHLORIDE	2.0 U	2.0 U	2.0 U	2.0 U
ACETONE	2.0 U	2.0 U	2.0 U	8.0 U
CARBON DISULFIDE	1.0 U	1.0 U	1.0 U	1.0 U
1,1-DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U
1,1 DICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U
1,2,-DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U
CHLOROFORM	1.0 U	4.0 J	4.0 J	4.0 J
1,2-DICHLOROETHANE	1.0 U	12 J	4.0 J	4.0 J
2-BUTANONE	2.0 U	2.0 U	3.0 U	3.0 U
1,1,1-TRICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U
CARBON TETRACHLORIDE	1.0 U	27 J	29 J	31 J
VINYL ACETATE	2.0 U	2.0 U	2.0 U	2.0 U
BROMODICHLOROMETHANE	1.0 U	1.0 U	1.0 U	1.0 U
1,2-DICHLOROPROPANE	1.0 U	1.0 U	1.0 U	1.0 U
CIS-1,3-DICHLOROPROPENE	1.0 U	1.0 U	1.0 U	1.0 U
TRICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U
BENZENE	1.0 U	1.0 U	1.0 U	1.0 U
DIBROMOCHLOROMETHANE	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-TRICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U
TRANS-1,3-DICHLOROPROPENE	1.0 U	1.0 U	1.0 U	1.0 U
BROMOFORM	1.0 U	1.0 U	1.0 U	1.0 U
4-METHYL-2-FENTANONE	2.0 U	2.0 U	2.0 U	2.0 U
2-HEXANONE	2.0 U	2.0 U	2.0 U	2.0 U
1,1,2,2-TETRACHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U
TETRACHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U
TOLUENE	1.0 U	1.0 U	1.0 U	1.0 U
CHLOROBENZENE	1.0 U	1.0 U	1.0 U	1.0 U
ETHYL BENZENE	1.0 U	1.0 U	1.0 U	1.0 U
STYRENE	1.0 U	1.0 U	1.0 U	1.0 U
TOTAL XYLENES	1.0 U	1.0 U	1.0 U	1.0 U

ANALYSIS TYPE: VOLATILES

TITLE: WATER FOR VOLATILES

LAB: REGION VII EPA

SAMPLE PREP: *[Signature]*

MATRIX: WATER

METHOD: 8241W00

REVIEWER: *[Signature]*

DATA FILE : DE1

UNITS: UG/L

CASE:

DATE: 11/22/83

SAMPLES	TK9A4005	TK9A4006F
CHLOROMETHANE	2.4 U	2.4 U
BROMOMETHANE	4.4 U	4.4 U
VINYL CHLORIDE	2.8 U	2.8 U
CHLOROETHANE	2.8 U	2.8 U
METHYLENE CHLORIDE	2.0 U	2.0 U
ACETONE	2.0 U	2.0 U
CARBON DISULFIDE	1.0 U	1.0 U
1,1-DICHLOROETHENE	1.0 U	1.0 U
1,1 DICHLOROETHANE	1.0 U	1.0 U
1,2-DICHLOROETHENE	1.0 U	1.0 U
CHLOROFORM	4.0 J	1.0 U
1,2-DICHLOROETHANE	12 J	1.0 U
2-BUTANONE	4.0 U	2.0 U
1,1,1-TRICHLOROETHANE	1.0 U	1.0 U
CARBON TETRACHLORIDE	32 J	1.0 U
VINYL ACETATE	2.0 U	2.0 U
BROMODICHLOROMETHANE	1.0 U	1.0 U
1,2-DICHLOROPROPANE	1.0 U	1.0 U
CIS-1,3-DICHLOROPROPENE	1.0 U	1.0 U
TRICHLOROETHENE	1.0 U	1.0 U
BENZENE	1.0 U	1.0 U
DIBROMOCHLOROMETHANE	1.0 U	1.0 U
1,1,2-TRICHLOROETHANE	1.0 U	1.0 U
TRANS-1,3-DICHLOROPROPENE	1.0 U	1.0 U
BROMOFORM	1.0 U	1.0 U
4-METHYL-2-PENTANONE	2.0 U	2.0 U
2-HEXANONE	2.0 U	2.0 U
1,1,2,2-TETRACHLOROETHANE	1.0 U	1.0 U
TETRACHLOROETHENE	1.0 U	1.0 U
TOLUENE	1.0 U	1.0 U
CHLOROBENZENE	1.0 U	1.0 U
ETHYL BENZENE	1.0 U	1.0 U
STYRENE	1.0 U	1.0 U
TOTAL XYLENES	1.0 U	1.0 U



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7
25 FUNSTON ROAD
KANSAS CITY, KANSAS 66115

DATE:

1/25/89

MEMORANDUM

SUBJECT: Data Transmittal for Activity #: DC906,
Site Description: Bruno PWS

FROM: Andrea Jirka ~~X~~
Chief, Laboratory Branch, ENSV

TO: Robert L. Morby
Chief, Superfund Branch, WSTM

Attached is the data transmittal for the above referenced site. This should be considered a Partial or ~~X~~ Complete data transmittal (completes transmittal of). If you have any questions or comments, please contact Dee Simmons at 236-3881.

Attachments

cc: Data Files
Ann Melia, E&E/FIT

EPA Region VII

Data Qualification Codes

- U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.
- M - Compound was qualitatively identified; however, quantitative value is less than contract required quantitation limits (CLP data); or value is less than limit of quantitation (EPA data) and is, therefore, an estimated value.
- J - The associated numerical value is an estimated quantity.
- I - The data are invalid (compound may or may not be present). Resampling and/or reanalysis is necessary for verification.
- O - Sample lost or not analyzed.
- L - Value known to be higher than value reported.
- N - Presumptive evidence of presence of material.
- NA - Sample was not analyzed for this compound.
- NJ - Presumptive evidence of the presence of the material at an estimated quantity.
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Codes for Flash Point Data

- L - The sample did not ignite or "flash." This is the highest temperature at which the sample was tested. It is possible that the material may be ignitable at higher temperatures.
- K - The sample did ignite or "flash" at the lowest temperature tested. This is usually the ambient temperature at the time of the test. It is possible that the material may be ignitable at even lower temperatures.

ANALYSIS TYPE: VOLATILES

TITLE: BRUNO PWS

MATRIX: WATER

UNITS: UG/L

LAB: VERSAR

METHOD: 9302M01

CASE: 4369G

SAMPLE PREP: _____

ANALYST/ENTRY: NJL REVIEWER: 7/22

DATE: 01/19/89

DATA FILE : N24

SAMPLES	DC906001	DC906002	DC906003	DC906004
CHLOROMETHANE	2.0 U	2.0 U	2.0 U	2.0 U
BROMOMETHANE	2.0 U	2.0 U	2.0 U	2.0 U
VINYL CHLORIDE	2.0 U	2.0 U	2.0 U	2.0 U
CHLOROETHANE	2.0 U	2.0 U	2.0 U	2.0 U
METHYLENE CHLORIDE	1.0 U	1.0 U	1.0 U	1.0 U
ACETONE	2.0 U	2.0 U	2.0 U	2.0 U
CARBON DISULFIDE	1.0 U	1.0 U	1.0 U	1.0 U
1,1 DICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U
1,1 DICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U
1,2, -DICHLOROETHENE (TOTAL)	1.0 U	1.0 U	1.0 U	1.0 U
CHLOROFORM	4.0	2.0	2.0	3.0
1,2, DICHLOROETHANE	12 J	3.0	3.0	12
2-BUTANONE	I	I	I	I
1,1,1 TRICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U
CARBON TETRACHLORIDE	37 J	15	14	29
VINYL ACETATE	2.0 U	2.0 U	2.0 U	2.0 U
BROMODICHLOROMETHANE	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2, -TETRACHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U
1,2-DICHLOROPROPANE	1.0 U	1.0 U	1.0 U	1.0 U
TRANS-1,3-DICHLOROPROPENE	1.0 U	1.0 U	1.0 U	1.0 U
TRICHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U
DIBROMOCHLOROMETHANE	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-TRICHLOROETHANE	1.0 U	1.0 U	1.0 U	1.0 U
BENZENE	1.0 U	1.0 U	1.0 U	1.0 U
CIS-1,3-DICHLOROPROPENE	1.0 U	1.0 U	1.0 U	1.0 U
BROMOFORM	1.0 U	1.0 U	1.0 U	1.0 U
2-HEXANONE	2.0 U	2.0 U	2.0 U	2.0 U
4-METHYL-2-PENTANONE	2.0 U	2.0 U	2.0 U	2.0 U
TETRACHLOROETHENE	1.0 U	1.0 U	1.0 U	1.0 U
TOLUENE	1.0 U	1.0 U	1.0 U	1.0 U
CHLOROBENZENE	1.0 U	1.0 U	1.0 U	1.0 U
ETHYL BENZENE	1.0 U	1.0 U	1.0 U	1.0 U
STYRENE	1.0 U	1.0 U	1.0 U	1.0 U
TOTAL XYLENES	1.0 U	1.0 U	1.0 U	1.0 U

ANALYSIS TYPE: VOLATILES

TITLE: BRUNO PWS

MATRIX: WATER

UNITS: UG/L

LAB: VERSAR

METHOD: 9302M01

CASE: 4369G

SAMPLE PREP: _____ ANALYST/ENTRY: NJL REVIEWER: NOY

DATE: 01/19/89

DATA FILE : N24

SAMPLES	DC906005	DC906006F
CHLOROMETHANE	2.0 UJ	2.0 UJ
BROMOMETHANE	2.0 U	2.0 U
VINYL CHLORIDE	2.0 U	2.0 U
CHLOROETHANE	2.0 U	2.0 U
METHYLENE CHLORIDE	1.0 U	2.0
ACETONE	2.0 UJ	20 J
CARBON DISULFIDE	1.0 UJ	1.0 UJ
1,1 DICHLOROETHENE	1.0 U	1.0 U
1,1 DICHLOROETHANE	1.0 U	1.0 U
1,2,-DICHLOROETHENE (TOTAL)	1.0 U	1.0 U
CHLOROFORM	1.0 U	1.0 U
1,2, DICHLOROETHANE	1.0 UJ	1.0 UJ
2-BUTANONE	I	I
1,1,1 TRICHLOROETHANE	1.0 U	1.0 U
CARBON TETRACHLORIDE	1.0 UJ	1.0 UJ
VINYL ACETATE	2.0 U	2.0 U
BROMODICHLOROMETHANE	1.0 U	1.0 U
1,1,2,2,-TETRACHLOROETHANE	1.0 U	1.0 U
1,2-DICHLOROPROPANE	1.0 U	1.0 U
TRANS-1,3-DICHLOROPROPENE	1.0 U	1.0 U
TRICHLOROETHENE	1.0 UJ	1.0 UJ
DIBROMOCHLOROMETHANE	1.0 UJ	1.0 UJ
1,1,2-TRICHLOROETHANE	1.0 U	1.0 U
BENZENE	1.0 U	1.0 U
CIS-1,3-DICHLOROPROPENE	1.0 U	1.0 U
BROMOFORM	1.0 UJ	1.0 UJ
2-HEXANONE	2.0 UJ	2.0 UJ
4-METHYL-2-PENTANONE	2.0 U	2.0 U
TETRACHLOROETHENE	1.0 U	1.0 U
TOLUENE	1.0 U	1.0 U
CHLOROBENZENE	1.0 U	1.0 U
ETHYL BENZENE	1.0 U	1.0 U
STYRENE	1.0 U	1.0 U
TOTAL XYLENES	1.0 UJ	1.0 UJ

TENTATIVELY IDENTIFIED COMPOUNDS

TITLE: BRUNO FWS

MATRIX: WATER

UNITS: UG/L

LAB: VERSAR

METHOD: 9302M01

CASE: 4369G

ANALYST/ENTRY: NUL

REVIEWER: *AgL*

DATE: 01-19-89

<u>SAMPLE ID</u>	<u>COMPOUND NAME</u>	<u>FRACTION</u>	<u>EST. CONC.</u>
DC906001	NONE	VOA	
DC906002	NONE	VOA	
DC906003	NONE	VOA	
DC906004	NONE	VOA	
DC906005	NONE	VOA	
DC906006 F <i>do</i>	1 UNKNOWN	VOA	2 JN

NSI Technology Services Corporation

Gateway Center Tower II, Suite #311
Fourth & State Avenue
Kansas City, KS 66101
(913) 281-0307

TO: Debra Morey
Data Review Task Monitor
THRU: Andrea Jirka
ESAT Deputy Project Officer, EPA

FROM: Nancy J. Lappin *NJL*
ESAT Data Reviewer *TV*
THRU: Tenkasi S. Viswanathan, Ph.D.
ESAT Manager

DATE: January 19, 1989
SUBJECT: Review of organic data for Bruno FWS.

TID# 07-8901-114
ASSIGNMENT# 85
ICF ACCT# 302-26-114-02
NSI S.O.# 4632-1142

These data were reviewed according to the "Laboratory Data Validation Functional Guidelines for Evaluating Organic Analyses," February 1988 revision and the Region VII Organic Data Review Training Manual.

The following comments and attached data sheets are a result of the ESAT review of the above mentioned data.

CASE NO.: <u>4369G</u>	LABORATORY: <u>VERSAR</u>
SITE: <u>BRUNO FWS</u>	METHOD NO.: <u>9302M01</u>
REVIEWER: <u>NANCY J. LAPPIN</u>	EPA ACTIVITY NO.: <u>DC906</u>
	MATRIX: <u>WATER</u>

<u>SMO Sample No.</u>	<u>EPA Sample No.</u>
GF827	DC906001
GF828	DC906002
GF829	DC906003
GF830	DC906004
GF831	DC906005
GF832	DC906006F

GENERAL

This data review assignment covers SIX WATER samples from case 4369G analyzed for VOLATILE ORGANICS. One field blank was included in this assignment.

VOLATILES

1. Technical Holding Times

A. Holding time criteria were met for all sample analyses.

2. GC/MS Tuning

A. All BFB tuning criteria were met.

3. Initial and Continuing Calibration

A. One initial calibration and two continuing calibrations were performed. The average relative response factor for 2-Butanone was less than 0.05 in the initial calibration and the RRF50 was less than .05 in both continuing calibrations. Also, for this compound, the %RSD was greater than 30% in the initial calibration and the %Ds were greater than 25% in both continuing calibrations. All sample results for 2-Butanone were coded "I."

B. The %RSDs for Chloromethane, Acetone, and 2-Hexanone were greater than 30% in the initial calibration performed on 12-29-88. Acetone was detected in the field blank. That result was coded "J." All other sample results for these compounds were non-detect and were coded "U."

C. The first continuing calibration, performed on 12-29-88, corresponded to the analysis of samples DC906002, -003, and -004. The %Ds for Chloroethane, Acetone, and 2-Hexanone were greater than 25%. Sample results for Acetone and 2-Hexanone were previously coded. Results for Chloroethane in these samples were non-detect and were coded "U."

C. The second continuing calibration, performed on 12-30-88, corresponded to the analysis of samples DC906001, -005, and -006F. The %Ds were greater than 25% for Chloromethane, Carbon Disulfide, 1,2-Dichloroethane, Carbon Tetrachloride, Trichloroethene, Dibromochloromethane, Bromoform, and Xylene (total). Sample results for Chloromethane were previously coded. Results for 1,2-Dichloroethane and Carbon Tetrachloride were positive in sample DC906001 and were coded "J." Other sample results, corresponding to this calibration and the outliers mentioned above, were non-detect and were coded "U."

4. Internal Standard Response

A. Internal standard responses were within control limits.

5. Method Blanks

A. Two method blanks, VELK4 and VELK5, and one field blank, DC906006F, were analyzed. Acetone was detected in VELK4. Acetone and 2-Butanone were

detected in VBLK5. Acetone and Methylene Chloride were detected in the field blank. All of these compounds are common contaminants. Sample results for 2-Butanone were previously invalidated. Samples DC906001 and DC906002 were reported to contain Acetone and were qualified according to the blank rule.

6. Surrogates

A. Surrogate recoveries were within control limits.

7. Matrix Spike/Matrix Spike Duplicate

A. All RPDs and Percent Spike Recoveries were within control limits for the MS/MSD analyses of sample DC906005.

8. Compound Identification and Quantitation

A. Target compound identifications were generally supported by good agreement between sample and standard spectra.

B. A larger sample volume was used for these analyses, 25 ml as opposed to the 5 ml volume recommended in the SOW, to achieve a lower detection limit.

C. CLP contract requirements were met for all samples with respect to proper calculations for RRFs, %RSDs, %Ds, and sample concentrations.

9. Summary for volatiles

A. Sample results for 2-Butanone were invalidated due to calibration outliers.

B. Approximately 20% of the data is estimated due to failure to meet one or more QC criteria.

C. This data package generally meets the requirements for precision, accuracy and completeness described in SOP 9521M00.

Appendix E

Field Sheets and
Chain-of-Custody Sheets

1. 1.1

7-EPA-9262(Revised 5/85)

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:   Site Name: BRUNO PUBLIC WATER SUPPLY           Site Number:
:   Location: BRUNO NE                             Site Code:

```

: Collected: YR: 88 MO: 10 Day: 26 Time: 15:30 Leader: A.MELIA
:
:
: Sample Number: TK9A4001 SMO #:
:
:
: Sample Media (circle one):
: SOIL, DUST, RINSATE, SEDIMENT, WATER, OTHER: _____
:
:
: Sample Split (circle one): YES NO

Sample Container	Tag Color	Preservative	Analysis Requested
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9
10	10	10	10
11	11	11	11
12	12	12	12
13	13	13	13
14	14	14	14
15	15	15	15
16	16	16	16
17	17	17	17
18	18	18	18
19	19	19	19
20	20	20	20
21	21	21	21
22	22	22	22
23	23	23	23
24	24	24	24
25	25	25	25
26	26	26	26
27	27	27	27
28	28	28	28
29	29	29	29
30	30	30	30
31	31	31	31
32	32	32	32
33	33	33	33
34	34	34	34
35	35	35	35
36	36	36	36
37	37	37	37
38	38	38	38
39	39	39	39
40	40	40	40
41	41	41	41
42	42	42	42
43	43	43	43
44	44	44	44
45	45	45	45
46	46	46	46
47	47	47	47
48	48	48	48
49	49	49	49
50	50	50	50
51	51	51	51
52	52	52	52
53	53	53	53
54	54	54	54
55	55	55	55
56	56	56	56
57	57	57	57
58	58	58	58
59	59	59	59
60	60	60	60
61	61	61	61
62	62	62	62
63	63	63	63
64	64	64	64
65	65	65	65
66	66	66	66
67	67	67	67
68	68	68	68
69	69	69	69
70	70	70	70
71	71	71	71
72	72	72	72
73	73	73	73
74	74	74	74
75	75	75	75
76	76	76	76
77	77	77	77
78	78	78	78
79	79	79	79
80	80	80	80
81	81	81	81
82	82	82	82
83	83	83	83
84	84	84	84
85	85	85	85
86	86	86	86
87	87	87	87
88	88	88	88
89	89	89	89
90	90	90	90
91	91	91	91
92	92	92	92
93	93	93	93
94	94	94	94
95	95	95	95
96	96	96	96
97	97	97	97
98	98	98	98
99	99	99	99
100	100	100	100

[illegible]

Depth: _____ Fan #: _____ Aliquots: _____

Samplers: Anne Mejia

Dave Zimmerman

Site Description: Old well # 6-30185

Well depth 66 feet

Temp 130°C

$\text{pH} = 7$

Sp con. 500 umhos


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:   Site Name: BRUNO PUBLIC WATER SUPPLY           Site Number:
:   Location: BRUNO NE                             Site Code:

```

Sample Container	Tag Color	Preservative	Analysis Requested
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9
10	10	10	10
11	11	11	11
12	12	12	12
13	13	13	13
14	14	14	14
15	15	15	15
16	16	16	16
17	17	17	17
18	18	18	18
19	19	19	19
20	20	20	20
21	21	21	21
22	22	22	22
23	23	23	23
24	24	24	24
25	25	25	25
26	26	26	26
27	27	27	27
28	28	28	28
29	29	29	29
30	30	30	30
31	31	31	31
32	32	32	32
33	33	33	33
34	34	34	34
35	35	35	35
36	36	36	36
37	37	37	37
38	38	38	38
39	39	39	39
40	40	40	40
41	41	41	41
42	42	42	42
43	43	43	43
44	44	44	44
45	45	45	45
46	46	46	46
47	47	47	47
48	48	48	48
49	49	49	49
50	50	50	50
51	51	51	51
52	52	52	52
53	53	53	53
54	54	54	54
55	55	55	55
56	56	56	56
57	57	57	57
58	58	58	58
59	59	59	59
60	60	60	60
61	61	61	61
62	62	62	62
63	63	63	63
64	64	64	64
65	65	65	65
66	66	66	66
67	67	67	67
68	68	68	68
69	69	69	69
70	70	70	70
71	71	71	71
72	72	72	72
73	73	73	73
74	74	74	74
75	75	75	75
76	76	76	76
77	77	77	77
78	78	78	78
79	79	79	79
80	80	80	80
81	81	81	81
82	82	82	82
83	83	83	83
84	84	84	84
85	85	85	85
86	86	86	86
87	87	87	87
88	88	88	88
89	89	89	89
90	90	90	90
91	91	91	91
92	92	92	92
93	93	93	93
94	94	94	94
95	95	95	95
96	96	96	96
97	97	97	97
98	98	98	98
99	99	99	99
100	100	100	100

[illegible]

Samplers: Anne Melia

Dave Zimmerman

Site Description:

Temp. 15°C

$$DH = 6.75$$

Spd = 600 mph

CHAIN OF CUSTODY RECORD
ENVIRONMENTAL PROTECTION AGENCY REGION VII

[illegible]

FIELD SHEET
U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII
ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

: Site Name: BRUNO FWS Site Number: :
: Location: BRUNO NE Site Code: :

: Collected: YR: 88 MO: 12 Day: 19 Time: 13:50 Leader: A MELIA :

: Sample Number: DC906001 SMO #: :

: Sample Media (circle one): :

: SOIL, DUST, RINSATE, SEDIMENT, WATER, OTHER: _____ :

: Sample Split (circle one): YES NO :

: Sample Container : Tag Color : Preservative : Analysis Requested :

: 40-ML VIAL : LIME : ICE : LDL VOA :

: : : : : :

: : : : : :

: : : : : :

: : : : : :

: : : : : :

: : : : : :

: : : : : :

: : : : : :

: : : : : :

: Depth: _____ Pan #: _____ Aliquots: _____ :

: Samplers: Anne Melia :

: Mary Knowles :

COMMENTS OF FIELD PERSONNEL

: Site Description: :

: Bruno Well # G-3085 Depth 66ft :

: sp. Cond - 400 :

: pH - 6.8 :

: Temp - 12°C :

FIELD SHEET
U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII
ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

: Site Name: BRUNO FWS Site Number: :
: Location: BRUNO NE Site Code: :

: Collected: YR: 88 MO: 12 Day: 19 Time: 13.30 Leader: A MELIA :

: Sample Number: DC906003 SMO #: :

: Sample Media (circle one):
: SOIL, DUST, RINSATE, SEDIMENT, WATER, OTHER: _____ :

: Sample Split (circle one): YES NO :

: Sample Container : Tag Color : Preservative : Analysis Requested :

: 40-ML VIAL : LIME : ICE : LDL VOA :

: Depth: _____ Pan #: _____ Aliquots: _____ :

: Samplers: Anne Melia :

: Mary Kniles :

COMMENTS OF FIELD PERSONNEL

: Site Description: :

: Duplicate of 002
: U222 # 6-30184 Depth 138ft
: Temp 8°C
: pH = 6.7
: Sp Cond - 450

FIELD SHEET
U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII
ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

: Site Name: BRUNO FWS Site Number: :
: Location: BRUNO NE Site Code: :

: Collected: YR: 88 MO: 12 Day: 20 Time: 10:00 Leader: A MELIA :

: Sample Number: DC906005 SMO #: :

: Sample Media (circle one):
: SOIL, DUST, RINSATE, SEDIMENT, WATER, OTHER: _____ :

: Sample Split (circle one): YES NO :

: Sample Container : Tag Color : Preservative : Analysis Requested :

: 40-ML VIAL : LIME : ICE : LDL VOA :

: Depth: _____ Fan #: _____ Aliquots: _____ :

: Samplers: Anne Melia :

: Max Knudsen :

COMMENTS OF FIELD PERSONNEL

: Site Description: Background Well :

: SP Cond. - 510 Well depth 130ft :

: pH - 6.6 :

: Temp - 10°C Owner: Clarence Kotaria :

: 826 N. :

: Divide City, NE 68632 :

Appendix F

Plat 1 - Soil-Gas Survey Results

Appendix G

Well Logs

Registration No. G-30185 County of Butler Date Filed Aug. 20, 1968

STATE OF NEBRASKA
CERTIFICATE OF WELL DRILLER

I, UNKNOWN of _____
(Name of Driller) (Postoffice Address)

County of _____ State of _____, do hereby certify that:

1. I am the driller of a well located on the _____ Quarter, Section No. _____
Township _____ North, Range _____, owned by Village of Bruno
whose postoffice address is Bruno State of Nebraska

2. That the drilling was begun on the _____ day of _____, 19____, and completed on
the _____ day of UNKNOWN, 19____

3. That the well is cased and screened in the following manner: 18' liner screen;
(Give kind of casing, lengths and position of plain and
4" I.D. x 5" O.D. stainless steel Keystone wire-wrapped - Installed by Layne-Western Co. in
screen casing, weight of metallic casing, etc.) 1965, inside old 8" nominal brass
strainer that had failed. Eight
inch standard steel pipe extended
to surface.

4. That the diameter of drilled hole is XXX 30 inches.

5. That UNKNOWN type of drilling machinery was used.

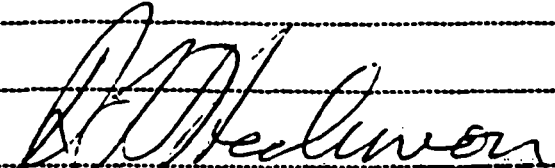
6. That the drilled hole is/is not sealed, as follows: UNKNOWN

7. That the following is an accurate log of the depth, thickness and character of the different strata
penetrated, and the location of water-bearing strata:

DEPTH IN FEET
FROM TO

MATERIAL DRILLED

Date Signed July 23, 1968


Driller R. L. HECKMAN
LAYNE-WESTERN COMPANY

Registration No. G-30184 County of Butler Date Filed Aug. 20, 1968

7-19

STATE OF NEBRASKA
MUNICIPAL OR INDUSTRIAL WELL REGISTRATION

I, RUDOLPH R. KUZISEK of Bruno
(Name of person signing registration) (Postoffice Address)

County of BUTLER State of Nebraska, do hereby certify:

1st. That the name of the owner of the municipal (or) industrial well registered herein is.....
Village of Bruno whose postoffice address is Bruno, Nebraska

2nd. That the well is located on the NE Quarter of the SE 1/4 Quarter of Section 10
Township 15, Range 4 E of the Sixth P. M., BUTLER County, and it is 570
feet from the WEST line and 120 feet from the SOUTH line of said tract, as accurately
shown on the plat on page 2 hereof.

3rd. That the well was installed for the following purpose or purposes:.....
Municipal Water Supply

4th. That the capacity of said well under normal operating conditions is 50 ~~100~~ gallons per minute.

5th. That the depth of the well is 138 feet, measured from the surface of the ground.

6th. That the inside diameter of the casing is 10 inches.

7th. That the static water level in the well is 65 feet below ground surface.

8th. That the depth to water under normal pumping condition is XXX 80 feet below ground
surface. (Pumping Level)

9th. That the diameter of the pump column is 4 inches. That the diameter of the 7
bowl or bowls is 8 inches. (Give Number of bowls)

10th. That the type and size of impeller is as follows:
9" U3HC

11th. That the well was completed on or about the 7th day of July, 1965

VILLAGE OF BRUNO
Sec. 10, T. 15N., R. 4E., Butler Co.

Registration No. G-30184 County of Butler Date Filed Aug. 20, 1968STATE OF NEBRASKA
CERTIFICATE OF WELL DRILLERI, LAYNE-WESTERN COMPANY of 4430 Commercial Ave. - Omaha
(Name of Driller) (Postoffice Address)County of Douglas State of Nebraska, do hereby certify that:

1. I am the driller of a well located on the _____ Quarter, Section No. _____
Township _____ North, Range _____, owned by Village of Bruno
whose postoffice address is Bruno State of Nebraska

2. That the drilling was begun on the _____ day of _____, 19____, and completed on
the 7th day of July, 1968

3. That the well is cased and screened in the following manner: 25' of 10" stainless steel
screen; 115' of 10" standard black casing
(Give kind of casing, lengths and position of plain and
screen casing, weight of metallic casing, etc.)

4. That the diameter of drilled hole is 36 inches.

5. That reverse rotary hydraulic type of drilling machinery was used.

6. That the drilled hole is not sealed, as follows: 1/4" stainless steel plate

7. That the following is an accurate log of the depth, thickness and character of the different strata
penetrated, and the location of water-bearing strata:

DEPTH IN FEET
FROM TO

MATERIAL DRILLED

0	29	Brown clay	<i>2000 ft. deep</i>
29	69	Brown clay, hard and boulders	<i>Clay fill</i>
69	90	Fine sand	
90	94	Gray clay	
94	111	Silty sand	
111	122	Fine sand and clay	
122	138	Medium sand, clean	

Signed July 23, 1968

[Signature]
Driller R. L. HECKMAN

8-0 1
7.5
Registration No. G-30185 County of Butler Date Filed Aug. 20, 1968

VILLAGE OF BRUNO

STATE OF NEBRASKA
MUNICIPAL OR INDUSTRIAL WELL REGISTRATION

I, RUDOLPH R KOZISEK of Bruno
(Name of person signing registration) (Postoffice Address)

County of BUTLER State of Nebraska, being first duly sworn upon my oath say:

1st. That the name of the owner of the municipal (or) industrial well registered herein is.....

Village of Bruno whose postoffice address is Bruno, Nebraska

2nd. That the well is located on the NE Quarter of the SW Quarter of Section 10,

Township 15, Range 4 E of the Sixth P. M., BUTLER County, and it is 300 ~~300~~ 300

feet from the WEST line and 360 feet from the NORTH line of said tract, as accurately shown on the plat on page 2 hereof.

3rd. That the well was installed for the following purpose or purposes:.....

Municipal Water Supply

4th. That the capacity of said well under normal operating conditions is 40 gallons per minute.

5th. That the depth of the well is 66 feet, measured from the surface of the ground.

6th. That the inside diameter of the casing is 8 ~~XX~~ inches.

7th. That the static water level in the well is 22 feet below ground surface.

8th. That the depth to water under normal pumping condition is 40 feet below ground surface.
(Pumping Level)

9th. That the diameter of the pump column is 4 1/2 inches. That the diameter of the 4
(Give Number of bowls)
bowl or bowls is 6 inches.

10th. That the type and size of impeller is as follows:

4 stage, 6"XLC

11th. That the well was completed on or about the UNKNOWN day of UNKNOWN, 1968

BUTLER 15N 4E Sec. 10