

HYDROLOGIC SITE REVIEW

MPCA, Hazardous Waste Division
Tanks and Emergency Response Section

BACKGROUND INFORMATION

Leak #: 68
Site Name: Union Coop Oil Co.
Hector, Minnesota

Leak Report Date: 3-25-81

P.M.: Mark Koplitz

Hydro: Lifeng Guo

Name of Report:
RI/CAD

Name of Consultant
Agassiz

Date
Nov. 3, 1995

REVIEW DATE: 2/29/96

RECOMMENDATIONS: Request more work and information

COMMENTS/CORRECTIVE ACTION DECISION

- 1) The local water table, approx. 7 - 14 ft below the land surface, occurs in the glacial till (clay) of about 340 feet in thickness. The extent of soil contamination appears to be somewhat defined, but the preferential migration of petroleum hydrocarbons was not addressed along the backfills of underground utilities adjacent to the site. Consider the magnitude of contamination (organic vapor as high as 9,500 ppm, and dissolved benzene up to 18,900 ppb near the release), it is necessary to investigate and assess the risk associated with the preferential transport of dissolved hydrocarbons in the utility backfills.
- 2) Significant levels of organic vapor are detected in the utility manholes in the adjacent streets. The vapor survey result was not evaluated to address its sources and pathways, and the associated risk in the report. The figures showing the underground structures are not complete.
- 2) It is indicated that municipal water supply is available at/near the site. Based on the nearby logs (unique #209514 & 209515), the drinking water aquifer is covered by 340 feet of clay. The risk of cross contamination to the drinking aquifer appears low. However, the lateral extent of this clay near the site should be assessed based on the information contained in the available well logs and published information.
- 3) It appears that not all the initial groundwater samples were analyzed for VOC's (MDH 645D). There is no indication whether the ground water samples were preserved after collection.

***** HYDROLOGIC SITE REVIEW *****

PC FILE NAME:Hector
LEAK NUMBER:068
LEAKSITE NAME AND LOCATION:Farmer's Union Co-Op, Hector, MN
LEAK OR SPILL REPORTED DATE:3-25-81
CONTRACTOR:Twin City Testing
REPORT NAME:Report of Ground Water Sampling/Chemical Analysis
REPORT DATE:3-21-90
REPORT NUMBER:4231-90-38

PROJECT LEADER OR PCS:John Moeger
HYDROLOGIST: Jim Lundy DATE OF REVIEW:5-17-90

BACKGROUND

The following is a summary of significant events at this site to date, as reflected by the project file:

3-25-81. Leak report. A gasoline release from a LUST affected ground water, sewers and buildings in town. The source was thought to be two 30 year old 1,000 gallon UST's at the Farmer's Union Co-Op in Hector.

3-27-81. MPCA memorandum (Mark Oemichen). Strong odors were noted in the Ruby Anderson residence near the site. Free product was observed floating on the sanitary sewer flowage (where?). Hand-augered borings at the Farmer's Union Co-Op site (where?) exposed severe leakage near the UST's, implicating Farmer's Union Co-Op as the source. Fuel Recovery was retained to remediate the site.

11-17-83. Letter from Farmer's Union to Fuel Recovery. A sudden increase (presumably in a poorly documented vent system installed at the site at an unknown time) from 0-150 ppm (Hnu?) was noted. Vapors were noted at the bank building (where is this building?). The building occupied by the Hector telephone company was a former service station--were UST's ever removed?

3-19-84. Farmer's Union letter to MPCA. The "readings" in the vent system had increased to 500 ppm.

3-4-86. MPCA letter to Fuel Recovery. Contaminated soil was excavated when the UST's were replaced (no date given). Ground water has not been monitored.

9-18-86. MPCA memorandum. The UST at the Farmer's Union Co-Op site was replaced in 7-84. No details were given.

5-26-87. Dahl Report #172-001, "Union Co-Op Gasoline Spill Site". A vent sample at the site using a drager tube indicated approximately 300 ppm benzene was present. Three monitoring wells were installed to 11.5-13.1 feet below ground, constructed of PVC.

Four ground water elevation measurement dates indicated ground water flows to the southwest at a gradient of approximately 5E-02. All three wells were sampled in 3-87 for BTX and TPH/G:

	Concentration, ppb		
	<u>MW-1</u>	<u>MW-2</u>	<u>MW-3</u>
Benzene	12,000	BDL	1.7
Toluene	BDL	BDL	BDL
Xylene	4500	BDL	BDL
TPH/G	26,000	BDL	BDL

The four soil borings drilled (in addition to the monitoring wells) encountered contaminated soils in the tank basin area.

6-16-87. MPCA letter to Dahl granting conceptual approval for the proposed recovery well and soil treatment. Never implemented.

8-5-87. MPCA memorandum. Several buildings in Hector recently had fumes, which probably entered via foundation drainage.

8-21-87. MPCA letter to Farmer's Union. Since Farmer's Union is unwilling to conduct the investigation, the MPCA will conduct its own.

11-16-87. MPCA memorandum. Tires Plus in Hector (location?) replaced their existing 1,000 and 2,000 gallon UST's with two 6,000 gallon UST's. The removed UST's appeared intact with little or no corrosion. Tires Plus left Hector in March, 1986, and the tanks have been empty since that time (the facility is inactive). Tires Plus appears to own the UST's.

Vapors are noted periodically when trucks fill up at the Co-Op (where?).

Rumor in Hector that Bargman (Bargman Oil Company, Phillips 66) replaced UST's because of a leak. ⁶⁶⁶⁶ 2900

4-12-88. MPCA memorandum. In the next round of investigation (never completed) Dahl should drill soil borings between the Co-Op UST's and the sewer line on Main Street, and in front of the Co-Op near the dispensers.

4-15-88. MPCA memorandum. Other sources may be present besides Farmer's Union Co-Op. Gasoline seems to be entering the sewer line during precipitation events, though a significant time lag is probable.

6-17-88. TCT #4231 88-249. "Subsurface Assessment". TCT installed seven borings offsite to depths of 13-21 feet, and converted two of them to monitoring wells. Organic vapors were present in soils from borings B-1 and B-2 (Phillips 66), and from borings B-3 and B-4 (Mark's Transmissions), all located near the intersection of Main Street and Ash Avenue. Boring B-3 was the most contaminated, with 290,000 ppb TPH/G. Soil borings B-5, B-6, and B-7 were not affected by contamination. Ground water was

collected from the two wells (MW-1, MW-4), and dissolved hydrocarbons were detected in MW-1 (boring B-1, P66). The sanitary sewer beneath the intersection of Birch and Ash Streets (one block north of the Farmer's Union Co-Op site) had organic vapors at 16% of the LEL, while 3% of the LEL was measured in the sewer beneath Ash and Main (two blocks north of the Farmer's Union Co-Op site). The sewer line is currently above the water table, based on water levels at MW-1 and MW-4.

Recommendations: 1) survey all wells to a common datum point; 2) monitor water levels in the wells monthly; 3) ground water and sewage samples should be collected/analyzed regularly.

REPORT REVIEW

The following is a summary and review of the TCT 3-21-90 report on this site (referenced in the header of this memorandum).

The report combines previous work both on and off-site at the Farmer's Union Co-Op, Hector. Four monitoring wells were sampled on 2-23-90. A strong petroleum odor was noted in MW-1 (P66) and a moderate odor was present in MW-1 (Co-Op). Well MW-3 (Co-Op) was dry.

The sewer survey indicated ND at the four tested access points, located along Main Street, two blocks north to two blocks south of the Farmer's Union Co-Op site.

The ground water analytical results were as follows:

	Concentration, ppb			
	<u>MW-1</u>	<u>MW-4</u>	<u>MW-1 co-op</u>	<u>MW-2 coop</u>
TPH/G	5,900	51	24,000	41*
Benzene	3,500	5	4,300	ND
Toluene	36	ND	360	ND
Xylene	150	ND	620	ND
Ethylbenzene	6	ND	58	ND

* low boiling point peak present, corresponds to MTBE

Conclusions: 1) MW-1(co-op) has significantly high concentrations of TPH/G and related compounds; 2) MW-2(co-op) has low contaminant concentrations; 3) contaminant concentrations in MW-1(P66) are significantly high; 4) well MW-4 (Mark's Transmissions) has low contaminant concentrations; 5) the sewer system survey detected no impacts by organic vapors at the time of the survey.

Recommendations: 1) repeat sewer monitoring if odor complaints are received; 2) additional site assessment near MW-1(co-op) and MW-1 (at P66 site) is necessary; 3) MW-3(co-op) construction diagrams should be reviewed to assess whether the well needs replacement; 4) survey all wells to a common datum; 5) renumber all the wells to avoid confusion.

MPCA COMMENTS

A documented release to ground water and soil has occurred at the co-op site, which may have contributed to a sewer vapor problem at several times in the past. An RI must be completed at the co-op site for three reasons: 1) to identify the lateral extent of the on-site release; 2) to determine whether off-site impacts have occurred, leading to the sewer vapor problems of the past; and 3) to facilitate the preparation of a CAD proposal to mitigate the on-site problem and prevent off-site impacts in the future. The information currently in the file does not meet these objectives.

The following additional RI tasks are therefore necessary:

- 1) A buried utility map of the city of Hector should be obtained and added to MPCA files. The sewer line route in front of the co-op site should be assessed, and a search for other potential contributors to the sewer vapor problem should be made.
- 2) The locations of buildings affected by vapor problems in the past should be identified on a site map (include dates of vapor problems, if possible). This should include documented incidents of 3-25-81 (initial problem), approximately 11-17-83 (bank building), and 8-5-87 (other buildings in downtown area).
- 3) A site visit should be made by MPCA staff, including Mark Oemichen, to identify where the hand-augered borings were placed and where free product was noted in the sewer line when the initial release was reported.
- 4) The details on the UST replacement (especially tank and soil conditions) in 7-84 should be added to the site file.
- 5) An assessment of the vent system currently in place (?) should be made. Is it still in place? Is it active or passive? Construction details should be provided. Are there any sampling records? Does it need additions or modifications?
- 6) The borings in the Dahl report indicate the vertical extent of soil contamination (in 1987) was about 7-8 feet deep. However the lateral extent of soil contamination has not been addressed. This is of particular concern in two areas: east of the large tank basin; and west of a small diesel UST located at the west end of the building (partially beneath an alleyway, and very near a branch of the sewer system; see figure 2 of the TCT report). The boring for MW-3 near the diesel UST recorded strong diesel fuel odors, indicating an additional potential release at the site.
The small area of the site property will almost certainly require off-site investigation to determine whether the soils near the buried sewer lines have been impacted. The exact boring locations should be selected on-site jointly by MPCA staff and the selected contractor, and should be selected with the sewer line locations in mind (item 1, above).

- 7) Monitoring well MW-3 at the site was installed to 13.1 feet, according to the Dahl Report of 5-26-87, but the TCT report of 3-21-90 reports the well is only 10.2 feet deep, and dry. This indicates the well may have silted up, and may be salvageable as a monitoring well by redevelopment.
- 8) At a minimum, I foresee the following investigative activities at the site:
- a) three soil borings directly east of the tank basin, located in a north-south line approximately beneath the curbing, designed to investigate whether contaminated soils from the site could have impacted the sewer line beneath Main Street;
 - b) three soil borings installed in a triangle to investigate the area between and west of the tank basin and pump island;
 - c) four soil borings placed to investigate the area around the diesel storage tank west of the Co-Op building, designed to show whether a release from this tank (already documented in the Dahl boring for MW-3) could have impacted the sewer line beneath the alley west of the co-op.
 - d) at this time, I do not foresee additional monitoring wells at the site, primarily due to space restrictions. However, a complete receptor survey should be done.
- 9) Once the RI activities are complete, the consultant should develop an appropriate CAD for the site.

Offsite Concerns

- 10) A standard letter should be sent to the Phillips 66 station on Ash and Main Streets, since we have strong evidence of a release at that site. The relatively high dissolved contaminant concentrations and the site's proximity to the affected sewer line make this site of moderate concern. The RI generated at this site should include details on the documented UST replacement in 11-87, and should in particular address the site's impact on the buried sewer line beneath Main Street.
- 11) The former location of Tires Plus should be documented in the site file.
- 12) Since the UST's at Mark's Transmissions have been inactive as of 1988, they should be properly abandoned.