

EXECUTIVE SUMMARY

REMEDIAL INVESTIGATION

ELECTRO-COATINGS, INC. SITE

CEDAR RAPIDS, IOWA

Prepared By:

Iowa Department of Natural Resources
Solid Waste Section
Des Moines, Iowa

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Superfund

**REMEDIAL INVESTIGATION EXECUTIVE SUMMARY
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PREFACE:

The Remedial Investigation (RI) is the phase of a Superfund action which characterizes the site in order to develop and evaluate effective remedial alternatives. The RI includes efforts to determine the nature and extent of contamination largely through sampling of environmental media (e.g., groundwater, surface water, and soil). As part of the RI, a baseline risk assessment is also conducted to determine the extent to which the site poses a current or potential risk to human health and the environment in the absence of remedial action.

For this site the RI is presented in several documents prepared by different parties. The primary RI activities were conducted by the Electro-Coatings, Inc., the "Potentially Responsible Party" (PRP) for the site. PRP is a term used by the U.S. Environmental Protection Agency (EPA) for describing the party(ies) who are likely responsible for the site contamination. The Iowa Department of Natural Resources (DNR) prepared the other documents comprising the RI. The following documents comprise the RI for the Electro-Coatings site:

- 1) The April 1992 Remedial Investigation prepared by Shive-Hattery Engineers and Architects, Inc. for Electro-Coatings;
- 2) The October 1992 Report on Supplemental VOC Investigations by the DNR;
- 3) The April 1993 Addendum to the Remedial Investigation Feasibility Study prepared by Shive-Hattery Engineers and Architects, Inc. for Electro-Coatings;
- 4) The August 1993 Remedial Investigation Supplement by the DNR; and
- 5) The May 1993 Baseline Risk Assessment by the DNR.

The April 1992 Remedial Investigation is the principal RI report. Additional information was provided in the April 1993 Addendum including a description of chemical use and leak prevention at the Electro-Coatings plant. In the course of the initial RI work by Electro-Coatings a previously unknown contamination problem was discovered. This contamination appeared to originate largely from a source other than Electro-Coatings. In response to this finding, the DNR conducted an additional investigation which is reported in the October 1992 Report on Supplemental VOC Investigations. The July 1993 Supplemental Remedial Investigation Report was prepared by DNR to clarify and expand upon certain aspects of the April 1992 RI and April 1993 Addendum. This executive summary provides an overview of all the documents comprising the RI.

SITE BACKGROUND:

The Electro-Coatings, Inc. site is located at 911 Shaver Road NE in the City of Cedar Rapids in east-central Iowa (Figure 1). Electro-Coatings, Inc. is a nationwide corporation whose headquarters is located in Emeryville, California. The Electro-Coatings plant in Cedar Rapids has been in operation since 1947. The plant currently performs chromium, cadmium, nickel and zinc plating. The site occupies approximately one acre along the north shoreline of Cedar Lake. Cedar Lake is a 150 acres in size and is privately owned by a utility company. The area surrounding the site is urban. The immediate area is light-industrial.

In March of 1976 a yellow tinge was noted in the cooling water being discharged to Cedar Lake from the Hawkeye Rubber Company located immediately west of the Electro-Coatings, Inc. plant. The chromium contamination was attributed to the release of chromic acid to the groundwater from a concrete tank at the Electro-Coatings plant. The contaminated groundwater was found to be drawn into one of Hawkeye Rubber's two production wells which discharged into Cedar Lake. Shortly after the chromium contamination was discovered, the discharges from Hawkeye Rubber were moved to the sanitary sewer. The chromium contamination has not posed a problem for the Hawkeye Rubber Co.

Shortly after the discovery of the release Electro-Coatings took actions to prevent further releases in response to requirements by the State. Electro-Coatings installed five monitoring wells which they monitored periodically in addition to the Hawkeye Rubber production well. The main concern has been potential chromium contamination of the City of Cedar Rapids municipal wells; the closest of which is about 2,000 ft. west of the site. Over the years contamination was found to persist in the Hawkeye Rubber cooling water well, albeit in lower concentrations. Significant chromium contamination has only been found in one of the five monitoring wells; a monitoring well immediately adjacent to the plant. Chromium has reportedly been found in the City wells at low levels (i.e., 0.009 mg/l compared to the drinking water standard of 0.1 mg/l), but it is uncertain whether this is attributable to the Electro-Coatings site.

In June of 1988 the Electro-Coatings site was proposed for inclusion on the Superfund National Priorities List (NPL) and that listing became final in October of 1989. In January 1990 Electro-Coatings, Inc. entered into a consent order with the DNR for conducting a remedial investigation/feasibility study (RI/FS) of the site.

HYDROGEOLOGIC SETTING:

As part of the RI, Electro-Coatings installed ten monitoring wells and twelve soil borings (Figure 2). The site is underlain by variable thicknesses of sand and silty clay over Devonian dolomite bedrock. Towards the south the silty clay layer becomes predominantly silt (Figure 3). The silty clay forms a confining layer between the alluvial sand aquifer and underlying Silurian-Devonian bedrock aquifer. The silty clay appears to be very thin or non-existent in the vicinity of monitoring well MW-7. In general, site groundwater in both the sand and bedrock aquifers is drawn to the Hawkeye Rubber production well.

NATURE AND EXTENT OF CONTAMINATION:

Hexavalent chromium is the predominant contaminant found in site groundwater which is associated with the Electro-Coatings facility. The chromium contamination is attributed to use of chromic acid by Electro-Coatings for electroplating operations. Concentrations of hexavalent chromium as high as 25 mg/l have been found in site groundwater compared to the drinking water standard of 0.1 mg/l. Other inorganic compounds have been found in site groundwater including, cadmium, cyanide, nickel, and lead. Unlike chromium, these compounds have been detected at concentrations which are below or only slightly above drinking water standards.

Chromium contamination of groundwater has been found primarily in the area between the Electro-Coatings plant and the Hawkeye Rubber well PW-1. Figure 4 shows the chromium contamination plumes in the sand aquifer and the bedrock aquifer. Chromium contamination exists in the sand aquifer close to the Electro-Coatings plant but is drawn down to the bedrock aquifer by the Hawkeye Rubber production well PW-1. It appears that movement of chromium contaminated groundwater in the sand aquifer to bedrock aquifer is facilitated by the lack of the silty clay confining layer as identified near monitoring well MW-7 (Figure 3). Elevated levels of chromium have been detected in the sand aquifer west of PW-1, but at much lower concentrations than found east of PW-1 and in PW-1. Therefore, it has been concluded that PW-1 contains the majority of the chromium contamination from the Electro-Coatings site.

Volatile organic compounds (VOCs) have also been found in site groundwater at levels substantially above drinking water standards, including: tetrachloroethene; trichloroethene; 1,1-dichloroethene; and cis 1,2-dichloroethene. Most VOC contamination has been attributed to the adjacent Hawkeye Rubber Company which utilized tetrachloroethene for vapor degreasing until recently. Trichloroethene and cis 1,2-dichloroethene are breakdown products of tetrachloroethene, thus accounting for their occurrence. A small portion of the overall VOC contamination found appears to be attributed to the Electro-Coatings facility. Electro-Coatings has reportedly utilized trichloroethene and 1,1,1-trichloroethane. Figure 5 shows the trichloroethene (TCE) plume in the shallow sand aquifer.

Soil sampling conducted as part of the remedial investigation has not revealed significant chromium contamination. However, during plant modifications in the summer of 1992, chromium-contaminated soil was found under another tank at the Electro-Coatings plant. The contaminated soil was excavated and disposed of in a hazardous waste landfill. Some residual soil contamination under the plant which could not be accessed was left in place.

Soil sampling has revealed significant VOC contamination in the vicinity of the Hawkeye Rubber Co. plant. However, only very low concentrations of VOCs were identified in soils adjacent to the Electro-Coatings plant.

Sampling of water and sediments from Cedar Lake has not revealed any significant impact from the site. In 1986 a fish consumption advisory was issued for Cedar Lake due to high levels of chlordane found in fish from Cedar Lake. This has no relation to the contamination associated with the Electro-Coatings site.

BASELINE RISK ASSESSMENT:

The baseline risk assessment was prepared by the DNR to assess the actual and potential risks posed by the site in the absence of any remedial action. The risk assessment primarily addressed groundwater contamination associated with the Electro-Coatings plant.

Chemicals of potential concern fall into two general categories; metals associated with plating operations and volatile organic compounds (VOCs) used for solvents.

No significant current exposure to site contaminants was identified. Three future exposure scenarios were evaluated. They are:

- 1) Domestic use (drinking and showering) of water from a single city well which is assumed to draw in all site contaminants;
- 2) Domestic use (drinking and showering) of the entire city water supply which has assumed to draw in all site contaminants; and
- 3) Industrial use (drinking and showering) from the Hawkeye Rubber Production Well #PW-1 or similar well by another industry.

Groundwater exposures for the first two scenarios were based on a calculated rate of contaminant movement (mass of contaminant per day) emanating from Electro-Coatings site. This total daily contaminant mass was conservatively assumed to be drawn into one city well. These two scenarios represent the very unlikely situation that all site contaminants would be drawn to one city well. The highest concentration of contaminants found (or estimated based on maximum monitoring well concentrations) during the RI in Hawkeye Rubber Production Well PW-1 were used for Scenario 3 (industrial use). This scenario represents the reasonable maximum exposure (RME) to contaminants from the site.

Unacceptable chronic and subchronic risks due to exposure to hexavalent chromium were identified for Scenario 3 only. Since Scenario 3 represents the RME, remedial action is warranted.

Scenario 1 demonstrates that even in the highly unlikely event that all site contaminants are drawn into one city well, the resultant level of contamination in that well would likely not exceed drinking water standards; much less the entire city water supply. Based on this risk assessment, the Cedar Rapids public water supply does not appear to be threatened by contaminants from the Electro-Coatings site. Although not evaluated in detail in the risk assessment, VOC contamination from the nearby Hawkeye Rubber Company was also shown not to pose a serious threat the Cedar Rapids water supply.

FEBRUARY 1994 UPDATE

Seven monitoring wells and the Hawkeye Rubber production well PW-1 were sampled and analyzed for chromium in December 1993. The results show generally lower levels of chromium than previous sampling efforts. This tends to support the projection that natural attenuation will reduce the levels of contaminants with time.

Hawkeye Rubber Company conducted their own investigation in the fall of 1993. Results from this investigation were consistent with previous work. Hawkeye Rubber Company continues to work with the DNR to address their contamination problem. Cooperative efforts between Electro-Coatings and Hawkeye Rubber will be encouraged.

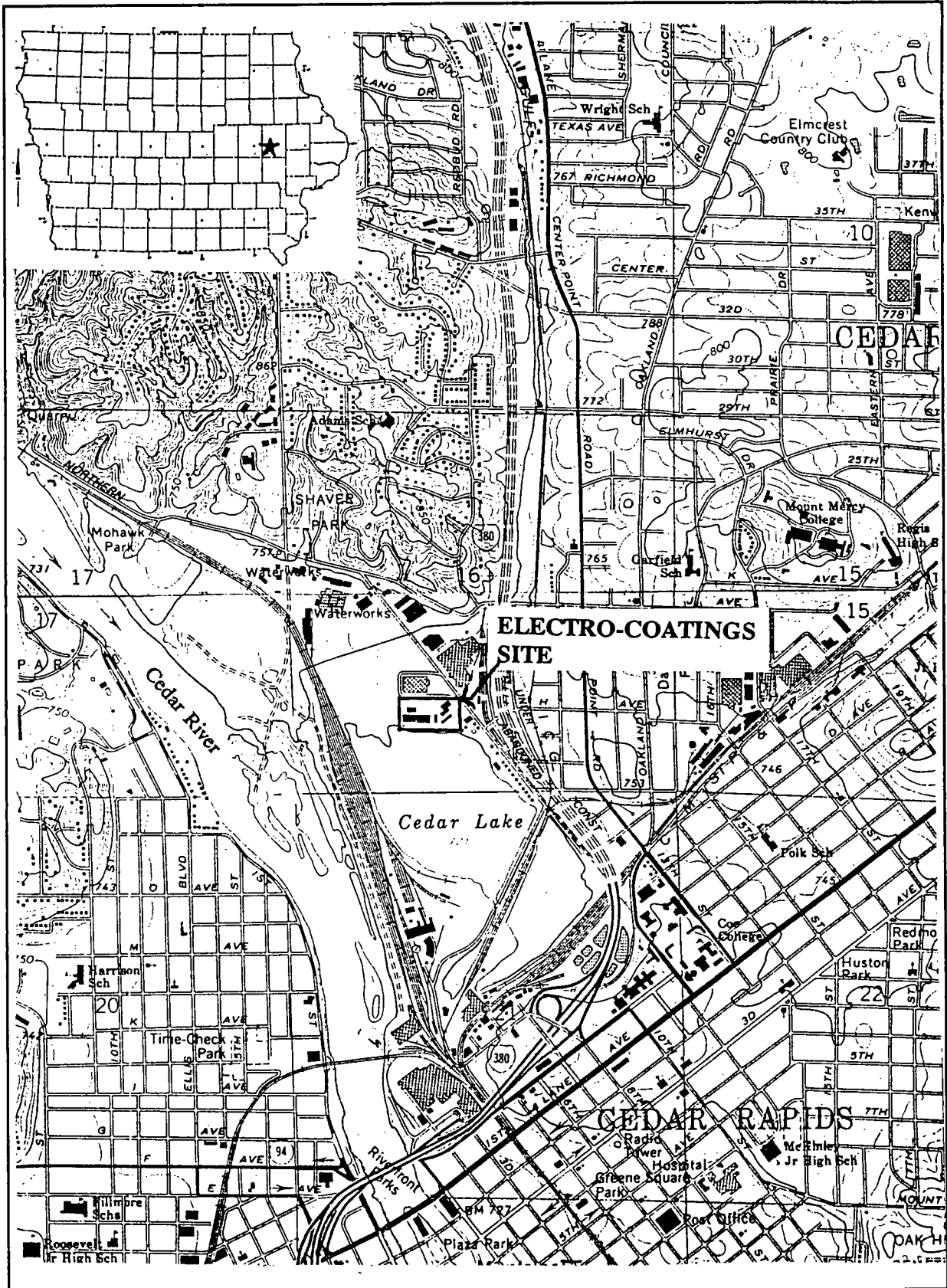
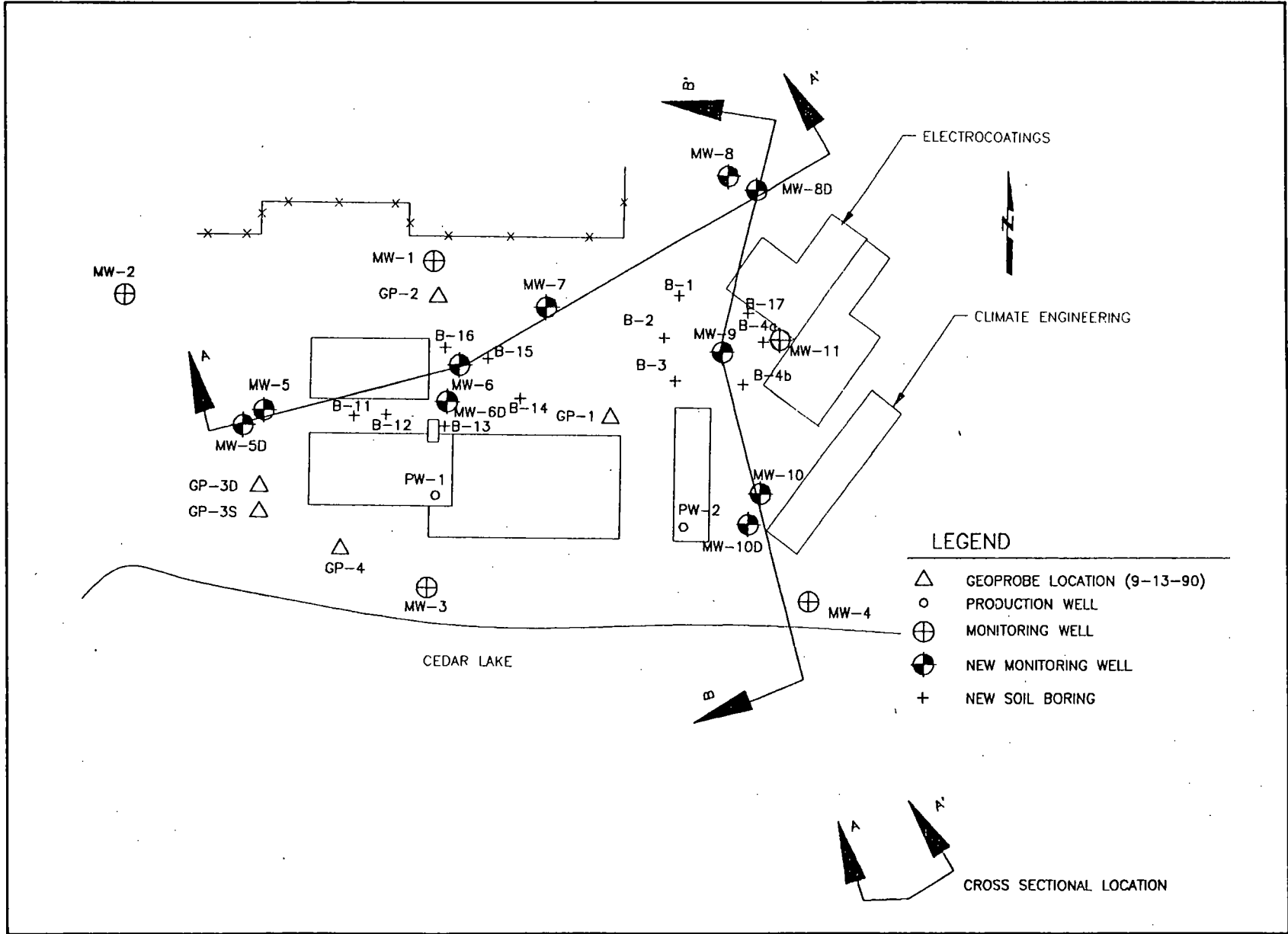


Figure 1: LOCATION MAP

Figure 2: SITE MAP



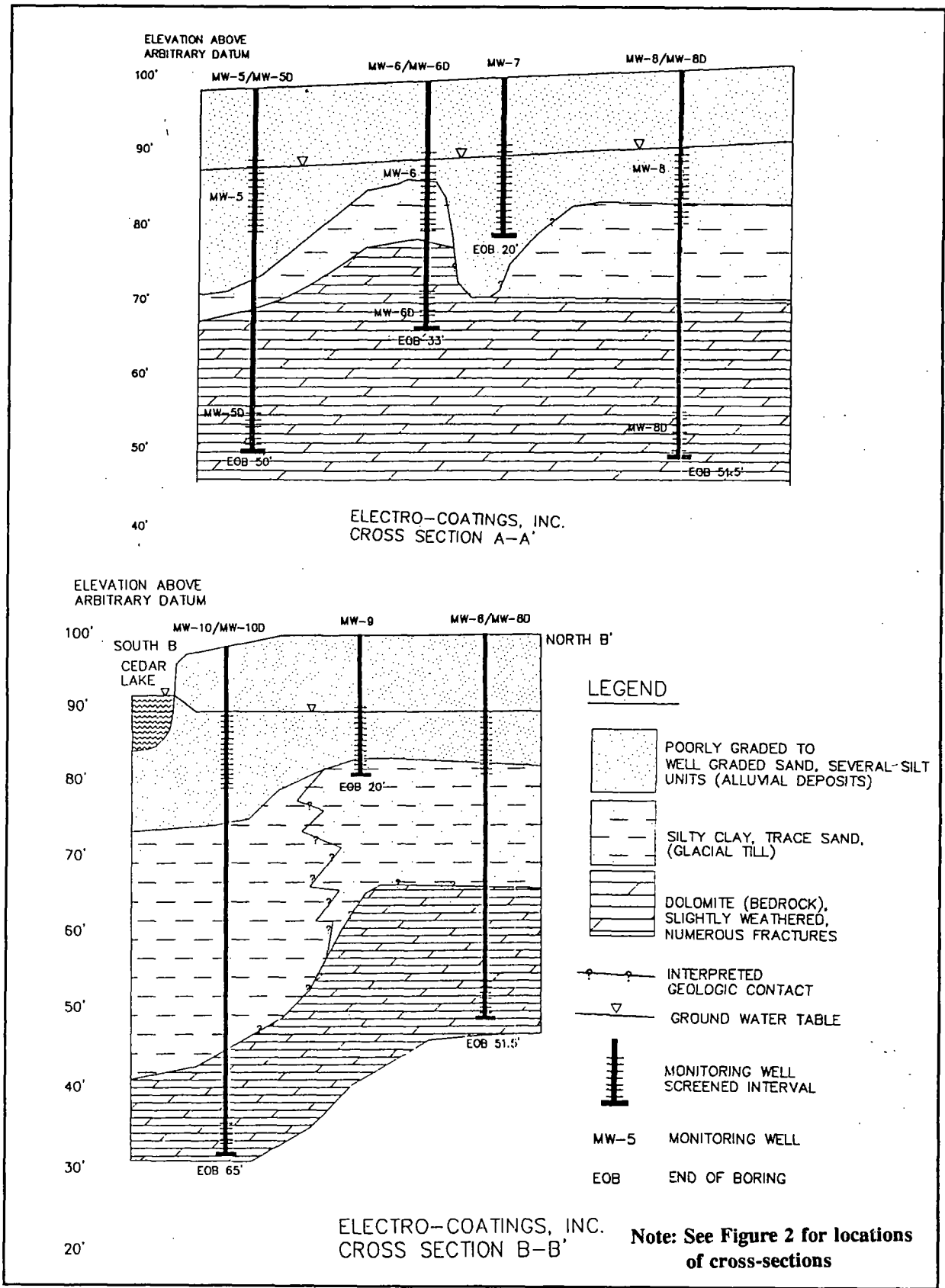


Figure 3: GEOLOGIC CROSS-SECTIONS

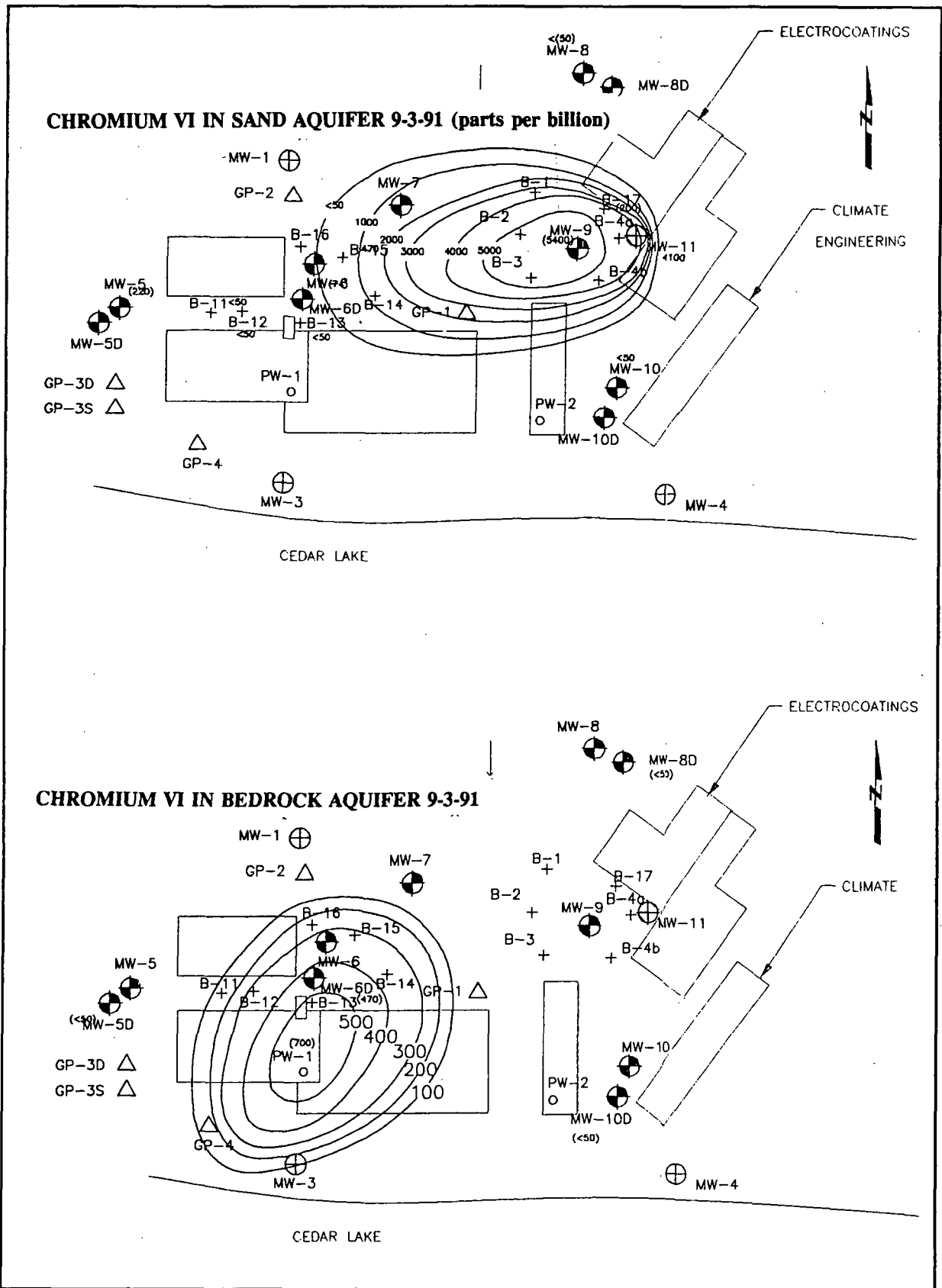


Figure 4: CHROMIUM PLUMES IN GROUNDWATER

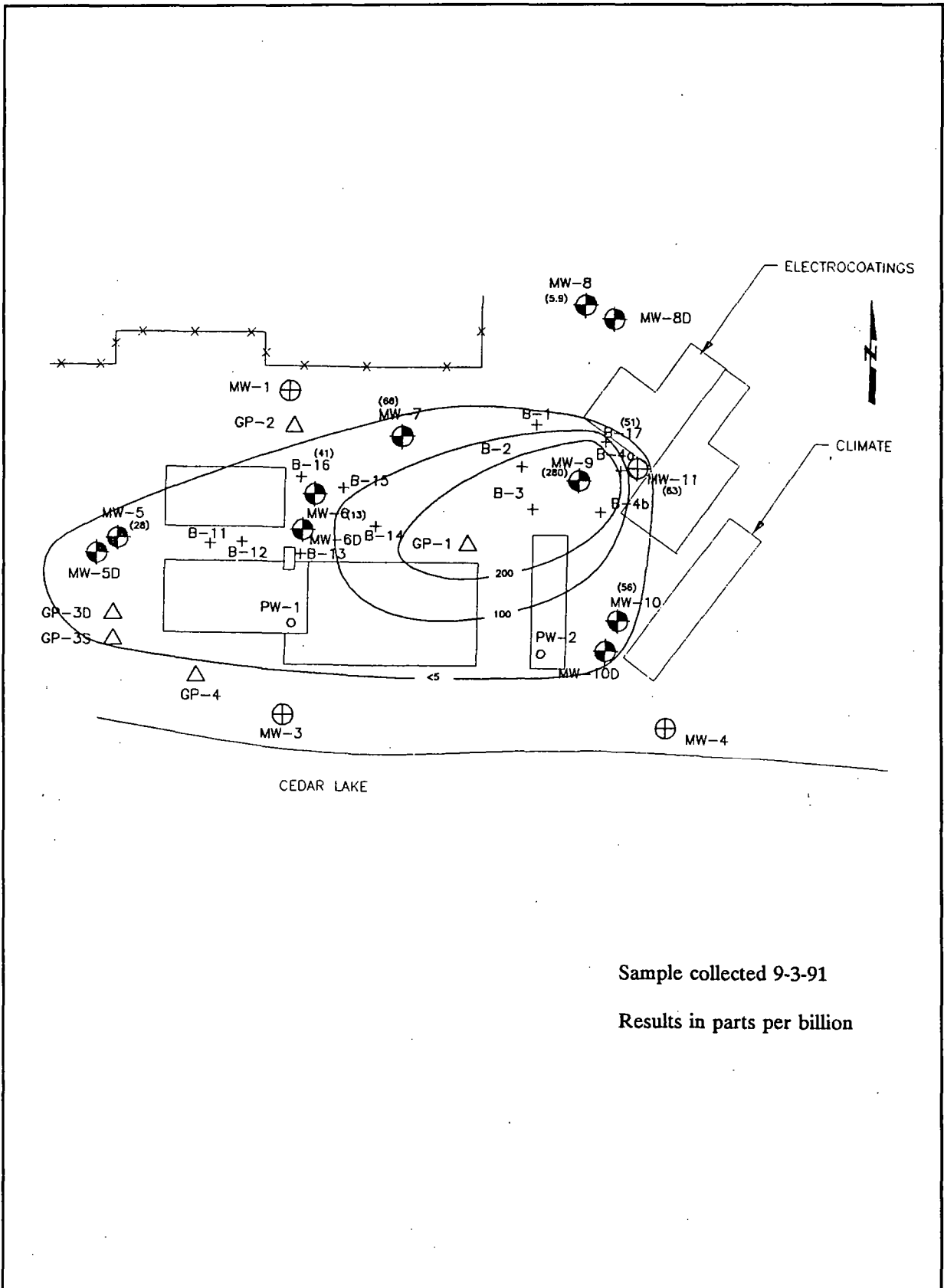


Figure 5: TCE PLUME IN SAND AQUIFER