UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
STATEMENT OF BASIS

for

Proposed Soil and Ground Water Cleanup

at

Anderson Redevelopment Commission
2900 South Scatterfield Road
Anderson, Indiana

IND 980 503 825

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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April 2013

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Former GM Plant 7, Area 7
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INTRODUCTION

This Statement of Basis (SB) for the Anderson Redevelopment Commission, former General Motors (GM) Energy and Engine Management Facility (Facility), Plant 7, Area 7 (Area 7), explains the United States Environmental Protection Agency's proposed remedy, and reasons for this proposal, for eliminating hazardous constituents in soil and preventing their release to ground water in order to protect human health. A Final Decision and Response to Comments was issued in 2006 for the entire facility. However, EPA has determined that the 2006 remedy for Area 7 must be revisited. This SB is for EPA's proposed remedy is for Plant 7, Area 7 only. In addition to the preferred proposed remedy, this SB includes summaries of other potential remedies analyzed and considered for Area 7. EPA will select a final remedy for Area 7 only after the public comment period has ended and the information submitted during this time has been reviewed and considered. As such, EPA is issuing this SB as part of its public participation responsibilities under the Resource Conservation and Recovery Act (RCRA).

This document summarizes information that can be found in greater detail in the April 2001 *RCRA Facility Investigation (RFI) Report*, the December 2011 *Final Corrective Measure Recommendation, Anderson Redevelopment Commission*, and other documents in the administrative record for the facility. EPA encourages the public to review these documents to gain a more comprehensive understanding of the facility and RCRA activities that have been conducted there.

EPA may modify the proposed remedy or select another remedy based on new information or public comments. Therefore, the public is encouraged to review and comment on all alternatives. The public can be involved in the remedy selection process by reviewing the documents contained in the administrative record file and submitting comments to the EPA during the public comment period. In this document, EPA informs the public of the location and availability of the administrative record, as well as the dates for the public comment period.

Although no public meeting has been scheduled as of the start date of the public comment period, members of the public can request a public meeting during the open public comment period.

PROPOSED REMEDY

EPA proposes that Anderson Redevelopment Commission (ARC) eliminate soil and ground water contamination at Area 7 through containment and in-ground chemical treatment. Specifically, this proposal involves: (1) repairing gaps in a below-ground bentonite clay slurry wall located soil in Area 7, and (2) injecting oxidizing chemicals into the subsurface to destroy the soil contamination contained within the slurry wall, a process known as in-situ chemical oxidation (ISCO).

During GM's ownership of the Facility, GM installed a network of ground water monitoring wells between Area 7 and the Facility property line, and off-site in the north/northwesterly direction of ground water flow (downgradient). EPA proposes using these wells in a monitoring program to evaluate the remedy's effectiveness in removing ground water contamination released from Area 7.

Restrictive covenants have been recorded in the property deed which:

- Restrict the use of the property to commercial and industrial for ARC and future owners;
- Prohibit the use of on-site ground water for any potable (i.e., drinking water) or non-potable purpose, except for corrective action activities;
- Require any soil, sediment, debris, surface water, ground water, and any other media that are excavated or disturbed on the property to be managed as hazardous wastes under RCRA if identified as such; and
- Be permanently enforceable on the property, regardless of changes of ownership.

FACILITY BACKGROUND

Location and Description

The Facility is located at 2900 South Scatterfield Road, on the southeast side of the City of Anderson in Madison County, Indiana (Figure 1). The 18 acre Plant 7 was part of a much larger automotive manufacturing facility. While operated by GM, the former 220 acre Facility produced electronic components such as ignitions, turn signals, distributors, horns and alternators for the automotive industry. Manufacturing began in the late 1930s and ceased in the late 1990s. A RCRA corrective action was initiated in 1998 and a Final Decision was issued for the entire Facility in 2006.

The former Plant 7 was located in the northwestern portion of the Facility. It was built in 1940 and expanded several times to approximately 427,000 square feet. The building was demolished in 1996, and the foundation and slab were removed in 2004. This location is bounded on the north by Conrail railroad tracks and the Phillips Industries scrap yard, on the east by the former Plant 3, on the south by the former Plant 10, and on the west by the Facility's former waste water treatment plant and industrial and residential properties.

While Plant 7 was active, GM operated an in-ground degreaser and associated trench system in the western portion of the building. The degreaser was installed in 1976 and taken out of service in 1986. A volatile organic compound (VOC) known as trichloroethene (TCE) was used as the solvent in the degreaser. For the RCRA Facility Investigation (RFI), which is described below in this SB, the former degreaser was designated as Area 7 (Figure 2). The degreaser and trench system were removed during demolition of Plant 7.

Area 7 Geology

Area 7 is approximately 18 acres in size. The soils are variable lenses and layers of silty clay and gravelly sand with a total depth ranging from 25 to 53 feet. A thick formation of dense and dry gravelly clay, known as the basal till, lies beneath the soil layers.

Area 7 Hydrogeology

Because of the variable soil types underlying the area, the depth to the water table ranges from 15 to 17 feet below ground surface. Overall thickness of the saturated soils above the basal till is approximately 30 feet. The direction of ground water flow in the area is north-northwesterly, toward the White River, which is approximately 0.75 mile from the northern property boundary of the ARC facility.

Surface Water Near Area 7

The Pittsford Ditch, a tributary of the White River, lies 50 feet to the west of Area 7 and flows south to north. Within the Facility boundaries the Pittsford Ditch is either lined with concrete or flows underground through culverts.

Area 7 Ecological Setting

The Facility is located in a highly developed area which is a combination of industrial, commercial and residential properties. The site itself is a formerly active manufacturing facility with little natural soil or vegetation at ground surface. Currently, the area is predominantly covered by pavement and crushed rock. The only surface water body, the Pittsford Ditch, flows either through concrete-lined channels or underground culverts. Based on these observations, no environmentally sensitive habitats exist at the Facility, and no endangered or threatened species are expected to be present.

Evaluation of Present Human Health Risk from Area 7

Access to Area 7 by trespassers is restricted by a fence which surrounds the Facility. Exposure to fugitive dust is prevented by an engineered cover which consists of a synthetic membrane, compacted clay and vegetated top soil. EPA contractors have not detected chlorinated VOCs after sampling and analyzing ground water near a residential area approximately 2,800 feet downgradient of Area 7 (Figure 3). Although releases are occurring from Area 7, the unit does not currently pose risk to human health. EPA seeks to eliminate future releases of TCE and its degradation products through the corrective measures proposed in this SB and thereby remove any potential endangerment to human health and the environment.

Interim Measures Taken at Area 7

In an effort to address TCE contamination in the ground water which is migrating beyond the northern boundary of the Facility, GM proposed to install a line of injection wells near the property line. Through these wells, GM proposed to inject a solution of molasses into the plume of contamination. The sulfur and the organic composition of the molasses were to stimulate the growth of existing bacteria, which would degrade the TCE. This process is known as Enhanced Reductive Dechlorination (ERD). EPA approved GM's plan for this interim measure on June 7, 2001. GM installed twenty-two injection wells near the property line on 10-foot centers. Operation of the ERD system began in August 2001; however, GM shut the system down in November 2003 due to its failure to completely remove all contamination. Although the system effectively degraded the TCE, the concentrations of the TCE degradation product vinyl chloride

were not effectively treated by the ERD system. EPA and GM decided to address the contamination at Area 7 through the remedy discussed below.

Interim Measures Taken Throughout the Facility

In addition to addressing contamination at Area 7, GM voluntarily removed contamination from other areas (Figure 2) at the Facility during its RCRA Facility Investigation (RFI) between 1998 and 2001. These actions are summarized in Table 1 below:

Table 1 – Interim Measures Taken by GM at Other Areas

Area	Interim Measures Taken	Contaminant Levels Remaining	Standards	Rationale
Former Plant 3 Area 3	Soil vapor extraction to remove TCE in soil at initial maximum concentration of 950 mg/kg (Taken in 1999-2001)	Average remaining TCE concentration 3 mg/kg in soil Average TCE ground water concentration 0.03 mg/L	Industrial screening level for TCE in soil 61.2 mg/kg Residential screening level for TCE in soil 23.2 mg/kg Site-specific screening level for TCE in ground water 0.005 mg/L	Remaining contamination meets calculated site-specific human health risk goals approved by EPA for industrial/commercial reuse of property *
Former Plant 11 Chrome Plater and Degreaser	Concrete floor removed as hazardous waste characteristic for chromium (Taken 1998-2000)	Average remaining chromium concentration in soil 142.31 mg/kg Average remaining TCE Concentration in soil 14.85 mg/kg Average concentration of TCE in ground water 0.016 mg/L	Industrial screening level for TCE in soil 61.2 mg/kg Industrial screening level for chromium in soil 4,480 mg/kg Site-specific screening level for TCE in ground water 0.005 mg/L	Remaining contamination meets calculated site-specific human health risk goals approved by EPA for industrial/commercial reuse of property *
Former Plant 17 Area 24	Soil vapor extraction performed 1999-2000 to remove TCE (Taken in 1999-2000)	Average remaining TCE concentration in soil 15.17 mg/kg Average concentration of TCE in ground water 0.39 mg/L	Industrial screening level for TCE in soil 61.2 mg/kg Site-specific screening level for TCE in ground water 0.005 mg/L	Remaining contamination meets calculated site-specific human health risk goals approved by EPA for industrial/commercial reuse of property *
Former Plant 7 Area 1	Waste cutting oil and metal chips removed from concrete drip pads (1999)	Average TCE concentration in soil 0.6 mg/kg Average lead concentration in soil 234 mg/kg	Industrial screening level for TCE in soil 61.2 mg/kg Industrial screening level for lead in soil 750 mg/kg	Remaining contamination meets calculated site-specific human health risk goals approved by EPA for industrial/commercial reuse of property *
Area 5 – Pittsford Ditch	Stream that traverses site in underground culverts and concrete swales – sediment and water sampled (1998)	Average lead concentration in water 0.005 mg/L Average lead concentration in sediment 381.67 mg/kg	Screening level for lead in water 0.015 mg/L Screening level for lead in sediment 400 mg/kg	Remaining contamination meets calculated site-specific human health risk goals approved by EPA for industrial/commercial reuse of property *

mg/kg = milligrams per kilogram soil mg/L = milligrams per liter water * Cumulative cancer risk of 1×10^{-4} (one in 10,000) and non-cancer hazard index of 1.0

Corrective Measures Taken in 2006

From 1998 through 2001, GM conducted an RFI for the entire Facility under the conditions of a RCRA permit for hazardous waste management. GM described and investigated releases from the former degreaser at Area 7 as part of the facility-wide RFI. In its April 2001 RFI Report, GM noted that TCE was embedded in the sand and clay layers at depths of nearly 30 feet, at concentrations of 0.004 to 5,400 milligrams per kilogram (mg/kg) of soil. Concentrations of TCE in ground water ranged from 31 milligrams per liter (mg/L) directly below the former degreaser to non-detect approximately 2,800 feet downgradient of Area 7.

On May 9, 2002, EPA and GM entered into a Consent Agreement and Final Order (CAFO) for the completion of corrective action at the Facility, which included Area 7. As shown in Table 1, GM addressed releases of contamination at other areas of concern at the Facility through interim measures. GM submitted the final revised Corrective Measures Proposal (CMP) for Area 7 on December 19, 2005. In order to prevent ongoing releases of TCE to ground water from the contaminated soil at Area 7, GM proposed to isolate and contain this contamination by installing an in-ground barrier of bentonite clay mixed with native soil, called a slurry wall. The slurry wall would be emplaced by excavation of soil with a backhoe followed by installation of the clay/soil slurry with a rotary auger device. When saturated, bentonite clay expands and fills voids between soil grains, thereby preventing the flow of ground water through the barrier. The slurry wall would be anchored 2.5 feet into the basal till, effectively sealing the bottom of the containment system. In order to alleviate pressure against the slurry wall created by ground water within the structure, GM proposed to install a pumping well within the containment. The extracted ground water would be held in a 5,000 gallon underground storage tank and periodically removed off-site. The containment area would be covered by an engineered cap consisting of compacted clay and a synthetic membrane.

On April 27, 2006, EPA gave public notice of its proposed final corrective measures decision for the Facility. EPA determined that the Facility, with the exception of Area 7, required no further corrective action and was suitable for commercial or industrial reuse. For Area 7, the features of the proposed remedy are summarized below in Table 2:

Table 2: 2006 Remedy for Area 7

Corrective Measure	Medium Protected	Protective Standard	Rationale
Slurry wall enclosure	soil, ground water	15 mg/kg TCE	TCE concentration calculated by GM and approved by EPA as maximum allowable in soil to prevent mobilization of TCE to ground water at concentrations above threshold calculated for property boundary , and to ensure that indoor vapor intrusion into buildings constructed at the site will not be a human health risk.
Ground water extraction within enclosure	ground water		Ground water extracted through a well in order to reduce internal pressure of ground water within enclosure and prevent stress on the slurry wall, stored in 5,000 gallon tank and removed off-site for treatment and disposal
Composite cap	soil, ground water		Cap consisting of clay and synthetic membrane was installed to prevent precipitation from coming into contact with contaminated soil within enclosure, and to prevent release of fugitive dust
Ground water monitoring at downgradient property boundary	ground water	0.520 mg/L TCE 0.483 mg/L cis-1,2 DCE 0.035 mg/L vinyl chloride	Property Boundary Goals were calculated by GM and approved by EPA as threshold concentrations in ground water migrating past property line that will be protective of human health through non-potable dermal contact and will attenuate to allowable Federal drinking water standards (MCLs) off-site of the facility.
Final goals for off-site ground water protective of human health	ground water	0.005 mg/L TCE 0.070 mg/L cis-1,2 DCE 0.002 mg/L vinyl chloride	Federal Maximum Contaminant Levels (MCLs) set by EPA as maximum concentrations allowable for safe drinking water

The 45 day public comment period for the proposed remedy for Area 7 and for EPA's proposal of no further corrective action for the remainder of the Facility ran from April 27, 2006 through June 12, 2006. EPA received no public comments. On July 11, 2006, EPA issued its Notification of Final Decision for the area 7 remedy and no further corrective action determination for the remainder of the facility. The proposed remedy was selected as the Final Decision for the Facility and GM implemented the remedy immediately.

Construction of the containment system at Area 7 began in September 2006 and was completed in July 2007. Operation of the internal ground water extraction system began on July 11, 2007. During the remainder of 2007, GM operated the pumping well and measured the depths to the water table within and outside of the containment to determine if inward flow of ground water within the enclosure had been achieved.

Evaluation of the Containment System

By early 2008, GM determined that inward flow of ground water was not occurring, and that ground water was likely flowing through the northern and eastern portions of the enclosure. The containment of ground water on-site was not occurring. Over the remainder of the year and into early 2009, GM conducted ground water pumping tests and drilled exploratory soil borings in the areas suspected of leakage. At two locations in the northern and eastern portions of the enclosure, GM discovered that the slurry wall had been anchored into a clay horizon which lies over a permeable sandy layer, rather than anchored as intended into the underlying basal till. Ground water has been flowing through the sandy material.

GM continued its ground water pumping tests and soil borings while evaluating options for repairing the gaps in the slurry wall until June 2009, when General Motors Corporation declared bankruptcy. When this declaration was made, all work ceased at Area 7, including evaluation of the slurry wall and operation of the ground water extraction system.

Regulatory History

Hazardous waste management and RCRA corrective action at the Facility (then known as GM Delco Remy) had been conducted under a RCRA permit issued by EPA on November 19, 1998. After lapse of that permit, EPA and GM entered into a CAFO in May 9, 2002. Under this CAFO, GM conducted the RFI and other corrective action activities described above in this SB. GM posted a $1.2 million surety bond as financial assurance for corrective action under the CAFO.

GM intended to decommission and divest themselves of the Facility. From 1992 through 2006, GM demolished the plant buildings and removed residual wastes as described above in this SB. The only remaining buildings belong to Hi-Tech Engineering (former Plant 18) and AMACOR (former Plant 19).

On September 20, 2006, GM deeded the entire Facility in its possession, including Area 7, to the ARC. ARC is an Indiana statutory redevelopment commission formed for the purpose of identifying, creating and funding redevelopment activities that will increase the tax base, create new jobs, and improve the economic conditions for the City of Anderson. By written agreement with ARC, GM retained responsibility to complete RCRA corrective action obligations for Area 7. Prior to the transfer, GM notified ARC of the terms and obligations of the CAFO and provided a copy of the document to ARC.

On June 1, 2009, GM, then known as Motors Liquidation Corporation (MLC) filed for bankruptcy in the United States Bankruptcy Court under Chapter 11 of the United States Code. On October 20, 2009, MLC informed EPA, in writing, that it would default on its obligations under the CAFO and that it would not complete the required RCRA corrective action at the Facility.

Under the CAFO, GM maintained financial assurance in the form of a surety bond issued to Westchester Fire Insurance Company (Westchester), to guarantee its financial ability to perform the corrective action. On February 2, 2010, EPA presented a claim to Westchester for the full amount of the surety bond. On November 19, 2010, Westchester deposited into a trust account at the Bank of New York/Mellon (BNY Mellon as Trustee) the amount of $1,200,435.09 (the Insurance Trust). EPA is the beneficiary of the BNY Mellon Insurance Trust. The trust money may only be used to reimburse persons specified by the EPA Regional Administrator for expenditures to perform RCRA corrective action at the Facility.

Additionally, on March 7, 2011, the United States Bankruptcy Court entered into a Consent Decree and Settlement Agreement among MLC, the United States of America, and the State of Indiana. Under this Consent Decree, MLC was obligated to make a cash payment in the amount of $3,599,039.00 into a trust account, of which EPA is the beneficiary, to conduct corrective action at the Facility. On April 1, 2011, MLC deposited the funds into a trust account at First Merchants Trust Company (First Merchants as Trustee), known as the Bankruptcy Trust.

Administrative Order on Consent

On July 11, 2011, EPA and ARC entered into an Administrative Order on Consent (AOC) to select and implement a new and effective remedy at Area 7. This Statement of Basis is EPA's proposal of the remedy to be implemented by the ARC.

SCOPE OF CORRECTIVE ACTION

ARC must implement corrective measures at Area 7 that meet the following objectives:

- Remove TCE in Area 7 soil to concentrations at or below 15 mg/kg, which is the calculated target concentration to prevent mobilization to ground water and volatilization to indoor air in future structures;
- Isolate and eliminate on-going release of TCE to ground water;
- Monitor downgradient ground water to verify remedy performance by observing decreasing concentrations of TCE and its degradation products; and
- Protect human health by eliminating ground water contamination.

EPA'S PREFERRED REMEDY

The Agency proposes that the remedial objectives listed above can be best met at Area 7 by repair of the slurry wall combined with In-Situ Chemical Oxidation (ISCO) of the TCE contamination within the containment area. ARC would monitor contaminant levels in ground water downgradient of Area 7 to assess the performance of the remedy. Existing institutional controls such as restrictive covenants on the property deed and a City ordinance which prohibits the installation of wells for potable use are components of the preferred remedy. EPA's preferred remedy and the remedial alternatives considered by the Agency in making the proposed selection are discussed in greater detail below in this SB.

Performance Standards for Corrective Measures

Remedial alternatives must meet three performance standards, which are the main objectives of corrective action under the RCRA program. These standards are:

1. Attain media cleanup standards;
2. Control the sources of releases; and
3. Protect human health and the environment.

Balancing Criteria

Often, more than one remedial procedure will meet the performance standards listed above. For EPA to select the most appropriate remedy, the technological options must be evaluated before a procedure or combination of procedures is proposed as the final remedy. The balancing criteria for such a decision are:

- Long-term reliability and effectiveness;
- Reduction of toxicity, mobility or volume of wastes;
- Short-term effectiveness;
- Implementability;
- Cost; and
- State and community acceptance.

SUMMARY OF ALTERNATIVES

The alternatives analyzed for Area 7 at the Facility are presented in detail below. Table 3 summarizes the cost associated with each remedy alternative:

Table 3 – Cost Associated with Each Remedy Alternative for the ARC Facility

Alternative	Description	Cost
1	No Action	$0
2	In-Situ Chemical Oxidation	$2,600,000
3	In-Situ Thermal Treatment	$4,600,000
4	Air Sparging/Soil Vapor Extraction	$3,700,000
5	Repair Slurry Wall	$1,700,000

Alternative 1: No Action

This option means that no action would be taken to rectify the situation at the Facility. Although the ground water contamination released from Area 7 is degrading, TCE from contaminated soil within the area would continue to mobilize into ground water flowing off-site. EPA does not consider Alternative 1 to be a viable remedy.

Alternative 2: In-Situ Chemical Oxidation (ISCO)

ISCO is the injection of an oxidizing chemical solution into contaminated soil and ground water through wells which have been installed throughout the contaminated area. In the case of Area 7, the oxidizing chemicals would be sodium persulfate and sodium hydroxide. A network of injection wells would be installed within the slurry wall enclosure, and the oxidizing solution would be injected into soil and ground water which contains TCE. The oxidizing chemicals would degrade the TCE into the non-hazardous compounds ethane and ethene. ARC would periodically sample and analyze the soil to determine if the cleanup target of 15 mg/kg has been achieved. Additional injections of oxidizer may be necessary to address TCE that may be released after initial treatment, known as "rebound". ARC would monitor ground water downgradient of Area 7 and the property line to assess decreasing contamination levels, after the source has been eliminated.

ISCO is a proven technology which has been successful in eliminating TCE and its degradation products, and it can be readily implemented at Area 7. However, before implementing this remedy at Area 7, ARC would have to conduct bench tests (in the laboratory) and pilot tests (in the field) to evaluate any effects the oxidizing chemical solution would have on the slurry wall and on the natural minerals which make up the soil. The bench and pilot tests would also indicate how effectively the oxidizers would eliminate the TCE under actual conditions at Area 7. Although ISCO is effective in degrading TCE and other chlorinated VOCs, the chemical reaction can produce heat and hazardous gases such as chlorine. Bench and pilot tests are necessary to adjust application rates and amounts of the oxidizers in order to minimize generation of these hazardous by-products.

Alternative 3: In-Situ Thermal Treatment

In-Situ Thermal Treatment is a technology that removes organic compounds in soil by heating the soil/contaminant mass with electrodes, volatilizing the contamination, and removing it in its gaseous form. The electrodes are inserted into soil borings above the water table at horizontal spacing that is calculated during the design phase of the project. Substantial current is passed through the contaminated soil between the electrodes, which heats the material and converts the organic contamination to vapor. This vapor is either captured or released under a state or federal air permit.

When properly implemented, In-Situ Thermal Treatment can effectively remove VOC contamination. However, numerous expenses and uncertainties are associated with this technology. High voltages of electricity are commonly required from utility companies or on-site generation, at substantial costs. Contaminant vapors which must be captured are often

contained in activated carbon canisters, thereby generating hazardous wastes which must be disposed in compliance with state and federal regulations.

In-Situ Thermal Treatment of organic contamination is only effective in unsaturated soil, i.e., soil above the water table. Even under unsaturated conditions, the distribution of contamination and layout of the electrode grid must be carefully understood and planned to contain the contamination in its original area, and not cause it to spread over a larger area during heating. Water present among the soil particles further complicates this situation. Variable texture of the soil (distribution of clay, sand, and gravel sized particles) can also cause uneven distribution of electric current and contaminant vapor through the area to be treated.

The size of Area 7, the distribution of TCE above and below the water table, and the variability of the soil texture present a complex scenario for In-Situ Thermal Treatment. Pilot testing would be necessary to evaluate the effect of this treatment on the slurry wall.

Alternative 4: Air Sparging/Soil Vapor Extraction

Air Sparging/Soil Vapor Extraction (AS/SVE) is a method for removing volatile organic contamination from soil. Air Sparging is the injection of compressed air into contaminated soil through a well or hydraulically driven shaft. The pressurized air displaces VOC vapors from the pore spaces of the soil and mobilizes the vapors, which are extracted by screened wells that are connected to vacuum lines. When the extent of VOC contamination in soil is delineated, the network of AS and SVE points is installed to ensure that VOC vapors are driven to the extraction points as effectively as possible.

In locations with coarse grained permeable soil, such as the Former Plant 3, Area 3, SVE can be very effective in removing VOCs. However, AS/SVE is much less effective in finer grained soils (e.g., clay, silt, fine sand) with less pore space and permeability. AS/SVE is not effective in contaminated soil below the water table. VOCs tend to bond with organic carbon and become difficult to extract, which makes AS/SVE marginally effective in soils containing high amounts of humus. Because AS/SVE technology removes VOCs only through their vapor phase, the rates of contaminant removal are not as rapid as those for technologies that eliminate VOCs on contact or remove them in bulk form. Costs of an AS/SVE remedy will increase if stronger vacuum and additional treatment time is needed in soils which are less conducive to this technology.

AS/SVE will generate vapors and condensed water which is contaminated with VOCs. This water must be managed and disposed as hazardous waste, which poses a challenge similar to the one presented by Alternative 3. Vapors could be released to the atmosphere under a state or federal permit. However, more prudent management would include containing the VOCs (e.g.,

in activated carbon canisters) and removing them off-site for proper disposal. Management of these wastes generated on-site increases the costs of an AS/SVE remedy.

Alternative 5: Repairing the Slurry Wall

This alternative involves review of GM's 2007-2009 soil boring and hydraulic investigations to locate the improperly installed portions of the slurry wall, drilling additional borings and conducting more hydraulic tests as necessary to fill information gaps, excavating the defective portions of the enclosure down to the basal till, properly installing the soil/bentonite wall, and connecting the new portions to the original enclosure. The extraction well which relieves internal ground water pressure would be restarted. In order to conduct the repairs, the composite cover on Area 7 would be removed then replaced when the project is finished.

Relative to the other alternatives, this option provides a rapid seal to prevent further release of TCE and degradation products to off-site ground water. However, it does not remove the source of release and requires long-term operation and maintenance.

EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES

EPA's proposed remedy for cleaning up the soil and ground water at and downgradient of Area 7 is a combination of Alternatives 2 and 5: repairing the slurry wall to seal off continued release of contamination while using ISCO to eliminate its source within the enclosure. This section profiles the performance of the proposed remedy against the four threshold criteria and the five balancing criteria, noting how it compares to the alternatives.

1. Overall Protection: Alternative 1 would provide no protection of human health and the environment. Alternatives 2, 3, and 4 are protective by removing the contamination from Area 7 or degrading it in-place. Alternative 5 is protective by isolating the source of contamination and preventing on-going releases to ground water.

2. Attainment of Media Cleanup Standards: Alternative 1 would not achieve cleanup standards because hazardous constituents would continue to be released. Proper implementation of Alternatives 2 and 3 would attain the media cleanup standards by chemically eliminating the VOCs in-place. Alternative 4 would be minimally effective at removing contamination from the soils at Area 7 and would have little effect on ground water contamination. The goal of Alternative 5 is effective containment of the VOC source in order to achieve downgradient ground water cleanup standards, but the alternative by itself would leave contaminated soil in place.

3. Controlling the Sources of Releases: Alternative 1 offers no source control. Alternatives 2 and 3 would control the source of releases by eliminating the contamination in-place, and Alternative 4 presents source control by removing contamination in its vapor phase from soil. Proper installation of Alternative 5 controls the source of release through physical containment.

4. Compliance with Waste Management Standards: Alternative 1 offers limited compliance by leaving the engineered cap in place to shield the contaminated soil from precipitation, but allows continued release to ground water. Alternatives 2, 3, and 4 would generate varying amounts of vapor which would have to be managed as hazardous waste. Construction of Alternative 5 involves excavation of contaminated soils which must be managed as hazardous waste.

5. Long-term Reliability and Effectiveness: Alternative 1 would be minimally effective under current conditions, and ineffective if precipitation breaches the engineered cover. Proper implementation of Alternatives 2 and 3 would be reliable and effective over the long term. Alternative 4 would be partially effective at removing contamination from soil and may cause gradual elimination of ground water contamination. Alternative 5 would be reliable and effective over the long term with proper installation, careful management and continued operation of the internal ground water extraction system.

6. Reduction of Toxicity, Mobility or Volume of Wastes: Alternative 1 offers none of these. Alternatives 2 and 3 would achieve this goal by either degrading VOCs in-place or removing them in their vapor phase. Alternative 4 would achieve this goal to a lesser extent because of the soil conditions at Area 7. Alternative 5 would reduce the mobility of wastes but not toxicity or volume.

7. Short-term Effectiveness: Alternative 1 is not effective. Alternative 5 would have the most rapid effect at halting the migration of contaminants in ground water. Alternative 2 is a proven technology which can significantly reduce the mass of VOCs in a contaminated area within relatively short periods. The time required for Alternatives 3 and 4 to be effective is difficult to estimate because it depends upon site geology, distribution of contamination, organic carbon content of the soil and depth to the water table. Alternative 4 does not directly remove contamination from ground water, and the reduction of contamination would gradually occur after cleanup of the soil.

8. Implementability: Alternative 1 is the easiest to implement but is not a viable remedy. Alternatives 2 and 4 would not require heavy excavation equipment but would use mobile drill rigs, pumps, storage tanks, containers for water and vapor collection, and sampling equipment. Alternative 3 would require a drill rig, numerous electrodes, electrical conduits, a vapor collection system, and either an on-site generator or access to a municipal power supply. Heavy excavation and construction equipment, storage tanks, bentonite clay, and new engineered cover materials to replace those which were removed would be required to implement Alternative 5 at Area 7. Alternatives 2, 3, and 4 require soil sampling and analysis to confirm removal of VOCs, and Alternative 5 would have to be evaluated by hydraulic tests after repair of the slurry wall. Alternatives 2, 3, 4, and 5 require ground water monitoring to confirm their effectiveness.

9. Cost: Alternative 1 has no cost, but is not a viable alternative. Alternative 5 has a cost of $1,700,000 which is the least expensive viable option. Alternative 2 would cost $2,600,000. Alternative 3 is the most expensive option at $4,600,000. Alternative 4 would cost $3,700,000.

In summary, a combination of Alternatives 2 and 5 (EPA's proposed remedy) would achieve the goals described above at Area 7 by preventing the migration of contamination to ground water while eliminating the source of contamination within the enclosure. All or portions of the engineered cover would have to be removed from Area 7 during remedy construction, but the cover will be replaced upon completion. Prior to installing the ISCO system, ARC will conduct bench and pilot tests of ISCO on the Area 7 soil to determine the most effective types and concentrations of oxidizing chemicals, the best layout of the injection well network, and the appropriate number of treatment injections which will minimize the amount of TCE and degradation products that may be sequestered in the soil and released in the future ("rebound"). After construction of the remedy, ARC will submit to EPA its Construction Completion Report and its plan for ground water monitoring which will evaluate the remedy's effectiveness. During remedy construction and implementation, ARC will petition EPA for disbursements from the trust funds previously described in this SB, for reimbursement of material and labor costs. The estimated cost of the proposed remedy is $4,300,000.

This remedy includes the following protective institutional controls which are currently in place:

- Restrictive covenants recorded in the property deed that restrict the land to commercial and industrial use;

- Restrictive covenants recorded in the property deed that prohibit the extraction of on-site ground water for any purpose other than corrective action;

- Restrictive covenants recorded in the property deed that require any soil, sediment, debris, surface water, ground water and any other media that are excavated or disturbed on the property to be managed as hazardous waste under RCRA if identified as such; and

- The restrictive covenants described above are permanently enforceable on the property, regardless of changes of ownership.

- An Ordinance has been established by the City of Anderson (Ordinance No. 50.070) which prohibits installation of private potable water wells.

PUBLIC PARTICIPATION

EPA is soliciting comments from the public on the corrective measures alternatives presented in this document for Area 7 at the Facility. EPA has scheduled a public comment period of 45 days from April 8, 2013, to May 23, 2013, to encourage public participation in the decision process. During the public comment period, EPA will accept written comments on the proposed action. The public may request that EPA hold a public meeting during the public comment period. The public may submit written comments, questions, and requests for a public meeting to the following address:

United States Environmental Protection Agency, Region 5
Remediation and Reuse Branch (LU-9J)
77 West Jackson Boulevard
Chicago, Illinois 60604
Attention: Don Heller
(312) 353-1248
Heller.donald@epa.gov

The administrative record is available for public review at the following two locations:

Anderson Public Library
111 East 12th Street
Anderson, Indiana 46016
http://www.and.lib.in.us/

and

United States Environmental Protection Agency, Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604
Hours
Monday-Friday: 8:00 AM to 4:00 PM

After EPA's consideration of the public comments that are received, EPA will summarize the comments and provide responses in a Response to Comments document. EPA will prepare the Final Decision and Response to Comments after the conclusion of the public comment period and both of these documents will be included in the administrative record. Based on the comments received, EPA may make changes to the proposed corrective measures which will be documented in the Final Decision and Response to Comments.

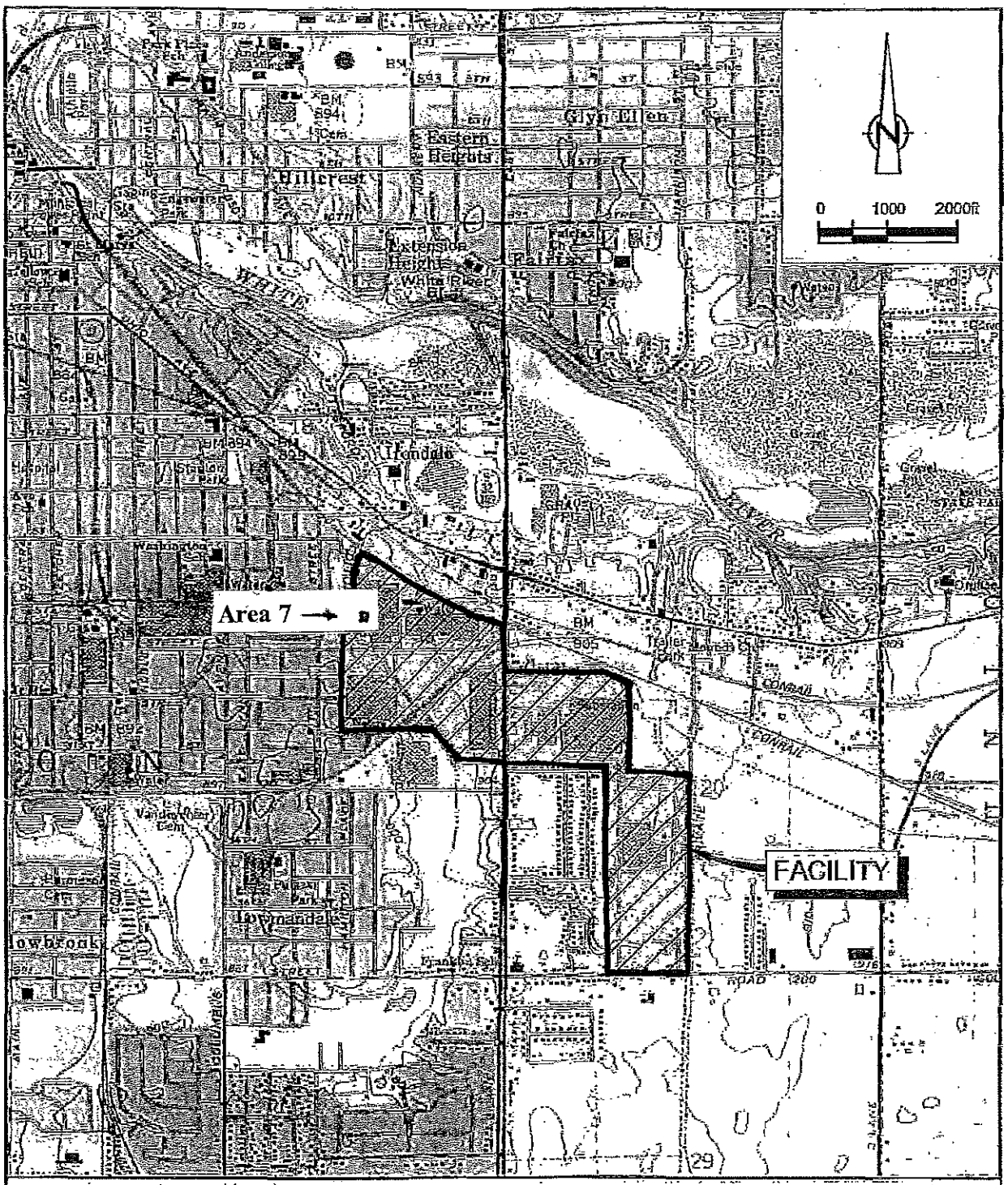

FIGURE 1

FACILITY LOCATION

Anderson Redevelopment Commission – Scatterfield Road Facility

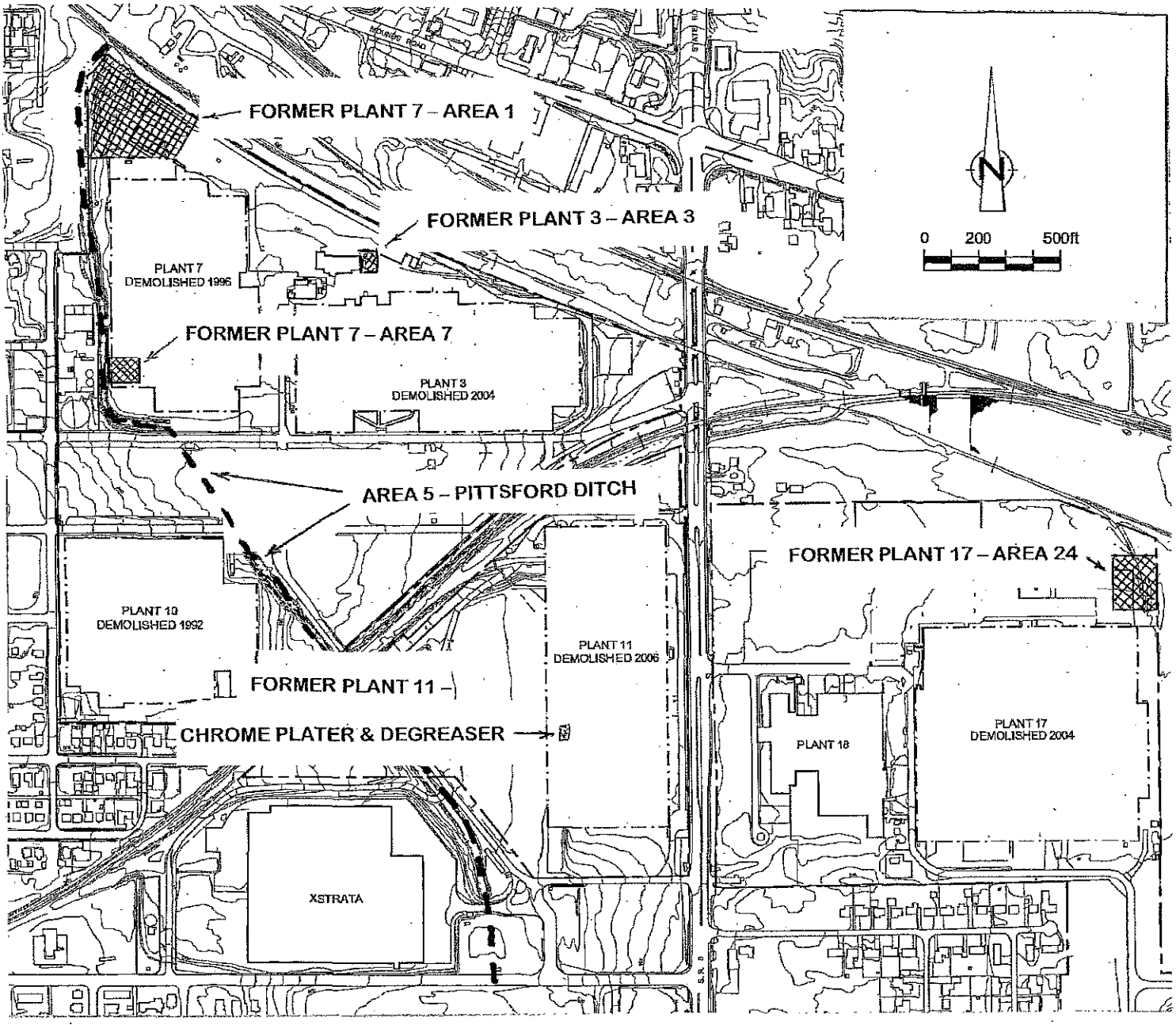

FIGURE 2

FACILITY LAYOUT AND AREAS OF INTEREST

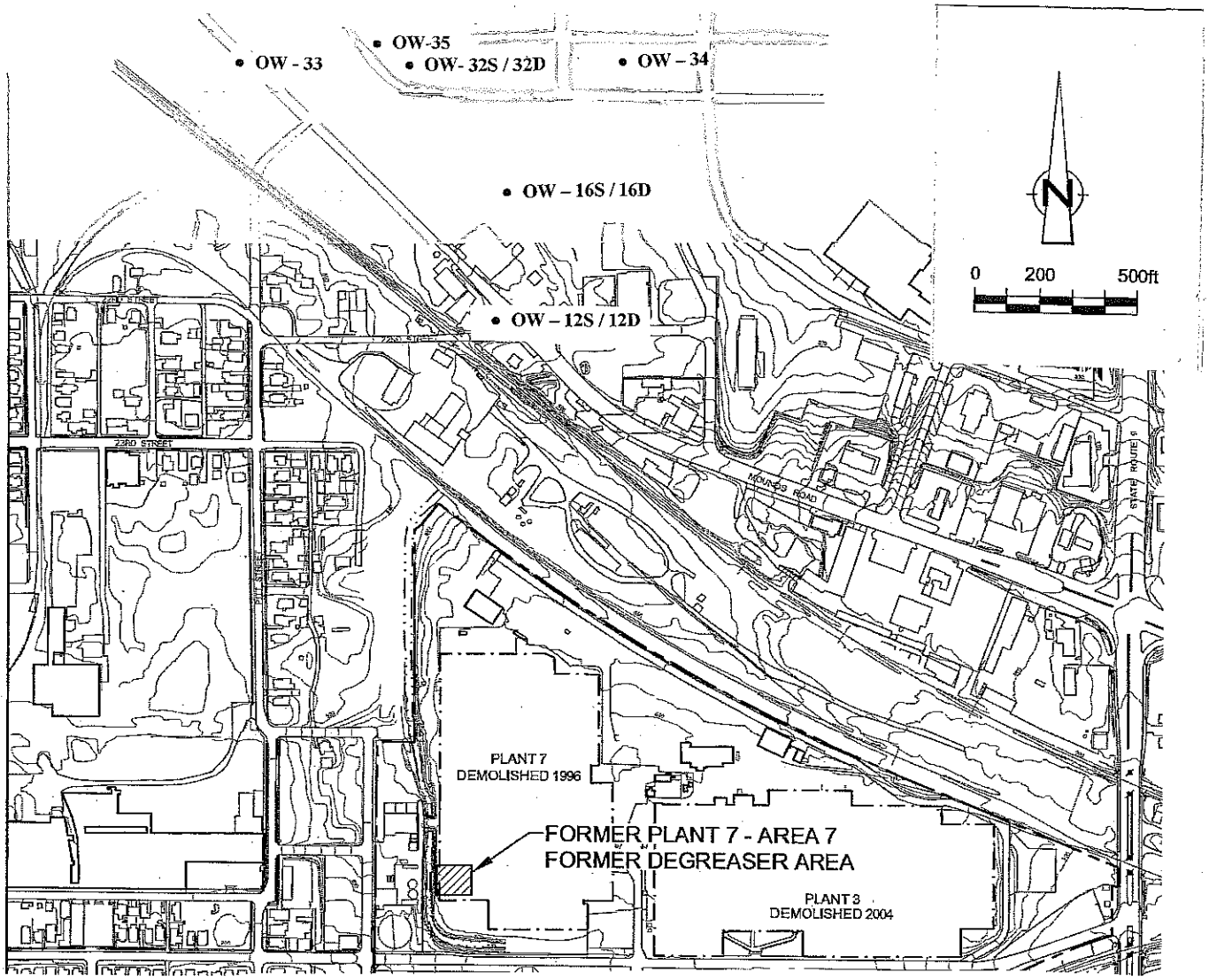

FIGURE 3 - Historical Ground Water Monitoring Data Downgradient of Area 7

Well OW – 12S	2 / 2000	10 / 2012
TCE	0.079	0.01
vinyl chloride	ND	ND
cis 1,2-DCE	0.14	ND

Well OW – 12D	2 / 1999	2 / 2000	10 / 2012
TCE	ND	ND	ND
vinyl chloride	ND	ND	ND
cis 1,2-DCE	ND	ND	ND

Well OW – 16S	11 / 1999	2 / 2000	10 / 2012
TCE	0.064	0.051	0.021
vinyl chloride	0.003	0.0023	ND
cis 1,2-DCE	0.11	0.12	0.008

Well OW – 16D	11 / 1999	2 / 2000	10 / 2012
TCE	0.088	0.12	0.082
vinyl chloride	0.003	0.002	ND
cis 1,2-DCE	0.085	0.12	0.122

Well OW – 32S	7 / 2000	10 / 2012
TCE	0.003	ND
vinyl chloride	ND	ND
cis 1,2-DCE	0.005	ND

Well OW – 32D	7 / 2000	10 / 2012
TCE	ND	ND
vinyl chloride	ND	ND
cis 1,2-DCE	ND	ND

Well OW – 33	8 / 2000	10 / 2012
TCE	ND	ND
vinyl chloride	ND	ND
cis 1,2-DCE	ND	ND

Well OW – 34	8 / 2000	10 / 2012
TCE	ND	ND
vinyl chloride	ND	ND
cis 1,2-DCE	ND	ND

Well OW – 35	8 / 2000	10 / 2012
TCE	ND	ND
vinyl chloride	ND	ND
cis 1,2-DCE	ND	ND

Concentrations in mg/L ND = non - detect
TCE = trichloroethene
cis 1,2-DCE = cis 1,2 dichloroethene