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**DECISION DOCUMENT FOR THE REMEDIATION OF  
Operable Unit 19 of the Diamond Shamrock Painesville Works**

Lake County, Ohio

prepared by

**THE OHIO ENVIRONMENTAL PROTECTION AGENCY**

December 13, 2006

I certify this to be a true and accurate copy of the  
official documents as filed in the records of the Ohio  
Environmental Protection Agency.

By:  Date: 12-21-06

## **DECLARATION**

### SITE NAME AND LOCATION

Operable Unit 19 of the Diamond Shamrock Painesville Works  
Lake County, Ohio

### STATEMENT OF BASIS AND PURPOSE

This Decision Document presents the selected remedial action for Operable Unit 19 (OU19) of the Diamond Shamrock Painesville Works facility (Site) in Lake County, Ohio, chosen in accordance with the policies of the Ohio Environmental Protection Agency, statutes and regulations of the State of Ohio, and the National Contingency Plan, 40 CFR Part 300.

### ASSESSMENT OF THE SITE

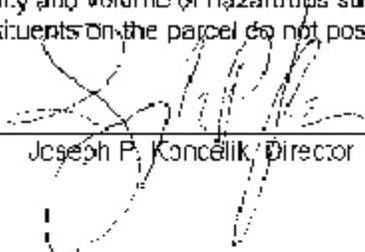
This study area was assessed through the collection of surface and subsurface soil samples from the property, as well as from groundwater and sediment samples collected from areas adjacent to this OU. Results were screened against conservative standards and baseline human health and ecological risk assessments were conducted for those constituents that exceeded screening standards. Based on the results of the risk assessments, it has been determined that none of the constituents detected on the parcel pose unacceptable risk to either human health or the environment.

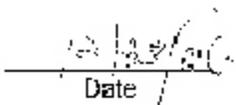
### DESCRIPTION OF THE SELECTED REMEDY

Analytical results and risk assessments for OU19 support Ohio EPA's proposed "no action" remedial alternative. Site-related constituents do not pose unacceptable risk to either human health or the environment and therefore, no remedial activity (clean-up) is required on this property.

### STATUTORY DETERMINATIONS

The selected "no action" remedy is protective of human health and the environment, complies with legally applicable state and federal requirements, and is responsive to public participation. Cost effectiveness, permanence, and the ability to reduce toxicity, mobility and volume of hazardous substances at the Site are not applicable, since constituents on the parcel do not pose a risk to either human health or the environment.

  
\_\_\_\_\_  
Joseph P. Konecnik, Director

  
\_\_\_\_\_  
Date

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# **DECISION SUMMARY**

for Operable Unit 19 of the Diamond Shamrock Painesville Works  
Lake County, Ohio

## **1.0 SITE BACKGROUND**

### **1.1 Site History**

The Diamond Shamrock Painesville Works facility (“the Site”) is an approximately 1100 acre former chemical manufacturing facility located in Lake County, Ohio (see Figure 1). The Grand River bisects the Site and Lake Erie borders it to the north. The Diamond Shamrock Painesville Works facility operated from 1912 through 1977 and manufactured a variety of products including, but not limited to, soda ash, baking soda, chromium compounds, carbon tetrachloride, hydrochloric and sulfuric acids, chlorinated wax, and coke. They also generated their own electricity in an on-site power plant. A number of individuals and companies purchased property from Diamond Shamrock and operated industrial facilities within the boundaries of the Site, including an aluminum smelter, a polyvinyl chloride monomer facility and a coke plant.

The Site has been divided into 21 operable units (see Figure 2). This decision document presents the Ohio EPA’s selected remedy for of one of the operable units, OU19.

OU19 is 2.5 acres in size and is located on the southern border of the Site, between Elm Street and Operable Units 4 and 14 (OU4 and OU14). No manufacturing activities related to the Diamond Shamrock Painesville Works facility were ever conducted on this portion of the Site. The property was part of the “buffer zone” between the former Waste Lake (Soup Pond) #4 and Elm Street.

This parcel was originally owned by the Diamond Shamrock Chemical Company, who sold this and other property located north of this OU to Nacelle Land and Management Company in 1979. The current property owner, Sally Westholm, was given the property by Nacelle Land and Management Company in 1999. The property is located within the City of Painesville, across the street from a residential neighborhood.

### **1.2 Summary of the Remedial Investigation**

The Remedial Investigation was conducted by the Painesville PRP Group, with oversight by Ohio EPA, and included a number of tasks to identify the nature and extent of site-related chemical contaminants. The Phase I and Phase II Remedial Investigation Reports were approved by Ohio EPA on June 28, 1999, and September 22, 2003, respectively. The investigation included sampling of surface and subsurface soils within OU19. The data obtained from the investigation were used to conduct a baseline risk assessment and to determine the need to evaluate remedial alternatives.

This Decision Document contains only a brief summary of the findings of the Remedial Investigation and Feasibility Study. Please refer to the Phase I and Phase II Remedial Investigation Reports and Feasibility Study Report for OU19 for additional information on contaminant concentrations.

The nature and extent of contamination at OU19 of the Diamond Shamrock Painesville Works Site in each environmental medium and the contaminants of concern attributable to this portion of the Site are described below.

### **1.2.1 Soil Contamination**

Although historical information does not suggest that any industrial activities have ever occurred within the boundaries of OU19, one (1) surface soil sample and one (1) subsurface soil sample were collected from OU19 during the Phase II Remedial Investigation (see Figure 3), for confirmatory purposes. These samples were analyzed for target compound list (TCL) volatiles, semivolatiles, pesticides and polychlorinated biphenyls (PCBs), target analyte list (TAL) metals, and total organic carbon (TOC). No samples were collected from OU19 during the Phase I Remedial Investigation of the Site.

In order to determine if potential risk exists to either human health or the environment, the results from all soil samples collected were compared to screening values. If a contaminant was detected at a concentration below its screening value, it was eliminated from further consideration because it did not pose unacceptable risk to human health or the environment. Ohio EPA required the use of actual site-specific background concentrations for metals and U.S. EPA Region IX Residential Preliminary Remediation Goals (PRGs) for the remainder of the constituents (volatiles, semivolatiles, pesticides and PCBs) as screening values for surface and subsurface soils for human health. For those metals or chemicals that were considered carcinogenic, one-tenth (1/10) of the applicable U.S. EPA Region IX Residential PRG was used to account for any potential cumulative effect as a result of exposure to more than one cancer-causing chemical at any one time.

A variety of standard toxicological benchmarks were used for screening of surface and subsurface soils for risk to ecological receptors (plants and animals). These included U.S. EPA Ecological Data Quality Levels (EDQLs) and site-specific background concentrations. Background concentrations were applied to the screening of metals only. This is because a number of metals occur naturally in soils. Remediation of environmental contamination focuses strictly on the clean-up of contaminants that exist in concentrations above what is commonly found in the area. Volatiles, semivolatiles, pesticides and PCBs do not occur naturally in the environment and one would expect that levels of these compounds in non-impacted soil should be zero (0). Therefore screening these compounds against background concentrations is not appropriate.

Screening performed to determine human health risk led to the elimination of all but one of the constituents detected in soils within the OU – vanadium. Vanadium is a mineral commonly found in clays and shales, both of which underlie OU19. The maximum concentration of vanadium in total soils (0' - 10' below ground surface - bgs) was 24 mg/kg. The U.S. EPA Region XI Residential PRG for vanadium is 7.8 mg/kg.

Screening performed for ecological receptors eliminated all but three (3) contaminants. These contaminants consisted of dichloromethane, hexavalent chromium and selenium. Dichloromethane and hexavalent chromium were retained for evaluation in the ecological risk assessment since standard toxicological benchmarks do not exist for those compounds. Selenium was retained for further evaluation because it exceeded three of the toxicological benchmarks used for screening purposes.

Additional calculations were performed to determine if unacceptable risk existed for human and ecological receptors from contaminants which were retained following screening. This was done as part of the Baseline Human Health and Baseline Ecological Risk Assessments. Results from these risk assessments are presented in Section 2.0 of this Decision Document.

### **1.2.2 Ground Water Contamination**

In 1995, following the signing of the Director's Final Findings and Orders for the Site, the determination was made that groundwater on the Diamond Shamrock Painesville Works Site would not be evaluated for human health purposes. The groundwater in this area generally has very poor quality and yield. Historical analysis of groundwater has identified high amounts of sodium, calcium and total dissolved solids. According to the Ground Water Resources of Lake County maps published in 1979 and revised in 1994 by the Ohio Department of Natural Resources Division of Water, Water Resources Section, groundwater yield in the vicinity of the Site averages less than 2 gallons per minute. Municipal water is supplied to residences and businesses throughout the area because of the poor quality of the groundwater.

No historical industrial or manufacturing activities have occurred on OU19, and groundwater flow in this portion of the Site is from south to north. Due to the direction of groundwater flow, it is unlikely that any COCs from other OUs on the Site could have migrated onto OU19. In addition, groundwater wells located in the vicinity of OU19 have not been found to contain site-related constituents.

Groundwater across the Site was evaluated as a potential route for the transport of contamination to both Lake Erie and the Grand River. This is discussed in Section 1.2.4, below.

### **1.2.3 Indoor Air Contamination**

Soil-to-indoor air risks were determined for residential receptors through use of the U.S. EPA's Johnson and Ettinger model. Indoor air was evaluated for structures with a basement. Results are presented in Section 2.0 of this Decision Document.

### **1.2.4 Surface Water and Sediment Contamination**

Ohio EPA required the Painesville PRP Group to calculate site-wide risk to someone who might come into contact with Grand River surface water and sediments. The assumption is that, for example, someone who lives on OU19 may fish or wade in the Grand River, even though the river is not located immediately adjacent to OU19. The calculated risk for exposure to the Grand River is therefore added to the risk determined for each individual operable unit. This will be discussed more in Section 2.0, below.

Although the Grand River is not located adjacent to OU19, Ohio EPA has included a summary of the surface water and sediment sampling conducted under the Phase II Remedial Investigation and presented in the Baseline Human Health and Ecological Risk Assessments for the Grand River and Lake Erie (SECOR, 2003). Please note that the contaminants of concern in the Grand River are not related to OU19. OU19 is a considerable distance from the Grand River and none of the contaminants of concern in the Grand River were found on OU19.

Four rounds of biased surface water samples were collected from eight (8) locations within the Grand River (see Figure 4). Based on historical analytical results for sampling performed within the Grand River, these surface water samples were analyzed for hexavalent and total chromium, total organic carbon (TOC), alkalinity, total hardness, calcium, magnesium, sodium, chloride and sulfate. Results were screened against U.S. EPA Ecological Data Quality Levels (EDQLs), State of Ohio Water Quality Standards (Outside Mixing Zone Averages - OMZA), and background. In addition, historical analytical samples for surface water from 1985 through 1997 were used in the evaluation of the Grand River. Based on the evaluation of current and historical data, the only constituent detected above human health screening standards in surface water was hexavalent chromium.

Sediment samples were also collected in the Grand River and analytical results from these samples were screened to determine whether they posed unacceptable risk to human health. Historical data from sampling performed by U.S. EPA in 1991 and Ohio EPA in 1995 was combined with the results from two (2) sediment samples collected during the Phase II Remedial Investigation at the Site. The only contaminants which were detected above the screening standards were aluminum, antimony, arsenic, cyanide, manganese and thallium.

### **1.2.5 Impacts to Biological Resources**

Impacts to biological resources were evaluated as part of the Baseline Ecological Risk Assessment, which is discussed in Section 2.2 of this Decision Document.

## **2.0 SUMMARY OF SITE RISKS**

As part of the remedial investigation for the Diamond Shamrock Painesville Work Site and the feasibility study for OU19, baseline human health and ecological risk assessments were developed. These baseline risk assessments evaluate the types of people, animals, plants and other organisms (receptors) that could potentially come into contact with existing contaminants on the parcel and what amount of risk those contaminants pose to the receptors. The following sections summarize the receptors evaluated and the risk determined to currently exist on OU19.

### **2.1 Risks to Human Health**

Ohio EPA requires that remedial alternatives be proposed for a site if it is determined that unacceptable risk exists. For cancer-causing contaminants, the total carcinogenic risk (with all contaminants evaluated together) must be less than or equal to  $1 \times 10^{-5}$ . This equates to a 1 in 100,000 chance of acquiring cancer from site-related contaminants and is in excess to the risk that people incur through contact, ingestion and inhalation of carcinogens in everyday life (eg.- cigarette smoke, exposure to gasoline fumes, etc.). For non-carcinogenic risk, all the hazard indices (HIs) determined for individual contaminants are added together and the total hazard index must be less than one (1). In order to make the determination regarding the amount of risk that exists for a specific operable unit, a baseline human health risk assessment is performed.

Analytical results for surface and subsurface soils collected from OU19 were used to perform the baseline human health risk assessment for this parcel. The risks resulting from the OU19 baseline human health risk assessment were added to the Grand River risk results presented in the Baseline Human Health Risk Assessment for the Grand River and Lake Erie (SECOR, 2003). This was done in order to evaluate total risk to adults and children living on OU19 who might also have recreational contact with the Grand River. A summary of each of the human health risk assessments is provided below:

Baseline Human Health Risk Assessment for the Grand River: Surface water and sediment samples collected from the Grand River were screened against background, Ohio EPA Surface Water Quality Standards (Outside Mixing Zone Average - OMZA) for the Lake Erie Basin and U.S. EPA Region IX Residential Soil PRGs. The contaminants of concern that remained following screening were used to determine risk posed by recreational contact with these water bodies. Risk was calculated for both adults and

children. A complete discussion of the risks calculated for surface water and sediment is presented in the Baseline Risk Assessment for the Grand River and Lake Erie (SECOR, 2003).

Constituents detected in Grand River surface water and sediments that were not screened out based on background and conservative screening standards were also carried through the property-specific baseline risk assessment for human health. These are as follows:

<u>Surface Water*</u>	<u>Sediments*</u>
Chromium	Aluminum
Hexavalent Chromium	Antimony
	Arsenic
	Cyanide
	Manganese
	Thallium

\*Note: these constituents were not found within OU19

The Painesville PRP Group was required to calculate both carcinogenic and non-carcinogenic risk for surface water and sediments. Arsenic and hexavalent chromium are considered to be carcinogenic metals, while the remainder are considered non-carcinogenic. Combined carcinogenic risk for arsenic and hexavalent chromium was calculated to be 4E-6 (4:1,000,000) for an adult participating in recreational activities within the Grand River and 8E-6 (8:1,000,000) for children participating in the same activities.

Potential risk to human health from the ingestion of fish is currently managed through a fish consumption advisory for the lower Grand River. This advisory was put into place by the Ohio Department of Health and restricts the number of fish a person should eat over a monthly basis. This health advisory was put into place based on elevated concentrations of mercury and PCBs in fish in this area. Ohio EPA has determined that neither of these contaminants are related to OU19.

OU19 Baseline Human Health Risk Assessment: Constituents found in concentrations greater than background and applicable screening standards in surface and subsurface soils from OU19 were carried through a site-specific baseline risk assessment. All of the constituents detected in soils were eliminated except vanadium. Vanadium is a mineral commonly found in clays and shales, both of which underlie OU19. This mineral was detected in total soils in a maximum concentration of 24 mg/kg, which is

above the U.S. EPA Region IX Residential PRG of 7.8 mg/kg. Vanadium is not considered to be a human carcinogen, therefore it was not necessary to calculate carcinogenic risk for soils on OU19. Utilizing conservative exposure estimates as part of the human health risk assessment, it was determined that the hazard index (HI), which measures non-carcinogenic risk, for soils on the study area was 0.01 for an adult and 0.08 for a child. These are both well below Ohio EPA's acceptable non-carcinogenic risk thresholds.

Exposure to contaminants in total soils through the inhalation of indoor air was determined using the U.S. EPA Johnson & Ettinger model for a residential structure with a basement. The non-carcinogenic hazard index (HI) for a resident was calculated to be 0.00005, which is well below the acceptable limit of 1.0. The total carcinogenic risk for residents was 4E-8, which is well below the 1E-5 site-specific risk goal.

Cumulative Risk to Receptors on OU19: In order to determine the cumulative risk posed to residential receptors within OU19, direct contact risks to soils and inhalation of indoor air were added to Grand River surface water and sediment risks. The total HI for adult and child receptors in OU19, is 0.1 and 0.5, respectively. Both which are below the acceptable HI of 1.0. The total carcinogenic risk for adult and child receptors is 4E-6 and 8E-6, which are both below the site-specific risk goal of 1E-5.

## **2.2 Risks to Ecological Receptors**

Risk to ecological receptors was evaluated within the baseline ecological risk assessment. Risk was calculated only for organisms potentially inhabiting OU19. Ecological risk to organisms within the Grand River was not evaluated as part of this risk assessment because a complete ecological pathway (i.e., groundwater to surface water connection) does not exist on this portion of the Diamond Shamrock Painesville Works Site.

Surface soils collected from depths of zero (0) to four (4) feet were utilized in risk assessment calculations. These results were screened against conservative toxicological benchmarks, such as U.S. EPA EDQLs, and site-specific background concentrations.

A number of receptors were selected to represent all of the organisms potentially present on OU19. Risk to soil flora and fauna, including plants, soil invertebrates (earthworms) and microbes, as well as wildlife species, including birds (northern bobwhite and American woodcock) and mammals (meadow vole and short-tailed shrew) was evaluated.

Only three (3) COCs were carried through the ecological risk assessment – dichloromethane, hexavalent chromium, and selenium. The remainder were eliminated based on screening against background and toxicological benchmarks.

Hazard Quotients (HQ) determined for the three COCs ranged from 0.3 to 0.002. When summed, risk posed to ecological receptors was shown to be insignificant for OU19.

### **3.0 FEASIBILITY STUDY**

A Feasibility Study was conducted by the Painesville PRP Group to define and analyze appropriate remedial alternatives. That study was conducted with oversight by Ohio EPA, and was approved on October 22, 2006. The Phase I and Phase II Remedial Investigations and Feasibility Study for OU19 are the basis for the selection of the Ohio EPA's preferred alternative.

### **4.0 REMEDIAL ACTION OBJECTIVES**

As part of the RI/FS process, remedial action objectives (RAO's) were developed in accordance with the National Contingency Plan (NCP), 40 CFR Part 300, which was promulgated under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended, and U.S. EPA guidance. The RAOs are goals that a remedy should achieve in order to ensure the protection of human health and the environment. The goals are designed specifically to reduce the potential adverse effects of site contaminants present in environmental media to an acceptable risk level.

The following RAOs have been established for the Diamond Shamrock Painesville Works, including OU19, in order to address risk posed by exposure to all media including the Grand River:

- Reduce or eliminate the direct contact threat to human health and the environment associated with contaminated soils and wastes;
- Prevent or minimize migration of contaminants from source materials to groundwater;
- Reduce or eliminate migration of contaminants from groundwater to the Grand River;
- Protect future workers from direct contact with contaminated soils, groundwater, and wastes; and
- Protect the public from ingestion of or contact with contaminated groundwater.

Since no historical industrial activities have taken place on this OU, confirmed by sampling of soils within the OU, and groundwater in the vicinity of the OU does not contain any site-related contaminants, the RAOs listed above are satisfied without any type of remedial action.

## **5.0 SUMMARY OF REMEDIAL ALTERNATIVES**

A total of two (2) remedial alternatives were considered in the FS. A brief description of the major features of each of the remedial alternatives follows. More detailed information about these alternatives can be found in the Feasibility Study for Operable Unit OU19 (Hull, 2006).

### **5.1 Alternative ALT OU19-A**

FS Alternative ALT OU19-A is a “no action” remedial alternative. The NCP requires evaluation of a “no action” alternative in order to establish a baseline for the comparison of other remedial alternatives. Under this alternative, no remedial activities or monitoring are performed.

### **5.2 Alternative ALT OU19-B**

Alternative ALT OU19-B would involve the establishment of an Environmental Covenant for OU19 in order to restrict potable and non-potable use of groundwater within this OU. No other remedial activities would be performed under this alternative.

## **6.0 COMPARISON AND EVALUATION OF ALTERNATIVES**

### **6.1 Evaluation Criteria**

In selecting the remedy for this Site, Ohio EPA considered the following eight criteria as outlined in U.S. EPA’s National Contingency Plan (NCP) promulgated under CERCLA (40 CFR 300.430):

1. Overall protection of human health and the environment - Remedial alternatives shall be evaluated to determine whether they can adequately protect human health and the environment, in both the short- and long-term, from unacceptable risks posed by hazardous substances, pollutants, or contaminants present at the Site.
2. Compliance with ARARs - Remedial alternatives shall be evaluated to determine whether a remedy will meet all of the applicable or relevant and appropriate

requirements under State and Federal and Local environmental laws;

3. Long-term effectiveness and permanence - Remedial alternatives shall be evaluated to determine the ability of a remedy to maintain reliable protection of human health and the environment over time, once pollution has been abated and RAOs have been met. This includes assessment of the residual risks remaining from untreated wastes, and the adequacy and reliability of controls such as containment systems and institutional controls;
4. Reduction of toxicity, mobility, or volume through treatment - Remedial alternatives shall be evaluated to determine the degree to which recycling or treatment are employed to reduce toxicity, mobility, or volume, including how treatment is used to address the principal threats posed by the Site;
5. Short-term effectiveness - Remedial alternatives shall be evaluated to determine the following: (1) Short-term risks that might be posed to the community during implementation of an alternative; (2) Potential impacts on workers during remedial action and the effectiveness and reliability of protective measures; (3) Potential environmental impacts of the remedial action and the effectiveness and reliability of mitigative measures during implementation; and (4) Time until protection is achieved;
6. Implementability - Remedial alternatives shall be evaluated to determine the ease or difficulty of implementation and shall include the following as appropriate: (1) Technical difficulties and unknowns associated with the construction and operation of a technology, the reliability of the technology, ease of undertaking additional remedial actions, and the ability to monitor the effectiveness of the remedy ; (2) Administrative feasibility, including activities needed to coordinate with other offices and agencies and the ability and time required to obtain any necessary approvals and permits from other agencies (for off-Site actions); and (3) Availability of services and materials, including the availability of adequate off-Site treatment, storage capacity, and disposal capacity and services; the availability of necessary equipment and specialists, and provisions to ensure any necessary additional resources; the availability of services and materials; and the availability of prospective technologies;
7. Cost - Remedial alternatives shall evaluate costs and shall include the following: (1) Capital costs, including both direct and indirect costs; (2) Annual operation and maintenance costs (O&M); and (3) Net present value of capital and O&M costs.; The cost estimates include only the direct costs of implementing an alternative at the Site and do not include other costs, such as damage to human health or the environment associated with an alternative. The cost estimates are based on figures provided by the Feasibility Study.
8. Community acceptance - Remedial alternatives shall be evaluated to determine which of their components interested persons in the community

support, have reservations about, or oppose.

Evaluation Criteria 1 and 2 are threshold criteria required for acceptance of an alternative that has accomplished the goal of protecting human health and the environment and complied with the law. Any acceptable remedy must comply with both of these criteria. Evaluation Criteria 3 through 7 are the balancing criteria for picking the best remedial alternatives. Evaluation Criteria 8, community acceptance, was determined, in part, by written responses received during the public comment period and statements offered at the public meeting.

## **6.2 Analyses of Evaluation Criteria**

Typically, this section of the Decision Document looks at how each of the evaluation criteria is applied to each of the remedial alternatives found in Section 5.0 and compares how the alternatives achieve the criteria. Since no risk exists to human health and the environment, based on historical information and results obtained during the remedial investigation for the OU, both alternatives meet Criteria 1 through 6.

The present cost for Alternative ALT OU19-A is \$0, since it is a “no action” alternative. The present cost for Alternative ALT OU19B is \$12,300 for placement of the environmental covenant on the property.

Community acceptance was determined through solicitation of public comments, both through an open public comment period and during public hearing. Ohio EPA did not receive any comments, either written or verbal, during the public comment period or public hearing. Therefore, a responsiveness summary has not been prepared for this Decision Document.

## **7.0 SELECTED REMEDIAL ALTERNATIVE**

Ohio EPA’s Selected Remedial Alternative for OU19 is ALT OU19-A. Historical information and analytical data support selection of the “no action” alternative for this OU. An environmental covenant is not required to prohibit potable use of groundwater for several reasons: (1) yield in this area is typically less than 2 gallons per minute, which is much less than the amount necessary to support household needs, and the area is served by a municipal water system; (2) site-related contaminants have not been found in on-site groundwater wells in the vicinity of OU19; (3) no evidence exists of historic industrial or disposal activities on the property; and (4) OU19 is not located down-gradient from any waste disposal areas.

## 8.0 BIBLIOGRAPHY

Hull & Associates, Inc., *Lake Erie and Grand River Baseline Human Health Risk Assessment for Site-Wide Issues, Appendix S-I*, June 2003.

Hull & Associates, Inc., *Feasibility Study Report for Operable Unit OU19 of the Diamond Shamrock Painesville Works Site*, April 2006.

Ohio Department of Natural Resources, Water Resources Section, *Ground Water Resources of Lake County*, 1994.

SECOR International Incorporated., *Phase I Remedial Investigation Report for the Diamond Shamrock Painesville Works Site*, 1999.

SECOR International Incorporated., *Phase II Remedial Investigation Report for the Diamond Shamrock Painesville Works Site*, June 2003.

## 9.0 GLOSSARY

ARARs -	Applicable or relevant and appropriate regulations. Those rules which strictly apply to remedial activities at the Site, or those rules whose requirements would help achieve the remedial goals for the Site.
Baseline Risk Assessment -	An evaluation of the risks to humans and the environment posed by a site.
Carcinogen -	A chemical that causes cancer.
CERCLA -	Comprehensive Environmental Response, Compensation and Liability Act. A federal law that regulates cleanup of hazardous substances sites under the U.S. EPA Superfund Program.
Decision Document -	A statement issued by the Ohio Environmental Protection Agency giving the Director's selected remedy for a site and the reasons for its selection.
Ecological Receptor -	Animals or plant life exposed to chemicals released from a site.
Environmental Covenant -	A servitude arising under an environmental response project that imposes activity and use limitations and that meets the requirements established in section 5301.82 of the Revised Code.
Exposure Pathway -	Route by which a chemical is transported from the Site to a human or ecological receptor.
Feasibility Study -	A study conducted to ensure that appropriate remedial alternatives are developed and evaluated such that relevant information concerning the remedial action options can be presented to a decision-maker and an appropriate remedy selected.
Hazardous Substance -	A chemical that may cause harm to humans or the environment.
Human Receptor -	A person exposed to chemicals released from a site.

NCP -	National Contingency Plan. A framework for remediation of hazardous substances as specified in CERCLA.
O&M -	Operations and Maintenance. Long-term measures taken at a site, after the initial remedial actions, to assure that a remedy remains protective of human health and the environment.
Preferred Plan -	The plan that evaluates the remedial alternatives presented in the Feasibility Study and identifies the preferred remedial alternative selected Ohio EPA to remediate the Site in a manner that best satisfies the evaluation criteria.
Remedial Action Objectives (RAO) -	Specific goals of the remedy for reducing risks posed by the Site.
Remedial Investigation -	A study conducted to collect information necessary to adequately characterize the Site for the purpose of developing and evaluating effective remedial alternatives.
Responsiveness Summary-	A summary of all comments received concerning the Preferred Plan and Ohio EPA's response to all issues raised in those comments.
Risk Management Plan-	A plan developed to address risk to workers on a Site during post-remedial activities.
PAHs	Polynuclear aromatic hydrocarbons. Class of semi-volatile chemicals including multiple six-carbon rings. Often found as residue from coal-based chemical processes.
PCBs	Polychlorinated biphenyls. An oily chemical typically used in electrical equipment.

## **FIGURES**

Figure 1 - Location of the Diamond Shamrock Painesville Works Site.

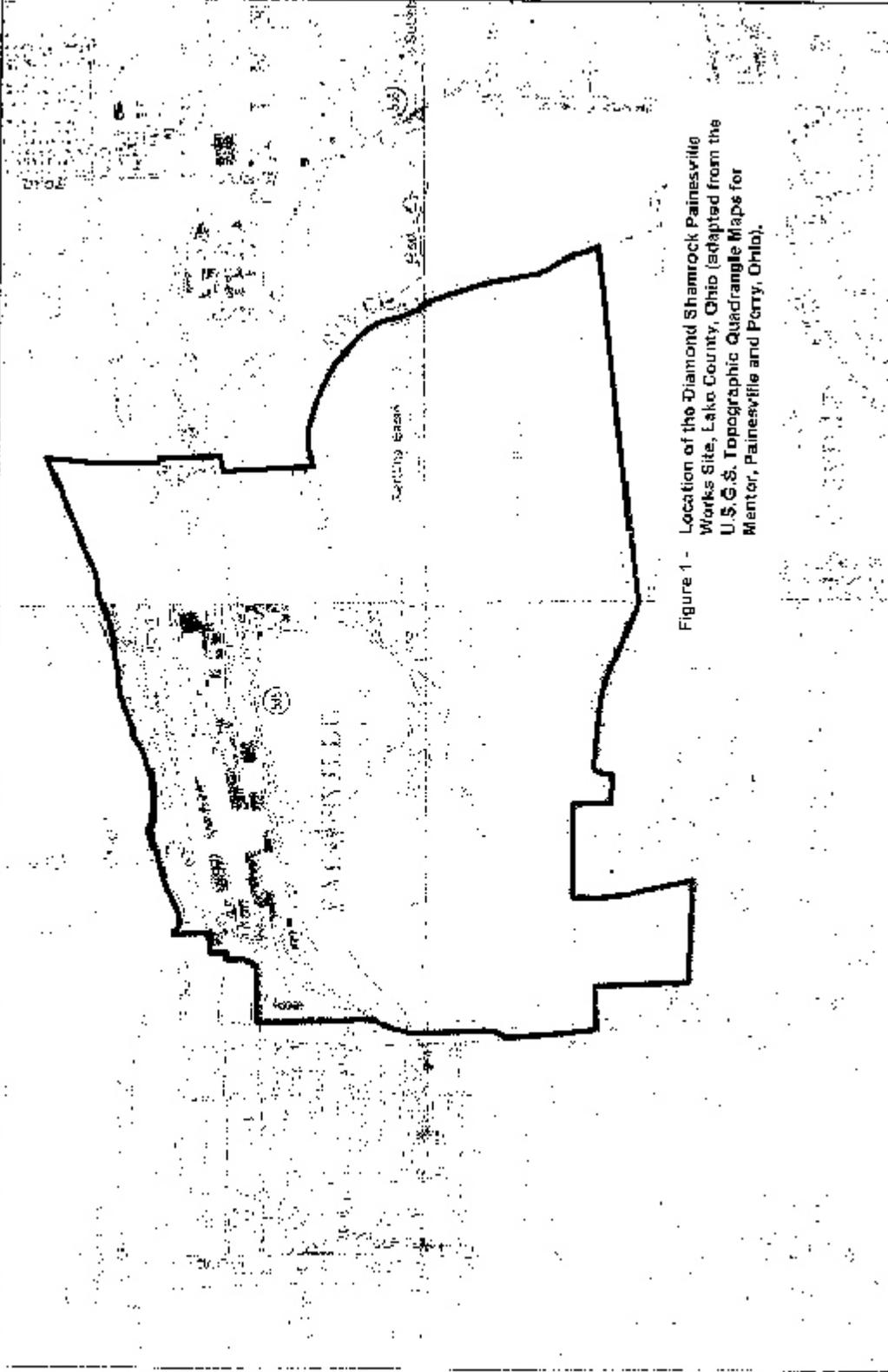
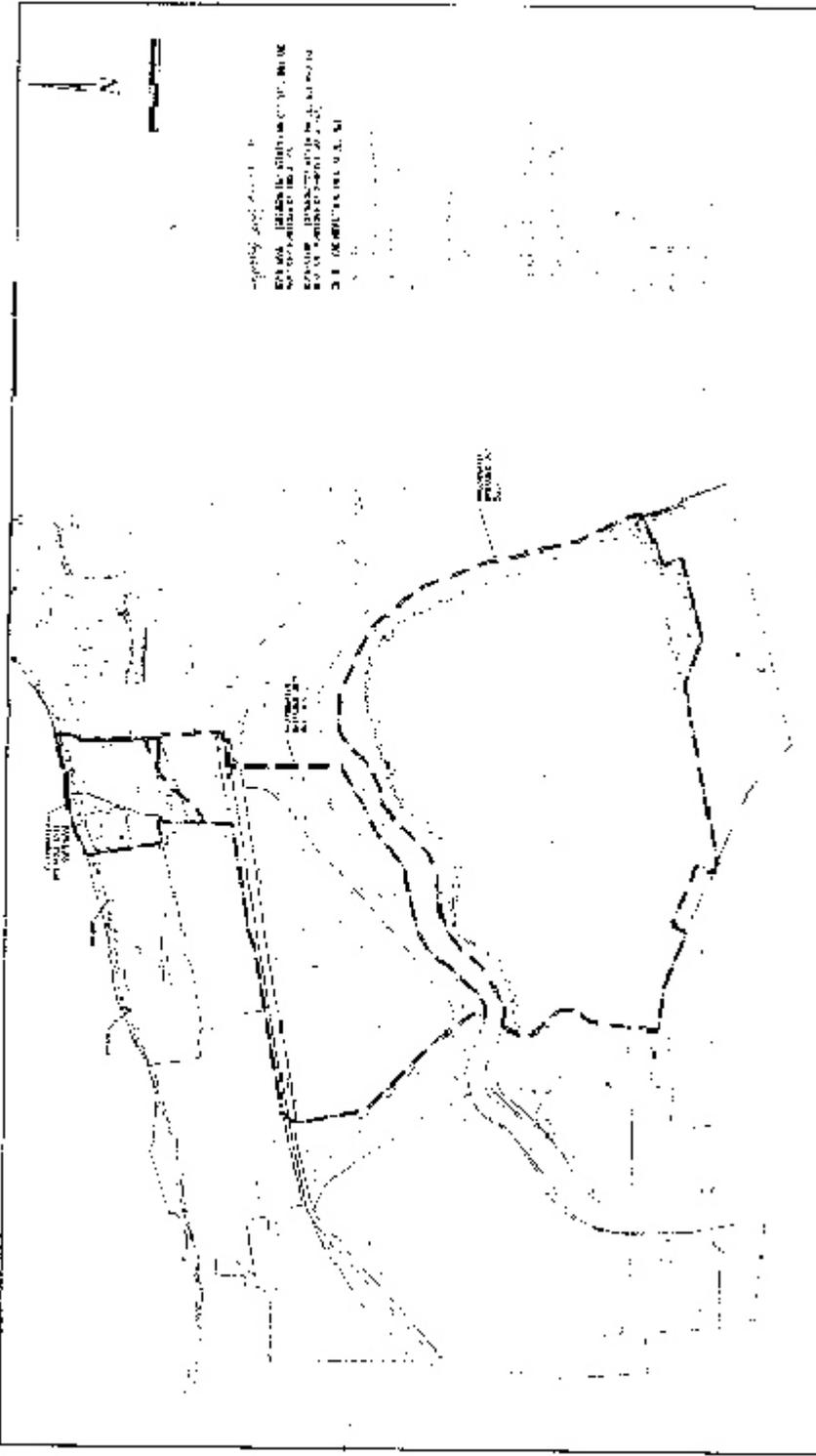


Figure 1 - Location of the Diamond Shamrock Painesville Works Site, Lake County, Ohio (adapted from the U.S.G.S. Topographic Quadrangle Maps for Mentor, Painesville and Perry, Ohio).

Figure 2 - Operable Units of the Diamond Shamrock Painesville Works Site.





1. THE ROAD NETWORK IS SHOWN AS A  
 DASHED LINE. THE ROAD NETWORK IS  
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**FIGURE 2**  
**DIVISIBLE UNIT TOPOGRAPHY MAP**  
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 1:10000 SCALE  
 1:10000 SCALE  
 1:10000 SCALE

**HILL**  
 1:10000 SCALE  
 1:10000 SCALE  
 1:10000 SCALE  
 1:10000 SCALE