US Army Corps of Engineers
Jacksonville District

Superfund Five-Year Review Report

Sydney Mine Sludge Ponds
Valrico, Hillsborough County, Florida

Prepared for
U.S. Environmental Protection Agency, Region IV
October 2000

EPA Five-Year Review Signature Cover
Preliminary Information

Site name: **Sydney Mine Sludge Ponds**			EPA ID: **FLD000648055**
Region: **04**	State: **Florida**	City/County: **Hillsborough County**	
LTRA* (highlight): **Y** N		Construction completion date: **see note below**	
Fund/PRP Lead: **PRP**			NPL status: **Final**
Lead agency: **EPA Region 4**			
Who conducted the review (EPA Region, state, Federal agencies or contractor): **US Army Corps of Engineers, Jacksonville District**			
Dates review conducted: From: **2/1/00** To: **10/6/00**			Date(s) of site visit: **3/16/00**
Whether first or successive review: **First Review**			
Circle: **Statutory** Policy		Due date: **9/30/97**	
Trigger for this review (name and date): **Initiation of Remedial Action; see note below**			
Recycling, reuse, redevelopment site (highlight): Y **N**			

Note: there are three separate Construction Completion and RA Start dates:

Event:	Construction Completion	RA Start
1. EPA takeover from Hillsborough County	6/1/89	6/1/89
2. Improvement to the Groundwater Recovery and Treatment System	6/16/93	9/30/92
3. Bone Valley Recovery System	8/29/96	6/30/94

Deficiencies:

Several minor deficiencies were identified. See Section VII: Deficiencies.

Recommendations:

Recommendations addressing the deficiencies are provided in Section VIII: Recommendations.

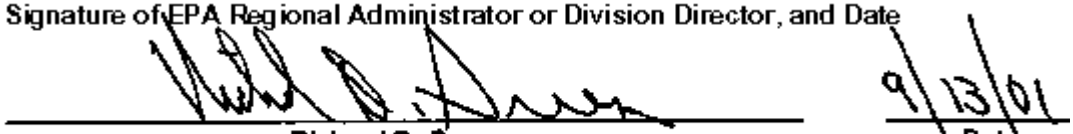
Protectiveness Statement(s):

The selected ROD remedy, groundwater recovery and treatment, during it's period of implementation, was protective of human health and the environment. The potential for long-term protectiveness of NA is currently being evaluated by the EPA. Therefore, at this time, a statement of long-term protectiveness can not be made.

Other Comments:

None.

Signature of EPA Regional Administrator or Division Director, and Date



Richard D. Green
Director, Waste Management Division

9/13/01
Date

Sydney Mine Sludge Ponds
Valrico, Hillsborough County, Florida
Superfund Five-Year Review Report

Table of Contents

List of Figures, Tables, Photographs & Attachments

Figures

Tables

Photographs

Attachments

List of Abbreviations

ARAR	Applicable, or Relevant and Appropriate Requirements
COC	Contaminant of Concern
EPA	Environmental Protection Agency
ESD	Explanation of Significant Differences
FDEP	Florida Department of Environmental Protection
FDER	Florida Department of Environmental Regulation
FS	Feasibility Study
RA	Remedial Action
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
SMSP	Sydney Mine Sludge Ponds
TIER	Technical Impracticability Evaluation Report
USACE	United States Army Corps of Engineers

Sydney Mine Sludge Ponds
Valrico, Hillsborough County, Florida
Superfund Five-Year Review Report

I. Introduction and Purpose

General

The U.S. Army Corps of Engineers, Jacksonville District (USACE), on behalf of the U.S. Environmental Protection Agency (EPA), Region IV, has conducted a Five-Year Review of the remedial actions implemented at the Sydney Mine Sludge Ponds Site (hereafter the SMSP Site), Valrico, Hillsborough County, Florida. This report documents the methods, findings, and conclusions of the review. The purpose of this Five-Year Review is to evaluate whether the remedial actions at the site remain protective of human health and the environment.

Authority

This review is required by statute. Section 121 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and Section 300.430 (f) (4) (ii) of the National Oil and Hazardous Substance Contingency Plan (NCP), require that periodic (no less than every five years) reviews be conducted for sites where hazardous substances, pollutants or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure following the completion of remedial actions.

This is the first five-year review for the SMSP Site. The trigger for this statutory review is the initiation of remedial action (RA) at the site, signified by the actual start date for ROD-promulgated remedial action shown in EPA's CERCLIS/WasteLAN database, (9/30/92).

Local Repository

A copy of this Five-Year Review Report will be placed in the EPA Region IV Record Center in Atlanta, GA, as well as the local information repository for the SMSP Site located at:

Brandon Regional Library
619 Vonderburg Drive
Brandon, Florida 33511-5972
(813) 744-5630

II. Site Background

The background information presented in this section is a summary and synthesis of material contained in the Record of Decision (ROD), as well as numerous other reports, both pre-remedial and post-remedial. It is not the purpose of this section to present a detailed description of the site background, since this has already been accomplished in other reports (see Appendix A).

A. Site Description

Location

The SMSP Site occupies about 9.5 acres of a former 1700-acre phosphate mine. The site was strip-mined for phosphate ore in the 1930s and 1950s. It is located in the unincorporated community of Brandon, Hillsborough County, approximately 15 miles east of downtown Tampa.

Land immediately adjacent to the SMSP Site is undeveloped and heavily vegetated on all sides. State Road 60 is located approximately one-half mile to the north of the site. There are scattered residential and commercial areas immediately north of State Road 60. Other developed areas are located at least one mile from the site in other directions.

A Site location map is presented as Figure 1.

Site Layout

For the purposes of this Five-Year Review, the current visible features of the SMSP Site can be categorized as follows:

- access road
- perimeter fence
- former Oil Pond & Septage Pond area, located within perimeter fence
- treatment system, influent and effluent tanks, located in southeast portion of the site within the perimeter fence
- south spray irrigation field
- north spray irrigation field
- Turkey Creek wetlands, located in northwest portion of site, outside of the fenced area

A Site Layout map which depicts current site features is presented as Figure 2.

Drainage and Surface Water

Natural surface water runoff patterns have been altered by historic mining activities, construction of disposal pits, and subsequent remediation activities. Much of the site precipitation rapidly infiltrates into the surficial sands, replenishing the underlying water tables systems. Surface runoff flows into on-site drainage ditches, which discharge into Turkey Creek, the primary drainage outlet for the site. Turkey Creek flows southward along the eastern property boundary and discharges to the Alafia River to the south.

Site Geology

Man-Made Geologic Units. Surficial geology in the area of the SMSP Site has been drastically disrupted by historic phosphate mining activities. During mining operations in the 1930's and 1950's, overburden material was placed in continuous linear mounds (spoil rows) across the site, adjacent to actively-mined trenches. The thickness of this unit, referred to as the Spoil Row unit, ranges from 10 to 25 feet. Liquid phosphatic clay wastes were subsequently spread between and over the spoil rows. There, the clay waste underwent settlement as it de-liquified. In the 1950's, a series of retention dikes were constructed, primarily of overburden material, to contain accumulating clay waste. In particular, an east-west trending dike, referred to as the North Dike, was constructed to divide the clay waste settlement area into two separate areas, referred to as the north settlement pond and south settlement pond. The thickness of the north and south clay settlement ponds which comprise the Clay Waste unit is as great as 20 feet. Finally, sand tailings, another by-product of the mining operation, were spread over the entire site, covering the Clay Waste unit. The Sand Tailings unit varies in thickness from 0 to 30 feet. In the early 1970's, disposal pits were constructed in the Sand Tailings unit to receive a variety of wastes, discussed in the next section.

Natural Geologic Units. Underlying the man-made units is the Bone Valley Formation, which is divided into upper and lower units. Prior to mining operations, the maximum thickness of this formation was estimated to be 30 feet. The upper unit, consisting mostly of non-phosphatic sandy clay, was excavated in order to mine the lower unit. The excavated material was placed into spoil rows, as described above. The lower unit, termed the "matrix" by the phosphate industry, was composed of clays and sands which were rich in phosphate ore. The lower Bone Valley unit is the unit that was actively mined.

Below the Bone Valley Formation is the Hawthorn Group, which is composed of low-permeability clay layers with lenses of water-bearing limestone. The uppermost clay layer of the Hawthorn formation, known as the Arcadia Formation, forms the base of historic mining operations.

Underlying the Hawthorn Formation are the carbonate units of the Tampa Limestone, Suwanee Limestone, Ocala Group, and Avon Park Limestone. These

carbonate units comprise the Floridan aquifer, the principal source of groundwater in the region. The Floridan aquifer is separated from the Hawthorn Formation by the confining clays within the Tampa Limestone unit.

Site Hydrogeology

The hydrogeologic framework of the SMSP site is quite complicated. The original soils at the site have been reworked into a series of man-made confining and water-bearing units. Water-bearing units at the site correspond to the man-made and natural geologic units described in the previous paragraphs, and have been categorized in recent studies as follows:

- Sand Tailings/Oil Pond Recovery Wells (OPRW) unit; also referred to as the perched water table system;
- Spoil Row/North Dike unit;
- Bone Valley unit;
- Hawthorn aquifer;
- Floridan aquifer.

In other site documentation, water-bearing units overlying the Floridan aquifer at the site have been broadly grouped into the Surficial Aquifer System, and the Intermediate Aquifer System (IAS). Under this grouping, the Surficial Aquifer System contains the Sand Tailings/OPRW unit, the Spoil Row/North Dike unit, and the Bone Valley unit. The IAS corresponds to the Hawthorn aquifer.

Surficial Aquifer System. Three distinct surficial water bearing units have been identified at the SMSP Site. The first unit is the perched water table, or the Sand Tailings/OPRW unit. This perched system overlies and is contained by the Clay Waste unit. The second system is located in the Spoil Row water-bearing unit, and extends into the North Dike. Groundwater moves northward and downward from the upper perched system into the permeable sands of the Northern Dike, and from there infiltrates into the Spoil Row water-bearing unit. Groundwater from the upper perched system may also flow downward through higher conductivity breaches in the Clay Waste unit into the underlying Spoil Row water-bearing unit. Groundwater in the Spoil Row unit generally flows to the northwest (see Figure 7). Average flow rates obtained from Spoil Row wells range from 0.31 feet/day to 4.8 feet/day (see Table 2). During periods of groundwater treatment, recovery wells installed in the North Dike area intercepted northward-moving or downward-moving groundwater. The Spoil Row water bearing unit overlies the Bone Valley unit. Groundwater in the Bone Valley formation generally flows to the northwest (see Figure 8). Average flow rates obtained from Bone Valley wells range from 0.33 feet/day to 3.10 feet/day (see Table 2). The Spoil Row unit and Bone Valley unit are contained by the clay layer of the Arcadia Formation. This low-permeability clay layer was disturbed during mining operations, resulting in some connectivity between the Bone Valley Formation and underlying Hawthorn Formation.

Intermediate Aquifer System and Floridan Aquifer.

The limestone unit(s) of the Hawthorn aquifer, also referred to as the IAS, is the first aquifer at the site that yields sufficient water for domestic use. Recent studies have indicated that there is some connectivity between the overlying Bone Valley water-bearing unit and the IAS. The primary water supply for domestic, public, and municipal purposes comes from the upper units of the Floridan aquifer. The degree of connectivity between the IAS and Floridan aquifers at the SMSP site is uncertain.

Representations of the regional geology/hydrogeology and site-specific geology/hydrogeology are shown in Figures 3, 4a, and 4b.

B. Site Chronology

History of Operations

Phosphate mining has occurred during two periods at the SMSP Site. Mining operations first took place during the 1930's but ceased prior to 1940. American Cyanamid Corporation resumed mining at the site in the 1950's. After mining operations ceased in mid-1958, the site was used for the disposal of phosphatic clay wastes and tailings sands from the continued processing of phosphate ore on adjacent lands. Large amounts of water were held in the clay waste slurry that was pumped into the settlement ponds. Substances such as fatty acids, kerosene, and amines that were used in the ore beneficiation (flotation) process were disposed of with the clay wastes. Gradually, the clay waste layer consolidated and formed a desiccated crust capable of receiving additional load. Sand tailings were subsequently spread over the clay waste layer. The SMSP site was allowed to re-vegetate naturally and was left undisturbed until early 1970.

From 1973 to 1982, the Hillsborough County Public Utilities Department rented the Sydney Mine Site from the American Cyanamid Corporation for dumping septic wastes, waste automotive oils, grease trap wastes and aluminum beverage can manufacturing cutting oils. During the nine-year span of waste disposal operations, an estimated 16 million gallons of liquid wastes were disposed in three unlined pits constructed in the Sand Tailings unit. These wastes were transported to the site by various haulers serving homes, schools, hospitals, and manufacturing and commercial establishments in the Tampa Bay region. During the period from 1978 to 1981, the site was also considered for use as a solid waste landfill. Following several studies to assess the site's suitability for solid waste disposal, and due to concerns about existing contamination from previous liquid waste disposal activities, the proposal to construct a solid waste landfill at the site was dismissed.

Early Enforcement and Compliance

In 1978, the SMSP site became the focus of community attention when the County considered using the site for a solid waste landfill. In 1979, the Florida Department of Environmental Regulation (FDER) and the Environmental Protection Agency (EPA) included the site in their inventories of potential hazardous waste site in Florida. During October-November of the same year, EPA's Air and Hazardous Materials Division conducted an investigation of the surface water and groundwater of the area, and concluded that organic contaminants and heavy metals were present onsite, but there was little effect from these to any offsite potable wells. Subsequently, the FDER began monitoring the site.

In late 1980, the Hillsborough County Division of Public Utilities notified EPA of hazardous waste activity at the site in accordance with the Resource Conservation and Recovery Act notification requirements. In 1981, EPA further investigated and evaluated site conditions in response to local citizens' inquiries about air and water quality and human health effects. In September 1981, after the FDER denied issuance of a second operation permit, the site was closed to waste liquid disposal. Also in 1981, the property was purchased by the current owner, Waste Resources of Tampa Bay, Inc. The current owner is in the process of applying for the rezoning of the property from low density residential to higher density residential, in anticipation of the property's sale.

Enforcement and Compliance actions conducted subsequent to closure of the site to waste disposal in 1981 are covered in Section III and Section IV of this report. A chronology of major site events is presented in Table 1.

III. Results of Site Investigations

A. General

Site Closure (1981) to Signing of the Record of Decision (1989)

In the 1982-1983 time frame, following a series of studies conducted by Hillsborough County, the site's surficial aquifer was found to be contaminated with dissolved hydrocarbons, including benzene, ethylbenzene and toluene, as well as dissolved chlorinated hydrocarbons, including 1,1,1-tichloroethane; 1,2-dichloroethane; 1,1-dichloroethane; 1,1-dichloroethene, chlorobenzene and vinyl chloride. The County subsequently selected extraction and treatment of surficial aquifer, along with excavation and on-site incineration of the pit contents as the most appropriate method to remedy site contamination.

In 1984, the County began site remediation. In what later became a two-phased effort, the activities in this first phase included:

- construction of an 1800 foot slurry wall to contain the waste pit contents;
- excavation and on-site incineration of approximately 10,900 cubic yards of waste pit contents in a mobile incinerator; and
- recovery and air-stripping of the contaminated groundwater from the surficial aquifer in the vicinity of the pits, and spray irrigation of the treated water on adjacent land.

Installation of the slurry wall and groundwater extraction wells were completed by the end of 1984. Excavation and incineration of waste pit contents began in February 1985 and continued through 1986. During this period, cleanup contractors uncovered additional contaminants buried adjacent to one of the pits. To address this additional contamination, the County selected excavation, on-site land treatment (air-drying), and off-site disposal of residuals at an approved solid waste landfill. This action was completed in August 1987 in a second phase of the site cleanup. During this second phase, approximately 15,000 cubic yards of contaminated materials were excavated from the site and moved to the air-drying area.

EPA proposed the site for the National Priorities List (NPL) in June 1986 and the site became final on the NPL in October 1989.

On May 12, 1989, Hillsborough County entered into an Administrative Order on Consent with EPA, under which Hillsborough County ceased operating and maintaining the existing surficial aquifer recovery and treatment system and turned the system over to EPA. Through the issuance of an initial Unilateral Administrative Order (UAO) with potentially responsible parties (PRPs), EPA required the continued operation and maintenance of the County's groundwater recovery and treatment system.

In 1988 and 1989, EPA reviewed the studies and actions previously undertaken by the County at the site. The purpose of this review was to determine if the accumulated data satisfied the requirements of a Remedial Investigation/Feasibility Study (RI/FS), as required by the National Contingency Plan. As a result of this review, EPA found it necessary to expand the subsurface investigation into the underlying IAS, in order to better define the vertical extent of groundwater contamination. EPA also required the development of a Risk or Endangerment Assessment (EA) which would analyze the potential threat to human health and the environment if no further action were taken to address the contamination at the site.

EPA ultimately determined that the additional, deeper groundwater data generated by Hillsborough County completed the evaluation of the series of studies which constituted an RI/FS. EPA used the EA, limited IAS analytical data and system performance data available to decide on further actions needed at the site, and subsequently issued the ROD in September 1989.

B. Contaminants of Concern

EPA selected as contaminants of concern (COC) those chemicals which were the most toxic, mobile, and presently persistent at the site. The only media COC's were selected for was groundwater. The selected COC's were: 1,1,1,-trichloroethane, 1,1-dichloroethane, 1,2-dichloroethane, 1,1,dichloroethene, benzene, chlorobenzene, ethylbenzene, and toluene.

C. Potential Pathways for Contaminant Migration and Exposure

Pre-CERCLA Remediation Time Frame

At the time of the writing of the ROD (1989), *then-current* potential pathways and receptors were identified as:

- **air**- inhalation of vapors released to the air from subsurface soils or groundwater; receptors could be on-site trespassers, children playing on the site, dirt bike riders, and hunters;
- **wildlife**- ingestion of contaminants bio-accumulated in game birds or animals living on or near the site.

Also at the time of the writing of the ROD, assuming no remedial action were taken, *then-future* potential pathways and receptors were identified as:

- **residential**: inhalation of vapors released from subsurface soils or groundwater, VOCs released during household use of groundwater, direct contact with contaminated groundwater during household use, and ingestion of contaminated groundwater;

- **industrial (on-site workers)**: inhalation of contaminated particulates/vapors released from soil and groundwater, direct contact/incidental ingestion of contaminants, or ingestion of contaminated groundwater;
- **recreational**: inhalation of vapors released from soil and ingestion of contaminants bioaccumulated in wildlife living at or near the site by hunters and their families consuming contaminated game, and visitors to a future park.

Post-Remediation/Current Time Frame

Currently, three COC's (benzene, 1,1-dichloroethane, vinyl chloride) are present in groundwater at concentrations which exceed ROD remediation goals. Future potential pathways and receptors for these three groundwater contaminants are the same as those listed in the preceding paragraph. At present, there are no known receptors being impacted by contamination originating from the site. As a result of remediation of waste pit contents and contaminated soils, accomplished by Hillsborough County during the time period from 1984 to1987, soil exposure pathways have been effectively addressed.

D. Summary of Site Risks

Based on a future, on-site, residential use scenario, the estimated lifetime cancer risks were generally greater than the acceptable risk range identified by EPA, assuming ingestion of carcinogenic compounds, as documented in the ROD. For future, potential, off-site, groundwater use scenarios which assumed off-site migration of groundwater contamination and subsequent groundwater ingestion, the estimated excess lifetime cancer risks generally fell within the acceptable risk range identified by EPA. It was concluded in the ROD that releases or threatened releases of hazardous substances from the site, if not addressed by implementing the response action in the ROD, may present an unacceptable risk to public health, welfare, or the environment. At the present time, since three COC's are present in the groundwater at concentrations which exceed ROD remediation goals, there may still be an unacceptable future risk to public health, welfare, or the environment until remediation goals are reached. However, at the present time, there are no know receptors at risk of exposure to groundwater contamination, and therefore no known site risks.

IV. Summary of Response Actions

A. Remedial Objectives

The objectives of the recommended remedy for the SMPCI Site, as stated in the ROD were:

- protection of human health and the environment;
- compliance with the Applicable, Relevant, and Appropriate Requirements (ARARs);
- long-term effectiveness and permanence;
- reduction of toxicity, mobility or volume;
- short-term effectiveness and implementability; and
- cost-effectiveness.

B. Remedy Selection

In September 1989, EPA issued a ROD selecting as the remedy the evaluation of the existing groundwater recovery and treatment system (installed during Hillsborough County's Phase 2 Site Cleanup), followed by modifications designed to improve the effectiveness and efficiency of the groundwater remediation. Groundwater sampling and analysis was to continue in order to evaluate the effectiveness of the system. Also included in the selected remedy was the evaluation of the need for deed restrictions for the areas of the site which may continue to be impacted by groundwater contamination after the best available remediation technology had been implemented. The selected remedy contemplated that deed restrictions would be sought, so as to protect future users of the water supply in the immediate area of the site. Timeliness of the remediation was to be improved by modifying the system as appropriate to achieve remediation goals. Remediation goals are listed in Section 5.E of this report.

The rationale for choosing the selected alternative included the following:

- it allowed for a more complete and expeditious remediation of the groundwater than the other alternatives;
- it contributed to the implementation of a permanent remedy at the site;
- it reduced the potential for contaminant plume migration.

Following unsuccessful negotiations for the implementation of the remedial design and implementing the remedial action, EPA issued a second UAO in July of 1990.

Significant Changes to the Remedy

EPA issued an Explanation of Significant Differences (ESD) in October 1991. This ESD stated that volatile organic compounds (VOCs) had migrated downward into the IAS and that further investigation was necessary to define the extent of contamination. The ESD further stated that once the extent of groundwater contamination in the IAS was determined, the groundwater in this water-bearing unit should be extracted and treated, in order to achieve the remediation goals specified in the September 1989 ROD. Such extraction and treatment was to be designed on the basis of aquifer tests and capture zone analysis.

C. Remedy Implementation

Remedial Design

The initial task of the Remedial Design (RD) was a review of the data generated during the five years of groundwater recovery and treatment. Continued operation of the recovery wells located both inside and outside the slurry wall was not found to be of benefit. In addition, a system of wells located immediately north and downgradient of the former disposal areas were believed to provide an effective barrier to the horizontal migration of groundwater contaminants.

The RD proposed to optimize the County-constructed recovery system by implementing the following:

- discontinuing operation of the slurry wall recovery wells;
- pulse pumping of the County-installed wells, located in the former disposal areas, in order to effect the water table to greater degree;
- recovery of groundwater from one additional spoil row well;
- addition of five new wells, in order to optimize the most productive recovery system on the site;
- installation of air-driven pulse pumps in the newly installed wells and gradual replacement of the then-existing pumps with the less maintenance-intensive pulse pumps, which recover only on demand and are well suited for low-flow conditions; and
- abandonment of the original Hawthorn aquifer monitoring well, located proximal to the disposal areas and believed by the steering committee to have been improperly constructed, thus potentially serving as a conduit of VOCs to the local potable water aquifer.

The RD for the surficial aquifer was concluded in March of 1992. The approved system modifications were concluded in February 1993.

As a result of the investigatory work during the data collection phase of the surficial aquifer RD, there was additional evidence of the vertical migration of contaminants from the surficial sediments into the Bone Valley water bearing unit. The plume of dissolved VOCs in the Bone Valley unit was found to extend approximately 700 feet in a northwesterly direction, beyond which it could not be investigated due to a submerged area.

RD activities related to the IAS included the following:

- delineation of the areal extent of IAS VOC contamination;
- installation of recovery wells, in order to determine the characteristics of the IAS proximal and downgradient of the disposal areas;
- discrete interval groundwater sampling in the upper portion of the IAS;
- conducting a long term aquifer performance test (APT); and
- revision of the of the recovery well network analytical model based on the APT.

The IAS studies which followed became the basis of a subsequent design for remediation of this water-bearing unit. In March 1994, the PRPs submitted a Technical Impracticability Evaluation Report (TIER), arguing that, due to the low permeability of the affected hydro-stratigraphic units, a technical impracticability waiver should be allowed by EPA and the State of Florida. This Technical Impracticability petition was found to be inadequate by EPA and FDEP. EPA required that the RD for active remediation be concluded and that recovery wells be installed in the IAS.

Remedial Construction Activities

The principal modification made to the Hillsborough County-constructed groundwater recovery system was the expansion of one of the recovery systems (the North Dike system) and the eventual replacement of the jet pumps with pulse pumps.

The North Dike recovery system was expanded by installing five additional recovery wells and discontinuing recovery from three wells, located in areas where remediation goals had been met. The newly installed recovery wells had pulse pumps installed in them, in order to more effectively recover the impacted groundwater.

Prior to the remedial action construction, one well was recovering from the IAS. The well was recovering approximately six gallons per minute. During RA construction, the IAS recovery system was expanded by recovering from a total of nine recovery wells. These wells were located in the most highly contaminated portion of the dissolved VOC plume and were equipped with pulse pumps in order to more effectively recover the VOC-contaminated groundwater. The air stripping tower was modified by adding 10 feet to the packed section making the section 22 feet in length. The nozzle was replaced with a gravity-fed liquid

distributor. The existing vapor emission “extender” was removed from service. In addition, since the Tampa Bay area is lighting-prone and the air stripping tower had been struck a number of times, the electrical system was modified by adding lightening protection devices.

Natural Attenuation Studies

Although the 1989 ROD did not specify the time required to meet the groundwater remediation goals, natural attenuation (NA) studies were undertaken in 1996 in order to provide an estimate of the range of time that contaminant concentrations will remain above the remediation goals, while NA/intrinsic bio-remediation processes may be operating.

Specifically, the objectives of the NA evaluation are as follows:

- determine whether NA will occur at a rate that exceeds plume migration;
- assess the change in plume mass downgradient of the former source area over the two-year study period;
- evaluate and better characterize site hydrogeologic conditions.

A preliminary evaluation (Phase 1) of the NA processes occurring at the site was conducted in April 1996. A more extensive evaluation (Phase 2) of the NA processes at the site was conducted in three rounds (Rounds 1.0, 1.5, and 2.0) in October 1997, March 1998, and January & February 2000, respectively. Results of NA studies are discussed in Section 5.E of this report. Analytical results for Round 2.0 NA evaluation are presented in Table 3.

In 1996, in order to facilitate accurate evaluation of NA processes, the groundwater recovery system in the upper two water bearing units (Sand Tailings and Spoil Row) was shut down. The Bone Valley and Hawthorn groundwater recovery and treatment system continued in operation for another year in order to minimize the possibility for off-site migration of contaminants, but was shut down in 1997, also to facilitate the evaluation of the NA processes. The groundwater recovery and treatment systems for all water bearing units are currently inactive.

D. Operation and Maintenance (O&M)

Under EPA regulatory oversight, the O&M period for the SMSP site began with the completion of RA activities for the Sand Tailings and Spoil Row units in February 1993, and for the Bone Valley and Hawthorn units in February 1995. Prior to February 1993, a detailed groundwater monitoring program had already been in existence at the site since 1991. The GW monitoring program was modified and expanded subsequent to remedial activities, and was further augmented under the NA evaluation program.

Prior to shut down of the groundwater treatment and recovery system in 1996/1997, O&M of the treatment plant consisted of (1) daily inspection/repair of the treatment system, and (2) sampling of treatment plant influent and effluent. Current O&M activities consist of semi-annual groundwater sampling events, and mowing and site repair as necessary. O&M costs are currently approximately $50,000 per year. The existing and proposed monitoring program is presented in Table 4.

V. Summary of Site Visit and Findings of the Five-Year Review

A. General

This Five-Year Review consisted of the following activities:

- a review of relevant documents (see Appendix A, Documents Reviewed);
- interviews with the EPA Project Manager;
- interview with the Site Manager;
- interview with the FDEP Project Manager;
- a site inspection;
- visit to the local information repository; and
- preparation of the Five-Year Review Report.

B. Interviews

Mr. Galo Jackson, EPA Region IV Remedial Project Manager RPM.
Mr. Jackson was interviewed when site documentation was gathered from the EPA Region IV file room in Atlanta, GA and on several other occasions. In addition to facilitating the gathering of documentation, Mr. Jackson provided information on site history, remedial actions, and current site status. As of September 2000, EPA is reviewing the Round 2.0 Natural Attenuation Evaluation Report, and has not yet made a determination on the effectiveness of NA.

Mr. Fred Blickle, Conestoga-Rovers and Associates, Project Manager.
Mr. Blickle was interviewed on several occasions. Based on results of the NA studies, Mr. Blickle feels that: (1) contaminant plumes have been well-defined, (2) NA has been effective in reducing contaminant levels, (3) although NA degradation time frames for benzene will impede achievement of ROD remediation goals in the short-term, based on low exposure risks, NA is still the preferred remedial option, (4) several additional monitoring wells should be installed in the Wetlands area to monitor possible migration of contamination. Appendix C contains Mr. Blickle's review comments for the draft version of this 5 Year Review Report.

Ms. Diedra Lloyd, Florida Department of Environmental Protection Project Hydrogeologist. Ms. Lloyd was interviewed on April 7, 2000. At that time, she had not received the data from the NA evaluation, and could not comment on the status of the site. She stated that the State's current standards for considering Natural Attenuation were 100 ug/l for benzene, and that benzene does not currently meet these standards (State standards are not ARARs; EPA treats these as "To Be Considered"). Subsequent to this, FDEP's position on the status of the site has been documented in an FDEP memorandum (review comments for the Phase II NAE Report), attached as Appendix D to this 5 Year Review Report.

C. Site Inspection

General

The site inspection for the Five-Year Review at SMSP Site was held on March 16, 2000. The weather was warm and mostly cloudy.

The following individuals were in attendance:

1. Tom Hastings, Site Manager;
2. Ed Villano, USACE, Jacksonville District, Project Engineer;
3. Eric Hines, USACE, Omaha District, Technical Liaison Manager;
4. Steve White, USACE, Omaha District, Geologist;
5. Muhammad Irfan, USACE, Jacksonville District, Project Hydrogeologist.

Mr. Hastings provided site access and escorted the USACE site inspection team throughout the site. The following areas were visited: former Oil Pond & Septage Pond area, treatment system, and Turkey Creek wetlands. The entire site could either be viewed or inspected from these three areas. In particular, the following features were inspected or observed:

- perimeter security fence;
- groundwater treatment system;
- wetlands; and
- monitoring wells.

In general, no environmental damage was observed, such as stressed vegetation, discolored earth, or odors. In some places, trash and broken glass/bottles were noticed. There was little evidence of former mining activities. Photographs showing current site conditions are presented at the end of this document in Appendix B.

Site Security

A perimeter security fence with a barb-wire was observed bordering the site. The fence appeared to be in good condition. The access gate was locked at the time the site inspection team arrived at the site.

Groundwater Recovery and Treatment System

The treatment system has been inactive since 1996/1997, but still remains at the site. There are no immediate plans to dismantle and remove the treatment plant from the site. If it is determined by EPA that natural attenuation will not result in achievement of the remediation goals in a reasonable amount of time, it is possible that the treatment system may need to be re-activated. Subsequent to shut-down of the treatment system, pilferable items such as pumps and compressors were removed from the site. The system was designed to treat groundwater from three

separate plumes: the Sand Tailings plume, Spoil Row plume, and Bone Valley plume. Groundwater is recovered from a network of extraction wells, treated, and spray irrigated. Two large holding tanks identified as the influent and effluent tanks were present. The larger of the two tanks, identified as the effluent tank, has collapsed, and small shrubs are growing in it. The influent tank is still intact and was almost filled to the top with cumulative rain water. Sampling of the water in the influent tank has shown that this water is not contaminated and poses no risks to the environment. Some plants were seen growing in the carbon filters. Rubber fittings and hoses appeared to be weathered. Rust was seen on some metalic components of the system. If reactivation of the treatment system were required, a significant amount of rehabilitation would be necessary.

Wetland Areas and the Turkey Creek

The wetland areas appeared to be a thriving habitat for flora and fauna. No signs of environmental damage such as stressed vegetation or stains, were seen.

Monitoring Wells

A number of monitoring wells, extraction wells, and monitoring points were observed across the site. A total of eighty wells, and 120 geoprobe wells are located at the site. Only twenty three wells have been selected for the NA evaluation. The remaining wells are not in use at the present time.

D. Review of Applicable or Relevant and Appropriate Requirements (ARARs)

An ARAR review was performed for the site in accordance with the draft EPA guidance document, “Comprehensive Five-Year Review Guidance,” EPA 540R-98-050, April 1999.

Documents reviewed for the ARAR analysis:

1. Record of Decision, 29 September 89
2. Phase II Natural Attenuation Evaluation Revised Round 2.0 Work Plan, September 1999
3. May 21, 1999 Monitoring Data for the Sydney Mine Waste Disposal Site
4. Remedial Action Report, April 1993
5. Remedial Action Report Addendum, May 1995

ARARs Identified in the ROD Evaluated for the Five Year Review:

1. RCRA location requirements (40 CFR Subpart X, 40 CFR 261, and 40 CFR 264 Subpart G)
2. Endangered Species Act (Section 7, Consultation Process 50 CFR 402)
3. RCRA Compliance Monitoring Program (40 CFR 264.99)
4. Safe Drinking Water Act (MCLs per 40 CFR 141 and 142)

5. Clean Water Act Ambient Water Quality Criteria

Not all ARARs identified in the ROD were evaluated for compliance as part of the Five-Year review. RCRA location requirements and Endangered Species Act requirements are location- and action-specific requirements that do not currently reflect or pertain to the protectiveness of the remedy and were therefore not evaluated for compliance. It is assumed the soil treatment and groundwater recovery and treatment systems were constructed in compliance with the RCRA location-specific ARARs and that the required Endangered Species consultation was completed as indicated in section 10.2 of the ROD.

The RCRA Compliance Monitoring Program and the Safe Drinking Water MCL ARARs were evaluated for compliance as part of the five-year review as these requirements pertain to the current protectiveness of the remedy. Specific details follow.

RCRA Compliance Monitorin Program (40 CFR 264.99):

The basic provisions of 40 CFR 264.99 require the owner/operator of the facility, under direction and approval of EPA, to:

- determine a the list of hazardous constituents for which to monitor;
- specify sampling procedures;
- develop and/or utilize statistical methods to determine if there is a statistically; significant evidence of increased contamination of any chemical parameter;
- determine the groundwater flow rate and direction in the uppermost aquifer at least annually;
- follow EPA direction for frequency of sampling and conducting statistical tests; and
- perform corrective action should specified contaminant levels be exceeded.

Based upon a review of available monitoring data and Natural Attenuation Evaluation results, the above requirements have basically been met.

Safe Drinking Water Act (MCLs per 40 CFR 141 and 142):

ROD remediation goals and MCLs are being exceeded for several chemicals of concern at the site. The following table lists contaminants, State and Federal MCLs and ROD cleanup levels, as well as a column indicating for which contaminant the standards were exceeded. [Data was evaluated from the January/February 2000 Round 2.0 Natural Attenuation Evaluation sampling event.]

Contaminant	ROD Level (ppb)	Federal MCL (ppb)	Florida MCL (ppb)	Exceeds Standard?
1,1,1-TCA	200	200	200	No
1,1-DCA	3[1]	-----	-----	Yes
1,1-DCE	7	7	7	No
1,2-DCA	3	5	3	No
Benzene	1	5	1	*Yes*
Chlorobenzene	100	100	100	No
Ethylbenzene	700	700	700	No
Toluene	2000[2]	1000	1000	No
Vinyl Choride	1	2	1	*Yes*

[1] – ROD cleanup level based upon MCL for 1,2-DCA. There are no State or Federal MCLs for 1,1-DCA.
[2] – The ROD indicated a cleanup level of 2000 ppb for toluene based upon the Federal MCL. Both the State and Federal MCLs are now 1000 ppb.

The current MCL (both Florida and Federal) for toluene is 1000 ppb and no longer 2000 as was the case at the signing of the ROD. However, groundwater levels of toluene do not exceed the current, lower MCL values.

Clean Water Act (CWA) Ambient Water Quality Criteria (AWQC):

CWA AWQC apply to any treatment or other process waters discharged to Waters of the U.S. Currently, the groundwater treatment system has been shut down and natural attenuation is being considered. Therefore, there are presently no discharges of treated water. Should the active pump and treat or other system be reactivated, compliance with CWA water quality criteria would have to be assessed and substantive requirements thereof met.

Summary of Site Compliance with ARARs:

At this time, the site appears to be in compliance with all ARARs identified in the ROD with the exception of State and Federal MCLs. Contaminant levels exceed MCLs in multiple aquifers for 1,1-DCA, 1,2-DCA, benzene and vinyl chloride.

E. Groundwater Data Review

Groundwater data reviewed in this section includes quarterly water level measurements, semi-annual sampling, and natural attenuation evaluation data.

Until 1999, water level measurements were obtained on a quarterly basis in an effort to determine normative, post-pumping, seasonal water levels, and gradient direction and magnitude. Under the quarterly monitoring program, separate water level contour plots were generated for each of the following water bearing units: Sand Tailings, Spoil Row, Bone Valley, and Hawthorn. Measurement results and contour plots indicated that there were some seasonal fluctuations in water levels, but that there was no significant change in gradient direction or magnitude in these water bearing units during successive measurement events. Subsequently, in 1999, EPA agreed to reduce water levels measurement events to a semi-annual basis.

During the preliminary evaluation of intrinsic bioremediation (Phase 1) in 1996, VOC trends in chemical composition, and concentrations from data collected between 1988 and 1995 were analyzed. Results indicated that reductive dehalogenation and VOC degradation processes were occurring and were expected to continue. However, it was determined that a more extensive study of the capability of intrinsic bioremediation to effectively remediate site groundwater under natural conditions, in a reasonable period of time, was necessary.

Subsequently, NA studies were conducted in three rounds from October 1997 to February 2000. Groundwater samples were analyzed for contaminants of concern, related degradation products, and various intrinsic bioremediation indicator parameters.

The following is a discussion of the draft Round 2.0 Natural Attenuation Report. EPA comments on the report are not yet finalized (as of September 2000).

Data from Round 1.0 and 1.5 indicates trace levels of COC's in the Sand tailings unit, limited contamination in excess of ROD remediation goals in the Spoil Row unit, and more widespread contamination in excess of ROD remediation goals in the Bone Valley unit, extending to the wetland located northwest of the former source area. Results also indicate that NA processes were active in the Spoil Row and Bone Valley units, but limited in the Sand Tailings unit due to the low levels of contamination in that unit. It was accepted by EPA that no further evaluation was needed in the Sand Tailings unit, since contaminant concentrations were below

ROD remediation goals. Rounds 1.0 and 1.5 did not result in the full delineation of the extent of the Bone Valley plume on the northern side.

The primary objective of Round 2.0 sampling was to collect sufficient data to complete the qualitative assessment of NA and to assess the change in contaminant mass downgradient of the former source area. Results indicated that concentrations of ROD COCs and contaminant mass are decreasing over time in both the Spoil Row and Bone Valley units. The estimated lengths of time for COC concentrations to degrade to ROD remediation goals were calculated. In the Spoil Row unit, the average half-lives of benzene and vinyl chloride were calculated to be 7.5 and 3.7 years, respectively. In the Bone Valley unit, the average half-lives for benzene, 1,1-DCA and vinyl chloride were calculated to be 34, 4.9, and 2.8 years, respectively. Based on this data, achievement of ROD remediation goals appears to be governed by the slow degradation rate of benzene. As a worst-case theoretical scenario, the maximum Bone Valley Round 2.0 benzene concentration measured at TN5-3 (247 ppb), would take eight half-lives, or 272 years to degrade to the ROD remediation goal of 1 ppb, assuming that flow conditions remain unchanged, and assuming no dispersion, diffusion, or dilution. If these factors are taken into account, the degradation rate for benzene would be significantly less.

Key issues identified in the Round 2.0 NAE report that still require resolution include definition of flow conditions in the Bone Valley north and east of the wetland, and long-term degradation of COC’s beyond the wetland, particularly benzene. Additionally, sentinel wells should be installed past the downgradient edge of the Bone Valley plume in order to track plume migration.

VI. Assessment

Effectiveness of the Remedy for Soil Remediation: The selected ROD remedy did not involve soil remediation, since contaminated soil and sludges had already been removed under Hillsborough County's cleanup program. Approximately 25,000 cubic yards of contaminated soils were excavated and incinerated, air-dried, or disposed of at a landfill. Thus, contaminated soils were effectively addressed prior to the signing of the ROD in 1989.

Effectiveness of the Remedy for Groundwater Remediation.

The selected remedy for groundwater remediation has been partially effective in accomplishing the remedial objectives. While active groundwater pump and treatment (shut down in 1996/1997) was instrumental in reducing toxicity, mobility and volume of groundwater contamination, it was not fully effective in reducing contaminant levels below ROD remediation goals in a time-effective and cost-effective manner.

NA was evaluated from 1996 through mid-2000. NA is believed to to have been partially effective in achieving remedial goals. Currently, three of the nine COC's (benzene, 1,1-dichloroethane, vinyl chloride) are present in the Spoil Row and Bone Valley units at concentrations which exceed ROD remediation goals. Based on the results of the NA study, ability to achieve ROD remediation goals appears to be governed by the relatively slow degradation rate of benzene. The NA study's estimates of attenuation half lives indicate that contaminants may remain above the required limits for decades. As a consequence, EPA has recommended enhancements to the monitoring system, in order to effectively evaluate potential plume migration and contaminant reduction. The groundwater monitoring data will confirm whether NA alone will continue to reduce toxicity, mobility and volume of the COC's, while maintaining an acceptable long-term level of risk to human health and the environment.

At the present time, there are no known receptors at risk of exposure to on-site groundwater contamination. The Bone Valley plume has migrated northwest of the source area into Turkey Creek Wetlands, but the leading edge of the plume is still at least one-half mile from the nearest developed area. Potable water in developed areas downgradient of the site is either supplied municipally, or obtained from private wells. In a 1993 potable well survey, 39 wells were identified downgradient from the site, all located within 2 miles of the site, which may be open to the Bone Valley unit. As a long-term consideration, if the Bone Valley plume begins to migrate off site, technologies such as chemical oxidation, which accelerate the NA process, should be evaluated. While the Bone Valley groundwater recovery and treatment system was operating, the mobility of the plume was effectively retarded. Subsequent to this, the rate of plume migration, although still relatively low, may have accelerated somewhat since it is no longer artificially influenced. Plume migration should continue to be monitored. Sentinel wells should be installed beyond the leading edge of the Bone Valley plume in order to track plume migration.

Adequacy of O&M

O&M activities at present consist of semi-annual groundwater sampling events, mowing, and site other site maintenance as necessary. These O&M activities are judged to be adequate at this time. Certain components of treatment system are in disrepair and would require rehabilitation if the system is ever re-activated.

VII. Deficiencies

The following deficiencies were discovered during the Five-Year Review. These deficiencies do not pose a threat to human health or the environment, at present, but should be addressed to ensure long-term protectiveness.

A. Currently, three COC's (benzene, 1,1- dichloroethane, vinyl chloride) are present in the Spoil Row and Bone Valley units at concentrations which exceed ROD remediation goals.

B. There is an insufficient number of wells located beyond the downgradient edge of the Bone Valley plume to track plume migration.

C. Assuming natural attenuation is selected as a permanent remedy, based on the estimated degradation time-frame for benzene, long-term protectiveness needs to be demonstrated through monitoring.

D. There are a large number of unused monitoring/extraction wells and monitoring points which have not been properly abandoned. Those wells which penetrate more than one water-bearing unit may serve as a conduit for contaminant migration from one unit to another.

VIII. Recommendations

The following recommendations are made to address the deficiencies noted above:

A. The current semi-annual sampling program, augmented by several new monitoring wells recommended in the next paragraph, is judged to be adequate to monitor the attenuation and migration of COC's exceeding ROD remediation goals. Since there are no known receptors being impacted by these COC's at present, or likely to be impacted in the near future, there is no need for any additional remedial measures in the short term. EPA is currently evaluating the potential for natural attenuation as a remedy which could possibly ensure long-term protectiveness.

B. Additional monitoring wells should be installed beyond the leading edge of the Bone Valley plume to track potential plume migration.

C. If it is determined by EPA that natural attenuation alone can not ensure long-term protectiveness, in light of the excessive degradation time-frame for benzene, other remedial technologies should be evaluated. Additionally, another potable well survey would need to be conducted to determine potential receptors at risk of exposure.

D. It should be determined which wells are obsolete, no longer necessary under the current monitoring program, or which would not be used during any future expanded monitoring program. These wells should be properly abandoned in accordance with EPA and/or FDEP regulations.

IX. Protectiveness Statement

The selected ROD remedy, groundwater recovery and treatment, as well as suspension of groundwater treatment, and groundwater quality monitoring, is protective of human health and the environment. This statement of protectiveness is based on the following:

- documented reduction in toxicity, mobility, and volume of COC's through groundwater recovery, treatment and NA;
- relatively low rate of plume migration;
- low exposure risk to potential downgradient receptors.

Due to questions concerning the efficiency of groundwater remediation through groundwater recovery and treatment, it was suspended in 1996/1997, in order to study NA processes. The NA studies, finalized in late 2000, recognized the potential for contaminants to remain above the ROD's standards for decades. EPA recommended that enhancements to the existing monitoring system would be required to effectively evaluate potential plume migration and contaminant reduction. With monitoring safeguards in place, the remedy should remain protective.

X. Next Review

This is a statutory site that requires ongoing five-year reviews as long as hazardous substances, pollutants, or contaminants remain at the site above concentrations that allow for unlimited use and unrestricted exposure. Chemicals of Concern currently remain on site at concentrations which exceed ROD remediation goals. Therefore, ongoing 5-year reviews are required. EPA Region IV should conduct the next review within five years of the signature date of this report.

Figures

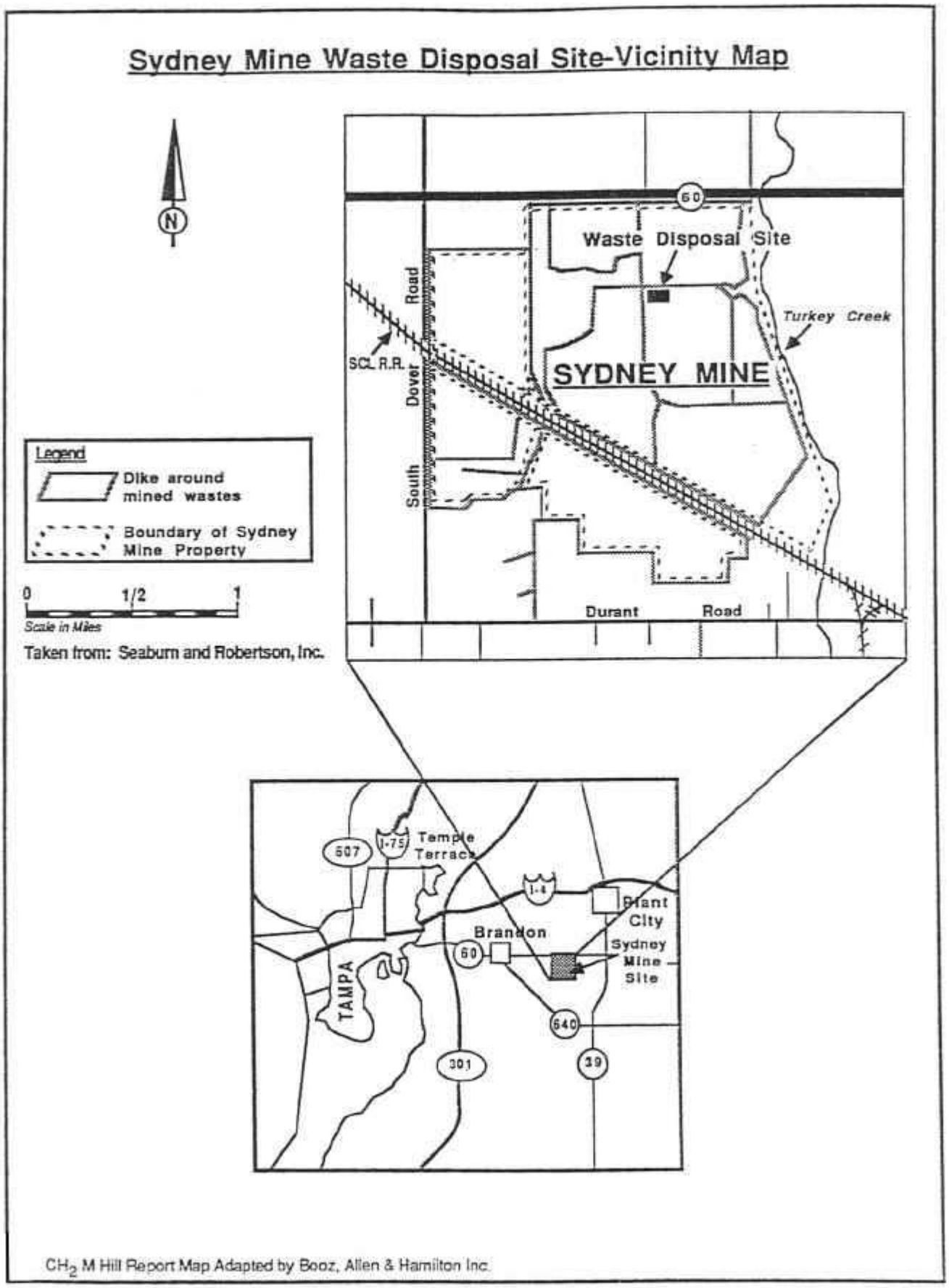


Figure 1: Site Location Map

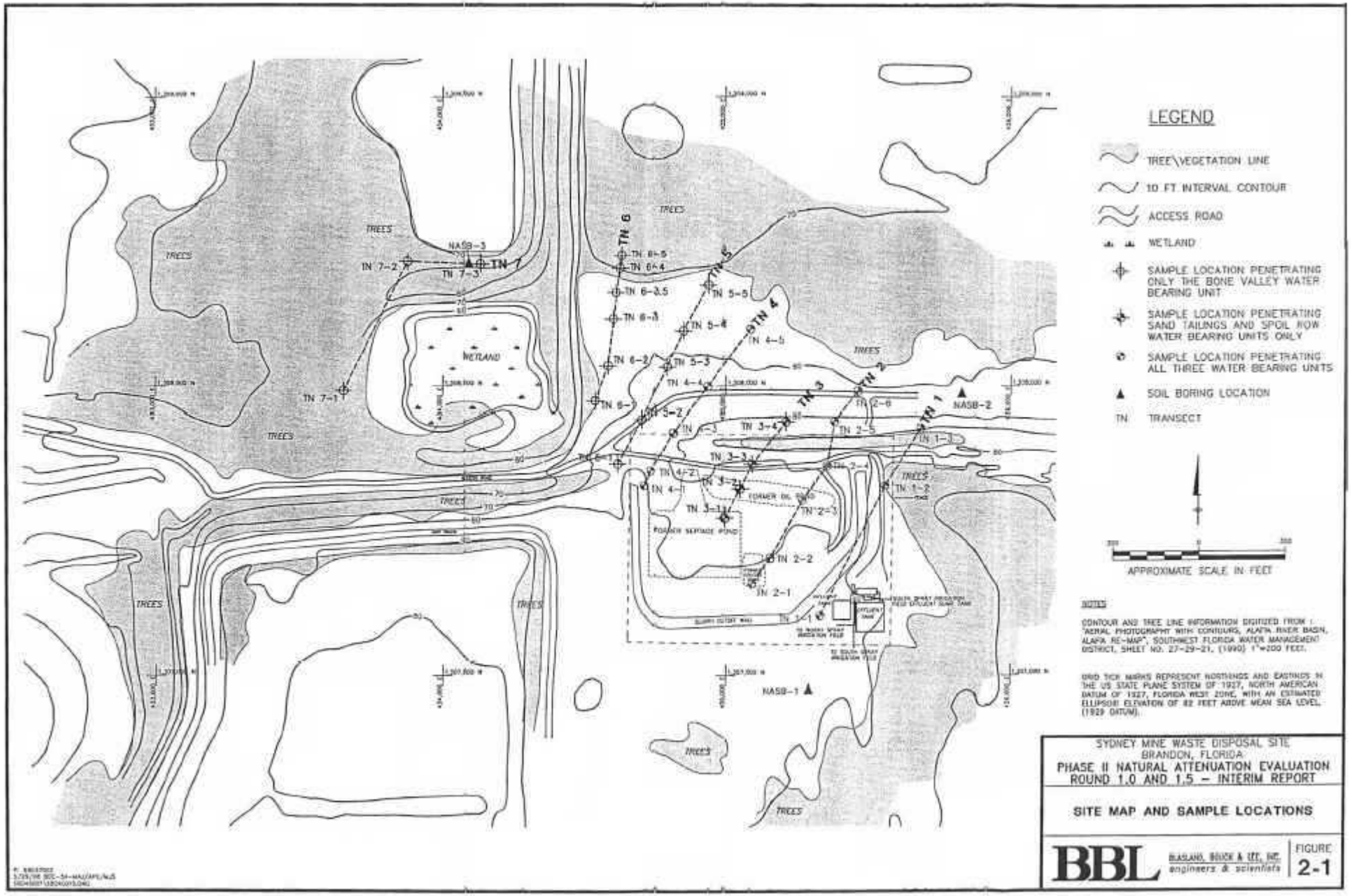
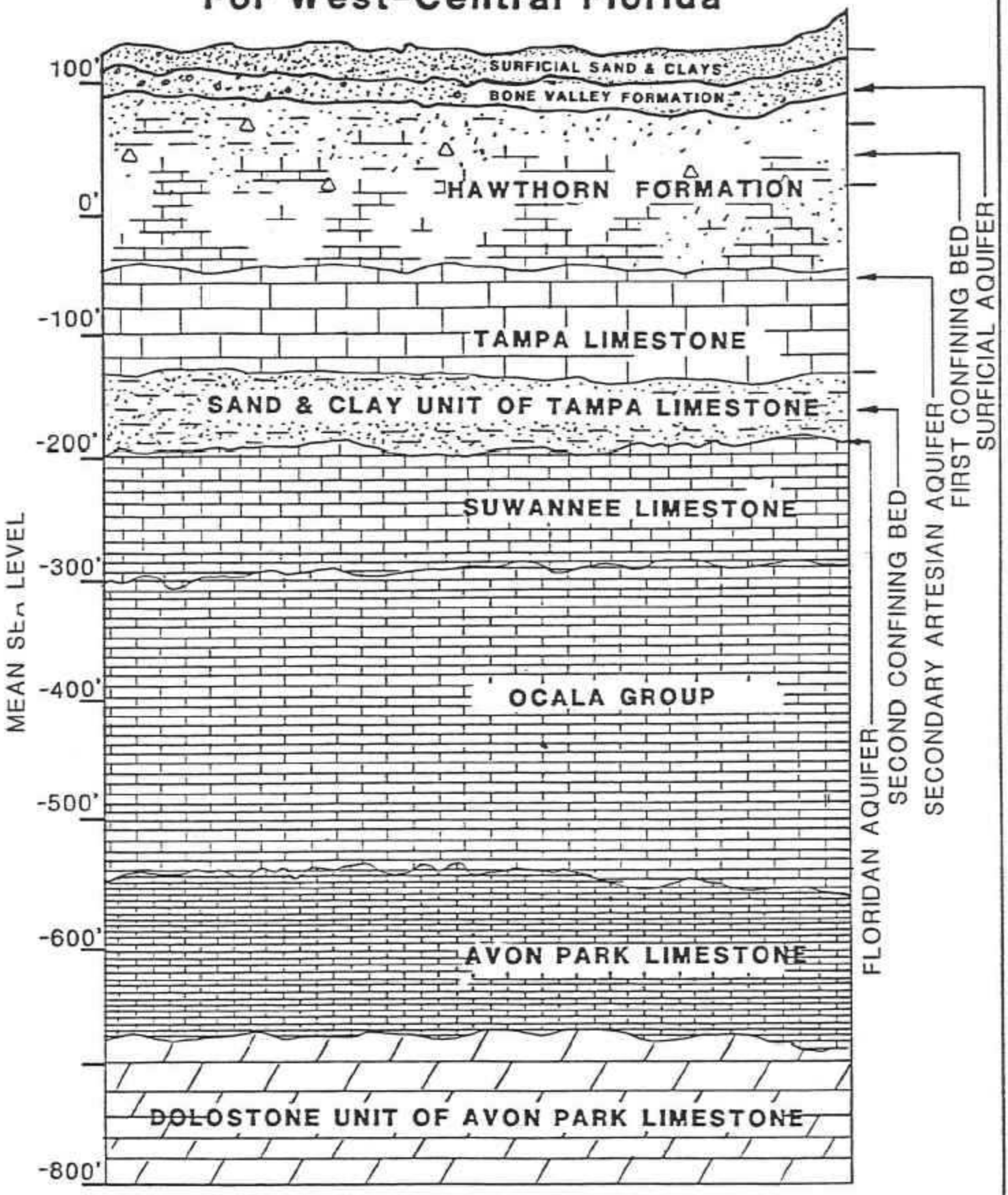


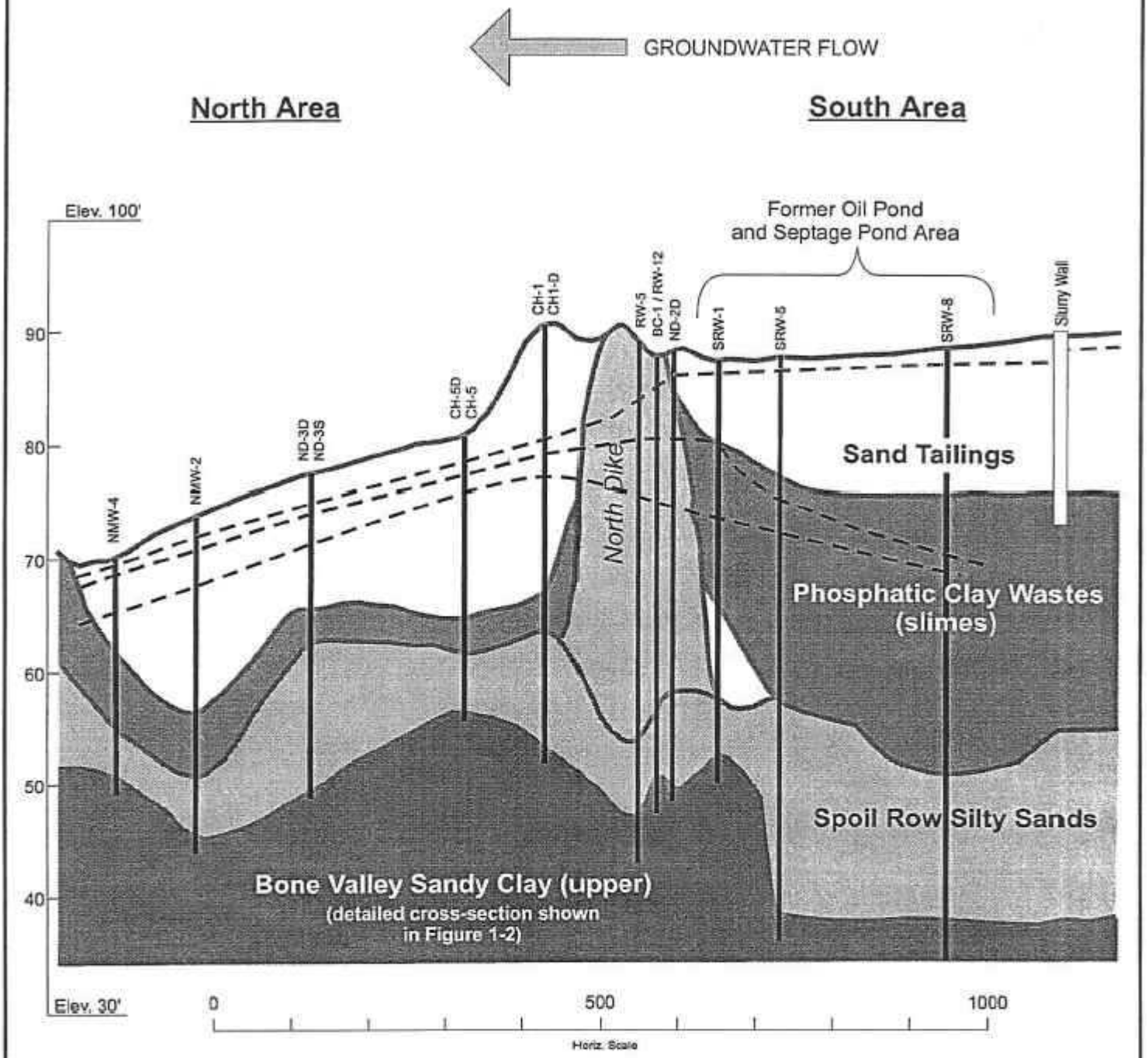
Figure 2: Site Layout Map

Generalized Hydrogeologic Cross Section For West-Central Florida



Prepared by:
P.E. LaMoreaux & Associates, Inc.

Figure 3: Regional Geology/Hydrogeology



Source: CH2MHILL

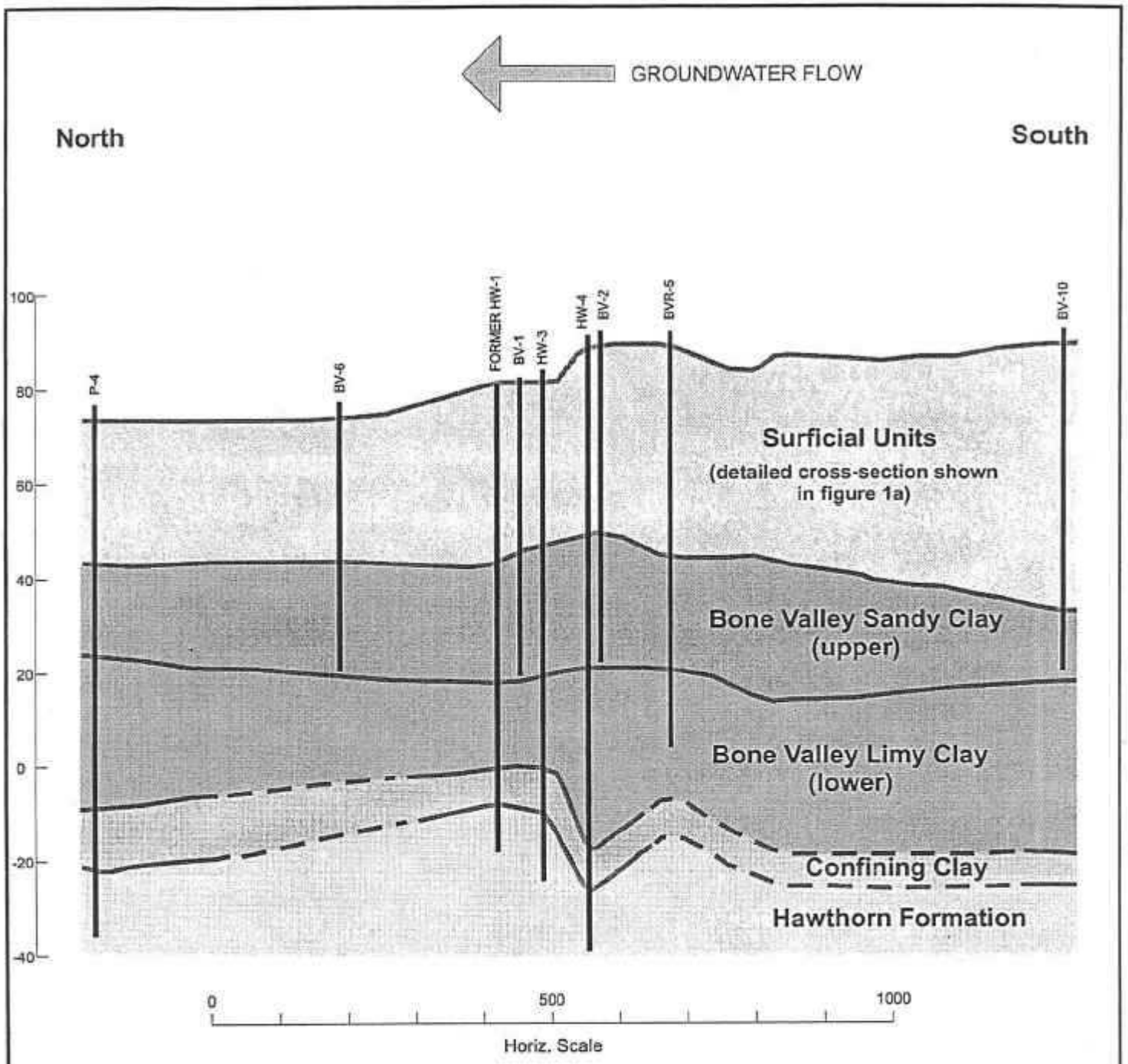
5/19/98 BOC-54-MAJ/MJS
68037001\68037026.CDR

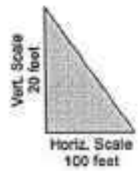
SYDNEY MINE WASTE DISPOSAL SITE
BRANDON, FLORIDA
PHASE II- NATURAL ATTENUATION EVALUATION
ROUND 1.0 AND 1.5 - INTERIM REPORT

APPROXIMATE HYDROGEOLOGIC CROSS SECTION, NORTH-SOUTH THROUGH SURFICIAL UNITS

BBL BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Figure 4c: Site Specific Geology/Hydrogeology
Detail of Surficial Units





SYDNEY MINE WASTE DISPOSAL SITE
BRANDON, FLORIDA
PHASE II- NATURAL ATTENUATION EVALUATION
ROUND 1.0 AND 1.5- INTERIM REPORT

APPROXIMATE HYDROGEOLOGIC CROSS SECTION, NORTH-SOUTH THROUGH BONE VALLEY WATER BEARING UNIT

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

4/16/98 BOC-54-MAJ/MJS
68037001\68037027.CDR

Figure 1b Surficial & Intermediate Units

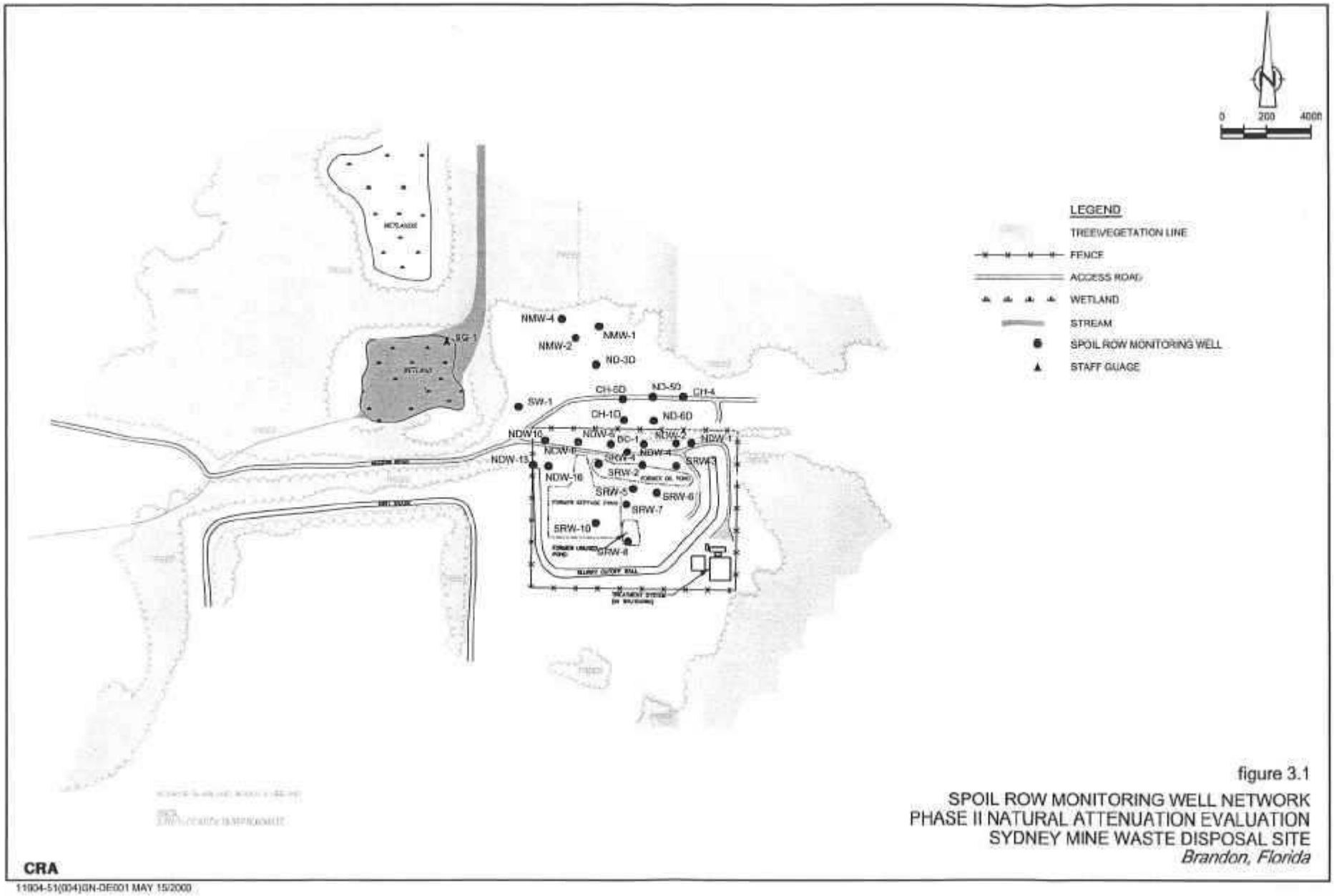


Figure 5: Spoil Row Monitoring Well Network

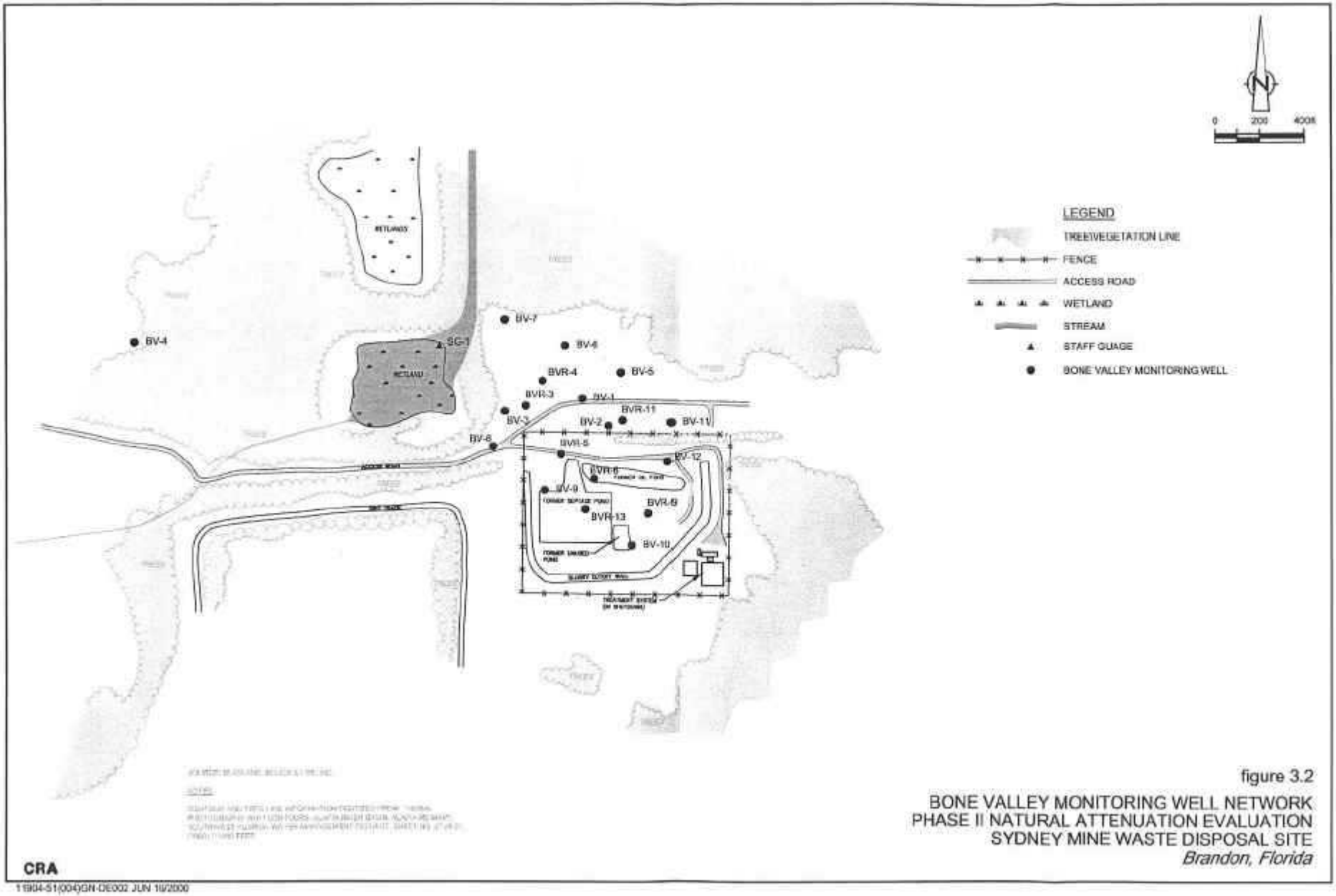


Figure 6: Bone Valley Monitoring Well Network

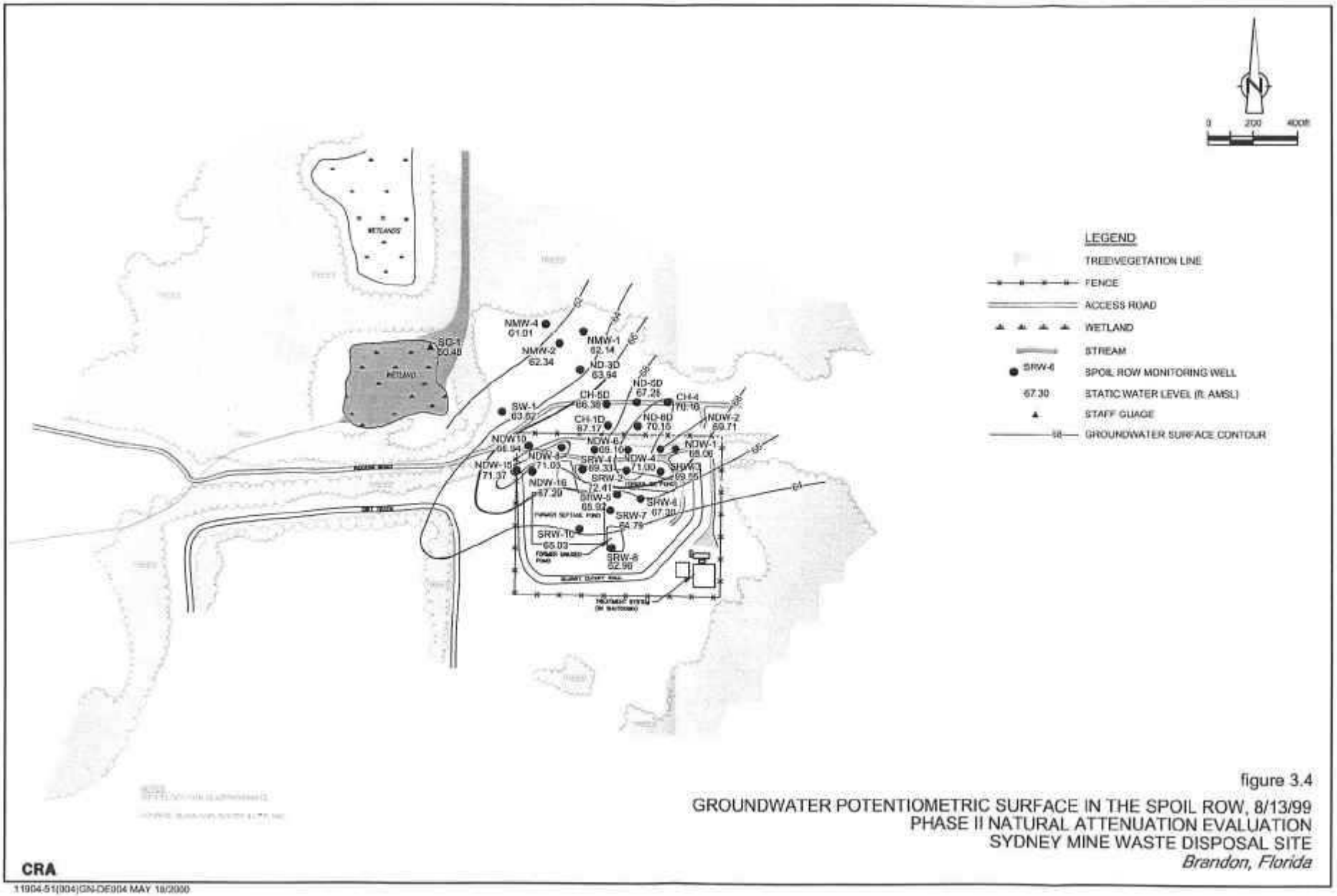


Figure 7: Potentiometric Surface in the Spoil Row, 8/13/99

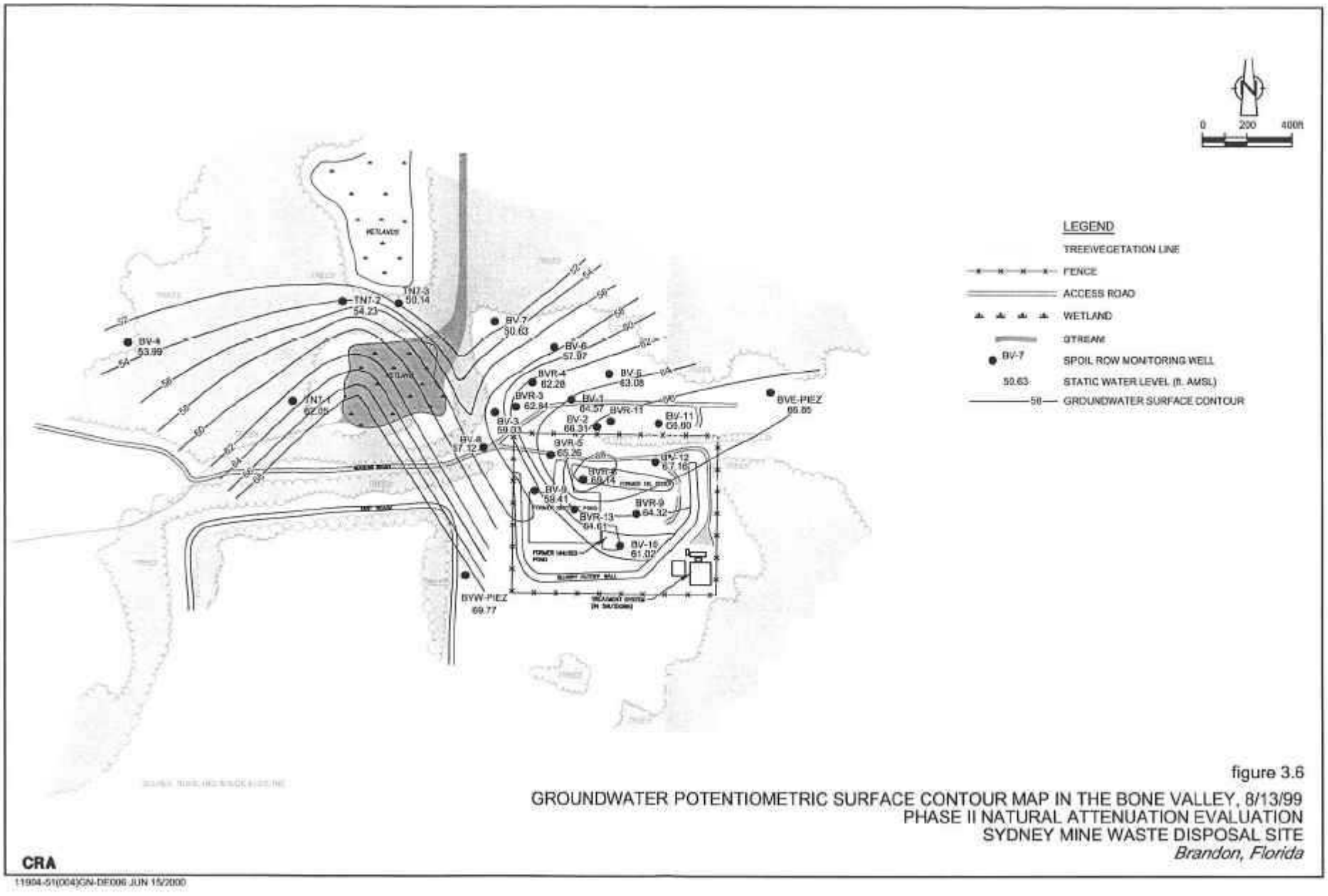


figure 3.6

GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR MAP IN THE BONE VALLEY, 8/13/99
PHASE II NATURAL ATTENUATION EVALUATION
SYDNEY MINE WASTE DISPOSAL SITE
Brandon, Florida

CRA

11994-51(004)GN-DF006 JUN 15/2000

Figure 8: Potentiometric Surface in the Bone Valley, 8/13/99

Tables

Table 1- Chronology of Site Events

Event	Date
Phosphate Mining Activity	approx. 1930-1958
Hillsborough County Operates Site as Liquid Waste Disposal Site	1973 to 1982
Hillsborough County's Phase 1 and Phase 2 Site Cleanup Activities	1983 to 1987
Regulatory Oversight Transfers from Hillsborough County to EPA	June 1, 1989
ROD Signature	September 1989
NPL Listing	October 1989
Explanation of Significant Differences	October 1991
Remedial Design for Surficial Aquifer	March 1992
Remedial Action Start, Improvements to GW Recovery System	September 30, 1992
Construction Completion, Improvements to GW Recovery System	June 19, 1993
Remedial Action Start, Bone Valley GW Recovery System	June 30, 1994
Construction Completion, Bone Valley GW Recovery System	August 29, 1996
Natural Attenuation Evaluation (Preliminary, Rounds 1.0, 1.5 and 2.0)	April 1996 to Present
Sand Tailings and Spoil Row GW Treatment System Shut Down	1996
Bone Valley GW Treatment System Shut Down	1997
Superfund Preliminary Close Out Report	June 28, 1999

Table 2 – Summary of Hydraulic Conductivity Estimates,
Round 2.0 NAE and Previous Investigations

SUMMARY OF HYDRAULIC CONDUCTIVITY ESTIMATES
ROUND 2.0 NAE AND PREVIOUS INVESTIGATIONS
SYDNEY MINE WASTE DISPOSAL SITE

SPOIL ROW RESULTS

Well		Test	Test Type	Results (feet/day)	Average (feet/day)
SRW-4	HSA	1	Slug Test	4.5	4.8
		2		5.0	
		3		4.8	
		4		4.8	
SRW-5	HSA	1	Slug Test	1700*	NA
		2		37*	
		3		34*	
		4		990*	
SRW-7	HSA	1	Slug Test	4.0	4.0
		2		4.0	
		3		4.1	
SRW-9	HSA	1	Slug Test	0.65	0.61
		2		0.59	
		3		0.59	
ND-3D	CH_2M	1	Slug Test	2.72	2.72
ND-6D	CH_2M	1	Slug Test	1.36	1.36
ND-8D	CH_2M	1	Slug Test	0.31	0.31
CH-1D	CH_2M	1	Slug Test	0.54	0.54
CH-1D	CH_2M	1	Slug Test	0.74	0.74

BONE VALLEY RESULTS

Well		Test	Test Type	Results (feet/day)	Average (feet/day)
TN 4-4	HSA	1	Slug Test	0.48	0.33
		2		0.33	
		3		0.19	
TN 6-3 (S)	HSA	1	Slug Test	0.35	0.63
		2		0.71	
		3		0.84	
TN 6-3 (D)	HSA	1	Slug Test	1.4	0.64
		2		0.36	
		3		0.17	
BV-5	BBL	1	Pumping Test	3.10	3.10
BV-6	BBL	1	Pumping Test	1.60	1.60

HSA - HSA Engineers & Scientists Slug Test Report dated Februrary 17, 2000.
CH2M - CH2M Hill Technical Memorandum from John Miller to Starr Dehn dated Februrary 19,1988.
BBL - Blasland, Bouck & Lee Inc. Technical Impracticality Evaluation Report dated March 1994.
* - Anomalous data due to potential well construction issues
NA - Not Available
(S) - Shallow
(D) - Deep

Table 3- Spoil Row and Bone Valley Analytical Results Summary, Round 2.0 NAE

SPOIL ROW ANALYTICAL RESULTS SUMMARY
ROUND 2.0 NAE
SYDNEY MINE WASTE DISPOSAL SITE

Sample Location	***ROD Clean-Up***	TN 1-2	TN 1-3	TN 2-1	TN 2-1	TN 2-1	TN 2-2	TN 2-2	TN 2-2	TN 2-3	TN 2-3	TN 2-3	TN 2-4	TN 2-4	TN 2-4	TN 2-5
Interval Sampled (ft BGS)	***Goals***	26-27	29-30	32-33	34.5-35.5	39-40	33.5-34.5	37.5-38.5	43.5-44.5	15-16	22-23	32-33	20.5-21.5	25-26	29-30	22-23
Date Sampled		02/01/00	02/02/00	01/31/00	01/31/00	01/31/00	01/19/00	01/19/00	01/19/00	01/17/00	01/17/00	01/17/00	01/15/00	01/15/00	01/15/00	02/01/00
Volitile Organics (ug/L)																
Benzene	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**22**	Dry	<1.0	<1.0	Dry
Chlorobenzene	100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	
Chloroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	
1,1-Dichloroethane	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	
1,2-Dichloroethane	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	
1,1-Dichloroethene	7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	
Cis-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	
Trans-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	
Ethylbenzene	700	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	
Toluene	2,000	<1.0	<1.0	<1.0	<1.0	<1.0	7.2	3.6	5.1	7.7	<1.0	10		18	18	
1,1,1-Trichloroethane	200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	
Trichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.6		<1.0	<1.0	
Vinyl Chloride	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	
Gases (ug/L)																
Ethane		<1	<1	<1	27	26	194	<1	<1	<1	<1	<1		<1	<1	
Ethene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	<1	
Geochemical Parameters (mg/L)				L	L	L	L							L		
Alkalinity		140	301	NA	NA	353	NA	112	106	95	155	146		NA	174	
Ammonia		<0.1	<0.10	NA	NA	<0.1	NA	0.415	1.1	3.4	4.25	2.3		NA	<0.010	
Carbon Dioxide		66	36	35	34	181	205	210	117	103	178	68		99	81	
Chloride		**14**	11	NA	NA	20	NA	18	18	25	23	14		NA	13	
DO Winkler		0.1	0.1	NA	NA	<0.1	6.3	<0.1	<0.1	0.1	<0.1	<0.1		NA	0.2	
DOC		**4.2 R**	NA	NA	NA	NA	NA	NA	NA	**5.4 R**	NA	NA		NA	NA	
Ferric Iron		<1.0	<1.0	NA	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0		NA	<1.0	
Ferrous Iron		8.2	12	NA	NA	8.6	NA	7.0	7.3	8.9	7.9	2.3		NA	10	
Manganese		<0.8	<0.80	NA	NA	<0.8	NA	<0.80	<0.80	<0.80	<0.80	<0.80		NA	<0.80	
Methane		0.047	0.819	0.2	0.209	1.157	0.151	0.63	1.00	1.2	0.52	1.2		0.001	0.033	
Nitrate		2.5	<1.0	NA	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0		NA	<1.0	
Nitrite		<0.010	<0.010	NA	NA	<0.010	NA	<0.010	<0.010	<0.010	<0.010	<0.010		NA	<0.010	
Sulfate		<1.0	<1.0	NA	NA	<1.0	NA	<1.0	<1.0	<1.0	86	<1.0		NA	<1.0	
Sulfide		<0.02	<0.02	NA	NA	<0.02	NA	<0.02	<0.02	<0.02	<0.02	<0.02		NA	<0.02	
Field Measured Parameters				L	L	L	L							L		
pH (Units)		6.7	7.04	NA	NA	NA	NA	5.74	5.95	6.79	6.8	6.55		NA	6.16	
Temperature (°C)		22.4	21	NA	NA	NA	NA	22.3	22.7	20.9	21.7	21.9		NA	23.7	
Conductivity (uhmos)		262	248	NA	NA	NA	NA	326	313	502	532	258		NA	201	
ORP (mV)		24	142	NA	NA	NA	NA	134	1.01	95	82	70		NA	141	
DO Membrane (mg/L)		2.01	2.51	NA	NA	NA	NA	1.74	178*	2.28	1.19	3.24		NA	3.9	

Notes:
NA - Not Analyzed
Concentrations in BOLD exceed the ROD clean-up goals
L - Very little water produced - generally only enough for VOC analysis
R - Data was rejected (See text for explanation)

SPOIL ROW ANALYTICAL RESULTS SUMMARY
ROUND 2.0 NAE
SYDNEY MINE WASTE DISPOSAL SITE

Sample Location		TN 2-5	TN 2-5	TN 3-1	TN 3-1	TN 3-1	TN 3-1	TN 3-2	TN 3-2	TN 3-2	TN 3-3	TN 3-3	TN 3-3	TN 3-4	TN 3-4	TN 3-4
Interval Sampled (ft BGS)	***ROD Clean-Up***	27-28	32-33	23.5-24.5	35-36	45-46	54-55	26.5-27.5	34.5-35.5	39-40	24-25	30-31	36-37	30.5-31.5	34-35	38-39
Date Sampled	***Goals***	02/01/00	02/01/00	01/19/00	01/19/00	01/19/00	01/19/00	01/14/00	01/14/00	01/14/00	01/14/00	01/14/00	01/14/00	01/14/00	01/14/00	01/14/00
Volitile Organics (ug/L)																
Benzene	1	<1.0	<1.0	**7.8**	Dry	<1.0	<1.0	Dry	**68**	**31**	Dry	**2.5**	**25**	**2**	**1.3**	**14**
Chlorobenzene	100	<1.0	<1.0	<1.0		<1.0	<1.0		<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane		<1.0	<1.0	<1.0		<1.0	<1.0		12	3.7		<1.0	2.4	<1.0	<1.0	<1.0
1,1-Dichloroethane	3	<1.0	<1.0	<1.0		<1.0	<1.0		<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	3	<1.0	<1.0	<1.0		<1.0	<1.0		<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	7	<1.0	<1.0	<1.0		<1.0	<1.0		<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Cis-1,2-Dichloroethene		<1.0	<1.0	<1.0		<1.0	<1.0		<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene		<1.0	<1.0	<1.0		<1.0	<1.0		<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	700	<1.0	<1.0	<1.0		<1.0	<1.0		<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	2,000	<1.0	7.7	1.5		4.7	3.2		11	5.9		5.1	8	8	7	7.9
1,1,1-Trichloroethane	200	<1.0	<1.0	<1.0		<1.0	<1.0		<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene		<1.0	<1.0	5.1		3.3	<1.0		<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	1	<1.0	<1.0	**1.1**		<1.0	<1.0		**18**	**12**		<1.0	**6**	<1.0	<1.0	<1.0
Gases (ug/L)																
Ethane		<1	<1	<1		<1	<1		<1	27		<1	<1	<1	<1	<1.0
Ethene		<1	<1	<1		<1	<1		<1	<1		<1	<1	<1	<1	<1
Geochemical Parameters (mg/L)						L	L									
Alkalinity		89	69	98		NA	NA		95	155		99	174	146	30	59
Ammonia		<0.10	<0.10	<0.10		NA	NA		8.4	9.8		2.1	3.6	3.2	1.2	8.6
Carbon Dioxide		18	6.8	170		70	35		135	77		107	140	95	65	62
Chloride		4.8	16	19		NA	NA		22	27		9.7	15	9.3	8.4	26
DO Winkler		0.1	<0.1	<0.1		NA	0.2		<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	0.6
DOC		NA	2.7 R	NA		NA	NA		NA	NA		NA	NA	NA	NA	NA
Ferric Iron		<1.0	<1.0	<1.0		NA	NA		<1.0	<1.0		1.5	2.4	<1.0	<1.0	<1.0
Ferrous Iron		2.4	2.4	10		NA	NA		8	6.9		<1.0	1.3	6.9	3.7	12
Manganese		<0.8	<0.80	<0.80		NA	NA		<0.80	<0.80		<0.80	<0.80	<0.80	<0.80	20
Methane		<0.001	0.015	0.52		0.225	0.046		1.1	0.98		0.9	0.446	0.93	0.22	0.29
Nitrate		<1.0	<1.0	<1.0		NA	NA		<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Nitrite		<0.010	<0.010	<0.010		NA	NA		<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010
Sulfate		29	<1.0	<1.0		NA	NA		<1.0	86		<1.0	<1.0	<1.0	<1.0	86
Sulfide		<0.02	0.15	<0.02		NA	NA		<0.02	0.38		0.03	0.03	<0.02	0.02	0.38
Field Measured Parameters						L	L			L				L		
pH (Units)		6.76	6.93	6.24		NA	NA		6.59	NA		6.36	6.2	NA	6.33	6.41
Temperature (°C)		20.8	19.8	22.7		NA	NA		19.6	NA		22.5	22.3	NA	20.3	19
Conductivity (uhmos)		135	245	757		NA	NA		313	NA		230	202	NA	NA	248
ORP (mV)		76	95	1.42		NA	NA		-26	NA		-59	43	NA	7	-29
DO Membrane (mg/L)		2.34	1.85	159 R		NA	NA		6.92	NA		2.35	4.66	NA	1.31	1.73

Notes:
NA - Not Analyzed
Concentrations in BOLD exceed the ROD clean-up goals
L - Very little water produced - generally only enough
for VOC analysis
R - Data was rejected (See text for explanation)

SPOIL ROW ANALYTICAL RESULTS SUMMARY
ROUND 2.0 NAE
SYDNEY MINE WASTE DISPOSAL SITE

Sample Location		TN 4-2	TN 4-2	TN 4-3	TN 4-3	TN 4-3	TN 5-1	TN 5-1	TN 5-1	TN5-2.5	TN5-2.5	TN 5-3	TN6-2	TN 8-0.0	TN 8-1
Interval Sampled (ft BGS)	***ROD Clean-Up***	30-31	37-38	26-27	29.5-30.5	33-34	25-26	32-33	38-39	24.5-25.5	33-34	30-31	20-21	28.5-29.5	25-26
Date Sampled	***Goals***	01/15/00	01/15/00	01/15/00	01/15/00	02/02/00	01/17/00	01/17/00	01/17/00	02/11/00	02/11/00	02/03/00	02/11/00	02/11/00	02/11/00
Volitile Organics (ug/L)															
Benzene	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**30**	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	21	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cis-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	700	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	<1.0
Toluene	2,000	<1.0	<1.0	7.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**5.9**	<1.0	<1.0	<1.0	<1.0
Gases (ug/L)															
Ethane		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Geochemical Parameters (mg/L)			L											L	
Alkalinity		99	NA	41	38	3	30	296	314	68	88	123	84	NA	88
Ammonia		3.5	NA	2.3	2.4	2.9	<0.010	2.2	4.1	<0.10	<0.10	<0.10	<0.10	NA	<0.10
Carbon Dioxide		136	52	30	118	77	142	30	122	9.346	191	94	54	NA	110
Chloride		7	NA	30	13	15	7.1	7.7	14	6.2	22	5.2	4.8	NA	22
DO Winkler		0.2	NA	<0.1	<0.1	<0.1	0.9	<0.1	<0.1	18.4 R	<0.1	<0.1	<0.1	NA	0.4
DOC		NA	NA	3.9 R	NA	NA	1.3 R	NA	NA	NA	NA	NA	NA	NA	NA
Ferric Iron		<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.1	<1.0	<1.0	1.5	NA	<1.0
Ferrous Iron		7.1	NA	6.2	5.3	3.4	3.7	3.3	2.3	1.9	6.8	4.4	1.3	NA	4.8
Manganese		<0.80	NA	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.8	<0.80	NA	<0.80
Methane		0.16	0.040	1.00	0.49	0.31	0.076	0.025	0.643	0.056	0.939	0.209	0.946	NA	0.866
Nitrate		<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.7	<1.0	<1.0	NA	1.6
Nitrite		<0.010	NA	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	NA	<0.010
Sulfate		7.2	NA	<1.0	<1.0	<1.0	35	<1.0	<1.0	<1.0	6.6	<1.0	<1.0	NA	<1.0
Sulfide		<0.02	NA	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	NA	<0.02
Field Measured Parameters			L											L	
pH (Units)		6.01	NA	6.87	6.69	6.74	5.8	6.38	6.49	6.98	6.42	6.21	6.77	NA	6.51
Temperature (°C)		23.8	NA	19.1	18.5	22.1	22.9	24	24.8	25.2	21.8	20.6	23.3	NA	23.4
Conductivity (uhmos)		128	NA	328	307	275	164	268	314	167	345	296	149	NA	238
ORP (mV)		16	NA	4	41	14	130	117	123	203	64	45	75	NA	33
DO Membrane (mg/L)		2.28	NA	2.57	1.98	2.8	2.69	3	2.59	4.15	1.93	1.58	3.47	NA	2.29

Notes:
NA - Not Analyzed
Concentrations in BOLD exceed the ROD clean-up goals
L - Very little water produced - generally only enough
for VOC analysis
R - Data was rejected (See text for explanation)

BONE VALLEY ANALYTICAL RESULTS SUMMARY
ROUND 2.0 NAE
SYDNEY MINE WASTE DISPOSAL SITE

Sample Location		TN 1-2	TN 1-2	TN 1-2	TN 1-3	TN 1-3	TN 1-3	TN 4-2	TN 4-2	TN 4-2	TN 4-2	TN 4-3	TN 4-3	TN 4-3	TN 4-3
Interval Sampled (ft BGS)	***ROD Clean-Up***	46.5-47.5	52.5-53.5	66-67	33-34	45-46	59.5-60.5	43-44	49-50	57.5-58.5	64-65	37.5-38.5	42.5-43.5	50-51	54-55
Date Sampled	***Goals***	02/01/00	02/01/00	02/02/00	02/02/00	02/02/00	02/02/00	02/03/00	02/03/00	02/03/00	02/03/00	01/15/00	02/02/00	02/02/00	02/02/00
Volitile Organics (ug/L)															
Benzene	1	<1.0	<1.0	<1.0	Dry	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**22**	**162**	Dry
Chlorobenzene	100	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Chloroethane		<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	8.1	**53**	**28**	
1,1-Dichloroethane	3	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	1.9	<1.0	<1.0	**4.6**	**76**	
1,2-Dichloroethane	3	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**6.3**	
1,1-Dichloroethene	7	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.9	
Cis-1,2-Dichloroethene		<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Trans-1,2-Dichloroethene		<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Ethylbenzene	700	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.8	4.5	
Toluene	2,000	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	704	
1,1,1-Trichloroethane	200	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Trichloroethene		<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Vinyl Chloride	1	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**7.3**	**84**	
Gases (ug/L)															
Ethane		<1	<1	<1		<1	<1	<1	<1	<1	<1	<1	<1	<1	
Ethene		<1	<1	<1		<1	<1	<1	<1	<1	<1	<1	<1	<1	
Geochemical Parameters (mg/L)							L			L	L				
Alkalinity		86	108	<1		124	NA	126	134	NA	NA	125	118	108	
Ammonia		<0.1	<0.1	<0.10		<0.10	NA	<0.10	<0.10	NA	NA	<0.1	<0.1	<0.10	
Carbon Dioxide		86	50	45		147	1.354	153	185	37	76	40	241	224	
Chloride		15	18	<1.0		11	NA	6.9	8.9	NA	NA	14	17	24	
DO Winkler		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	NA	NA	<0.1	<0.1	<0.1	
DOC		NA	4.9 R	NA		NA	NA	16 R	NA	NA	NA	NA	NA	NA	
Ferric Iron		<1.0	<1.0	<1.0		2.6	NA	<1.0	<1.0	NA	NA	<1.0	<1.0	<1.0	
Ferrous Iron		7.0	5.0	<1.0		<1.0	NA	12	4.4	NA	NA	1.4	5.2	7	
Manganese		<0.8	<0.8	<0.80		<0.80	NA	<1.0	<1.0	NA	NA	<0.8	<0.8	<0.8	
Methane		0.034	0.020	0.056		0.842	<0.001	0.336	0.645	0.022	0.043	0.066	1.141	1.109	
Nitrate		<1.0	<1.0	<1.0		<1.0	NA	<1.0	<1.0	NA	NA	<1.0	1.3	4.3	
Nitrite		<0.010	<0.010	<0.010		<0.010	NA	<0.010	<0.010	NA	NA	<0.010	<0.010	<0.010	
Sulfate		1.2	15	<1.0		<1.0	NA	<1.0	<1.0	NA	NA	<1.0	<1.0	<1.0	
Sulfide		<0.02	<0.02	<0.02		<0.02	NA	<0.02	<0.02	NA	NA	<0.02	<0.02	<0.02	
Field Measured Parameters							L			L	L	L			
pH (Units)		6.75	6.35	7		6.48	NA	6.77	6.71	NA	NA	NA	6.73	6.09	
Temperature (°C)		21.8	21.7	19.9		20	NA	22.4	22.2	NA	NA	NA	22.4	22.2	
Conductivity (uhmos)		266	402	592		494	NA	445	430	NA	NA	NA	310	104	
ORP (mV)		161	105	62		125	NA	103	81	NA	NA	NA	54	147	
DO Membrane (mg/L)		1.14	1.4	0.42		3.7	NA	1.61	1.88	NA	NA	NA	1.37	0.95	

Notes:
NA - Not Analyzed
Concentrations in BOLD exceed the ROD clean-up goals
L - Very little water produced - Generally only enough for VOC analysis
R - Data was rejected (See text for explanation)

BONE VALLEY ANALYTICAL RESULTS SUMMARY
ROUND 2.0 NAE
SYDNEY MINE WASTE DISPOSAL SITE

Sample Location		TN 4-3	TN 4-3	TN 4-3.5	TN 4-3.5	TN 4-3.5	TN 4-3.5	TN 4-3.5	TN 4-3.5	TN 4-4	TN 4-4	TN 4-4	TN 4-4 WP	TN 4-4	TN 4-4
Interval Sampled (ft BGS)	***ROD Clean-Up***	59.5-60.5	68-69	35.5-36.5	39-40	43-44	50.5-51.5	55.5-56.5	59-60	33.5-34.5	38.5-39.5	42.5-43.5	43.5-45	48.5-49.5	55.5-56.5
Date Sampled	***Goals***	02/02/00	02/02/00	01/29/00	01/29/00	01/29/00	01/31/00	01/29/00	01/31/00	01/24/00	01/24/00	01/24/00	01/24/00	01/24/00	01/25/00
Volitile Organics (ug/L)															
Benzene	1	<1.0	<1.0	Dry	<1.0	**9.5**	**47**	Dry	<1.0	**25**	**63**	**67**	**215**	**24**	**22**
Chlorobenzene	100	<1.0	<1.0		<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane		**2.1**	**1.4**		**11**	**22**	2		**6.3**	1.3	**4.7**	**26**	**18**	**5.7**	**4.8**
1,1-Dichloroethane	3	**5.2**	<1.0		2.7	<1.0	**11**		**24**	**5.2**	**6.6**	**5.1**	<1.0	**15**	<1.0
1,2-Dichloroethane	3	<1.0	<1.0		<1.0	<1.0	<1.0		<1.0	<1.0	2.4	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	7	<1.0	<1.0		<1.0	<1.0	<1.0		2	<1.0	2.7	9.7	<1.0	<1.0	<1.0
Cis-1,2-Dichloroethene		<1.0	<1.0		<1.0	<1.0	<1.0		1.8	<1.0	8.0	5.4	7.6	5.1	2.0
Trans-1,2-Dichloroethene		<1.0	<1.0		<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	700	<1.0	<1.0		<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	11	<1.0	<1.0
Toluene	2,000	<1.0	<1.0		<1.0	<1.0	<1.0		<1.0	2.0	4.0	1.5	22	<1.0	<1.0
1,1,1-Trichloroethane	200	<1.0	<1.0		<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene		<1.0	<1.0		<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	4.8	<1.0	<1.0
Vinyl Chloride	1	**3.6**	<1.0		**2.9**	**4.1**	**9.3**		**25**	**7.6**	**22**	**23**	**24**	**18**	**5.2**
Gases (ug/L)															
Ethane		<1	<1		<1	27	27		<1	1	1	1	<1	1	<1
Ethene		<1	<1		<1	<1	<1		<1	<1	<1	<1	<1	<1	<1
Geochemical Parameters (mg/L)		L							L					L	
Alkalinity		NA	201		75	102	38		120	NA	22	50	3	NA	211
Ammonia		NA	<0.1		<0.1	<0.1	<0.1		<0.1	NA	<0.010	<0.010	0.23	NA	0.2
Carbon Dioxide		74	86		99	114	120		99	94	199	23	218	18	72
Chloride		NA	12		19	18	21		23	NA	21	24	23	NA	22
DO Winkler		NA	<0.1		0.4	<0.1	<0.1		<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1
DOC		NA	NA		NA	8.5 R	NA		NA	NA	NA	NA	NA	NA	NA
Ferric Iron		NA	<1.0		<1.0	<1.0	<1.0		<1.0	NA	<1.0	<1.0	<1.0	NA	1.3
Ferrous Iron		NA	<1.0		7.7	4.3	8.3		11	NA	6.3	5.3	6.1	NA	4.4
Manganese		NA	<0.8		<0.8	<0.8	<0.8		<0.8	NA	<0.80	<0.80	<0.80	NA	<0.80
Methane		0.034	0.116		0.659	1.089	0.737		0.555	0.632	1.107	0.018	1.2	0.516	0.515
Nitrate		NA	<1.0		<1.0	<1.0	<1.0		1.9	NA	<1.0	<1.0	<1.0	NA	<1.0
Nitrite		NA	<0.010		<0.01	<0.010	<0.010		<0.010	NA	<0.010	<0.010	<0.010	NA	<0.010
Sulfate		NA	<1.0		<1.0	<1.0	<1.0		<1.0	NA	<1.0	<1.0	<1.0	NA	<1.0
Sulfide		NA	<0.02		0.15	0.14	<0.02		<0.02	NA	0.04	<0.02	0.21	NA	<0.02
Field Measured Parameters		L			L					L			L	L	
pH (Units)		NA	7.19		NA	6.24	6.10		6.26	NA	5.69	5.87	NA	NA	6.62
Temperature (°C)		NA	22.9		NA	24.2	19.1		17.9	NA	20.6	19.1	NA	NA	18.1
Conductivity (uhmos)		NA	388		NA	291	377		406	NA	306	321	NA	NA	342
ORP (mV)		NA	181		NA	94	35		35	NA	37	14	NA	NA	-91
DO Membrane (mg/L)		NA	1.18		NA	1.38	1.55		2.75	NA	4.66	3.12	NA	NA	1.07

Notes:
NA - Not Analyzed
Concentrations in BOLD exceed the ROD clean-up goals
L - Very little water produced - Generally only enough for VOC analysis
R - Data was rejected (See text for explanation)

BONE VALLEY ANALYTICAL RESULTS SUMMARY
ROUND 2.0 NAE
SYDNEY MINE WASTE DISPOSAL SITE

Sample Location		TN 4-4	TN 4-4.5	TN 4-4.5	TN 4-4.5	TN 4-4.5	TN 4-4.75	TN 4-4.75	TN 4-4.75	TN 4-4.75	TN 4-4.75	TN 5-1.5	TN 5-1.5	TN 5-1.5	TN 5-1.5
Interval Sampled (ft BGS)	***ROD Clean-Up***	64-65	36.5-37.5	40.5-41.5	47.5-48.5	55-56	31.5-32.5	35.5-36.5	42.5-43.5	46.5-47.5	55-56	36.5-37.5	41-42	44.5-45.5	50.5-51.5
Date Sampled	***Goals***	01/25/00	01/26/80	01/26/80	01/26/80	01/26/80	01/25/80	01/25/80	01/25/80	01/25/80	01/25/80	02/09/00	02/09/00	02/09/00	02/09/00
Volitile Organics (ug/L)															
Benzene	1	<1.0	<1.0	**17**	**28**	<1.0	**6.4**	**7.8**	**7.5**	<1.0	**6.4**	**6.3**	**16**	<1.0	<1.0
Chlorobenzene	100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	3	<1.0	<1.0	<1.0	**8.8**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.9	<1.0	<1.0
1,2-Dichloroethane	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cis-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	700	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	2,000	<1.0	4.1	<1.0	2.8	1.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	1	<1.0	<1.0	<1.0	**6**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Gases (ug/L)															
Ethane		<1	<1	27	29	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Geochemical Parameters (mg/L)			L			L			L	L					
Alkalinity		341	NA	**74**	57	NA	40	**41**	NA	NA	354	199	202	187	89
Ammonia		<0.1	NA	<0.1	<0.1	NA	<0.10	<0.10	NA	NA	<0.10	<0.10	<0.10	<0.10	<0.10
Carbon Dioxide		23	66	126	154	73	90	95	42	30	46	116	217	197	191
Chloride		20	NA	11	9.3	NA	13	13	NA	NA	13	22	27	24	22
DO Winkler		<0.1	33.5 R	<0.1	<0.1	NA	14.9 R	3.9	NA	12.5 R	<0.1	<0.1	<0.1	<0.1	<0.1
DOC		2.6 R	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 R	NA	NA	NA
Ferric Iron		<1.0	NA	<1.0	1.2	NA	<1.0	<1.0	NA	NA	<1.0	1	<1.0	<1.0	<1.0
Ferrous Iron		9.0	NA	6.1	5.7	NA	4.1	11	NA	NA	4.6	6.5	8.2	7.8	6.1
Manganese		<0.8	NA	<0.8	<0.8	NA	<0.8	<0.8	NA	NA	1.2	<0.80	<0.80	<0.80	<0.80
Methane		0.018	0.173	0.512	0.049	0.039	0.169	0.143	0.017	0.003	0.037	0.24	0.966	1.124	0.089
Nitrate		<1.0	NA	<1.0	<1.0	NA	4.9	2	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0
Nitrite		<0.010	NA	<0.010	<0.010	NA	<0.010	<0.010	NA	NA	<0.010	<0.010	<0.010	<0.010	<0.010
Sulfate		<1.0	NA	<1.0	<1.0	NA	<1.0	<1.0	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0
Sulfide		<0.02	NA	<0.02	<0.02	NA	<0.02	<0.02	NA	NA	0.04	<0.02	<0.02	<0.02	<0.02
Field Measured Parameters			L		L	L			L	L					
pH (Units)		6.87	NA	6.32	NA	NA	6.06	6.34	NA	NA	6.95	6.7	6.45	6.25	6.52
Temperature (°C)		20.1	NA	20.1	NA	NA	21.1	18.3	NA	NA	21.2	23.3	23	22.9	23.1
Conductivity (uhmos)		447	NA	292	NA	NA	182	231	NA	NA	536	471	598	527	357
ORP (mV)		-144	NA	30	NA	NA	29	62	NA	NA	-26	25	12	35	90
DO Membrane (mg/L)		0.44	NA	1.72	NA	NA	2.4	3.99	NA	NA	1.76	2.07	0.41	1.91	2

Notes:
NA - Not Analyzed
Concentrations in BOLD exceed the ROD clean-up goals
L - Very little water produced - Generally only enough for VOC analysis
R - Data was rejected (See text for explanation)

BONE VALLEY ANALYTICAL RESULTS SUMMARY
ROUND 2.0 NAE
SYDNEY MINE WASTE DISPOSAL SITE

Sample Location		TN 5-1.5	TN 5-2	TN 5-2	TN 5-2	TN 5-2	TN 5-2.5	TN 5-2.5	TN 5-2.5	TN 5-2.5	TN 5-2.5	TN 5-3 WP	TN 5-3	TN 5-3	TN 5-3
Interval Sampled (ft BGS)	***ROD Clean-Up***	57-58	42.5-43.5	50-51	56.5-57.5	63.5-64.5	39-40	41.5-42.5	49-50	55-56	58.5-59.5	38.5	35.5-36.5	40.5-41.5	50-51
Date Sampled	***Goals***	02/10/00	01/29/00	01/29/00	01/29/00	01/29/00	01/13/00	01/13/00	01/13/00	01/13/00	01/14/00		01/12/00	01/12/00	01/12/00
Volitile Organics (ug/L)															
Benzene	1	<1.0	**43**	**8.4**	<1.0	<1.0	**74**	**87**	**54**	**3**	Dry	**100**	**100**	**170**	**247**
Chlorobenzene	100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	8
Chloroethane		<1.0	76	<1.0	<1.0	<1.0	6.7	<1.0	3.2	<1.0		7.6	5	5.2	2.5
1,1-Dichloroethane	3	<1.0	**15**	1.2	<1.0	<1.0	2.9	**17**	**9.7**	<1.0		<1.0	5.6	5.5	32
1,2-Dichloroethane	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	2.2	<1.0	<1.0
1,1-Dichloroethene	7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**14**	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0
Cis-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	4.6	4.6	3.8
Trans-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0
Ethylbenzene	700	<1.0	2.8	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0		<1.0	<1.0	5.6	6.5
Toluene	2,000	<1.0	<1.0	<1.0	<1.0	<1.0	3.5	25	11	10		15	27	37	29
1,1,1-Trichloroethane	200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	1.2	<1.0	<1.0
Trichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	7.4	<1.0
Vinyl Chloride	1	<1.0	**18**	<1.0	<1.0	<1.0	**37**	**15**	**9.4**	<1.0		**11.8**	**12**	**17**	**38**
Gases (ug/L)															
Ethane		<1	30	<1	27	26	<1	<1	<1	<1		540	<1	<1	<1
Ethene		<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	<1	<1	<1
Geochemical Parameters (mg/L)		L			L	L		L		L					
Alkalinity		NA	220	89	NA	NA	48	NA	59	NA		18	59	29	27
Ammonia		NA	<0.10	<0.10	NA	NA	<0.10	NA	<0.10	NA		0.13	4.9	1.5	<0.010
Carbon Dioxide		112	135	99	8.1	2.8	180	163	76	55		94	161	104	244
Chloride		NA	23	20	NA	NA	23	NA	25	NA		23	20	19	27
DO Winkler		NA	0.8	90.5 R	NA	NA	0.9	NA	0.6	NA		<0.1	0.65	<0.1	<0.1
DOC		NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA
Ferric Iron		NA	<1.0	<1.0	NA	NA	<1.0	NA	<1.0	NA		<1.0	2.1	<1.0	<1.0
Ferrous Iron		NA	7.6	5.5	NA	NA	8.1	NA	8.2	NA		5.2	4.3	6.1	10
Manganese		NA	<0.80	<0.80	NA	NA	<0.80	NA	<0.80	NA		<0.80	<0.80	<0.80	<0.80
Methane		0.027	1.038	0.134	0.02	0.034	1.10	0.179	0.56	0.045		0.85	0.43	0.26	0.41
Nitrate		NA	<1.0	<1.0	NA	NA	0.27	NA	<1.0	NA		<1.0	0.54	0.57	0.58
Nitrite		NA	<0.010	<0.010	NA	NA	<0.010	NA	<0.010	NA		<0.010	0.021	0.021	0.033
Sulfate		NA	<1.0	<1.0	NA	NA	<1.0	NA	<1.0	NA		<1.0	1.7	<1.0	<1.0
Sulfide		NA	<0.02	<0.02	NA	NA	<0.02	NA	<0.02	NA		0.04	<0.02	<0.02	<0.02
Field Measured Parameters		L			L	L		L	L	L		L			
													non-stable		
pH (Units)		NA	6.25	6.31	NA	NA	5.92	NA	NA	NA		NA	6.16	5.62	5.87
Temperature (°C)		NA	21.6	21.5	NA	NA	24.5	NA	NA	NA		NA	24.8	24.4	24.5
Conductivity (uhmos)		NA	441	313	NA	NA	331	NA	NA	NA		NA	433	292	612
ORP (mV)		NA	120	80	NA	NA	-0.43	NA	NA	NA		NA	-48	-3	-32
DO Membrane (mg/L)		NA	1.25	1.8	NA	NA	0	NA	NA	NA		NA	1.08	0.51	1.66

Notes:
NA - Not Analyzed
Concentrations in BOLD exceed the ROD clean-up goals
L - Very little water produced - Generally only enough for VOC analysis
R - Data was rejected (See text for explanation)

BONE VALLEY ANALYTICAL RESULTS SUMMARY
ROUND 2.0 NAE
SYDNEY MINE WASTE DISPOSAL SITE

Sample Location		TN 5-3	TN 5-3	TN 5-3	TN 5-3.5	TN 5-3.5	TN 5-3.5	TN 5-3.5	TN 5-3.5	TN 5-4.5	TN 5-4.5	TN 5-4.5	TN 5-4.5	TN 5-4.5	TN6-0.5
Interval Sampled (ft BGS)	***ROD Clean-Up***	60-61	64.5-65.5	74-75	41-42	45-46	52-53	59-60	65-66	36-37	40-41	47.5-48.5	52-53	57.5-58.2	35.5-36.5
Date Sampled	***Goals***	01/12/00	01/12/00	01/12/00	01/13/00	01/13/00	01/13/00	01/13/00	01/13/00	01/26/00	01/26/00	01/26/00	01/26/00	01/27/00	02/08/00
Volitile Organics (ug/L)															
Benzene	1	<1.0	<1.0	**22**	<1.0	Dry	**81**	<1.0	**24**	<1.0	<1.0	**8.2**	<1.0	**12**	<1.0
Chlorobenzene	100	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane		5.1	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	3	<1.0	<1.0	9.7	<1.0		**6.8**	<1.0	**56**	<1.0	<1.0	<1.0	<1.0	**7.8**	<1.0
1,2-Dichloroethane	3	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	7	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	**14**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cis-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	700	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	2,000	<1.0	<1.0	26	<1.0		18	<1.0	15	1.5	<1.0	<1.0	1.6	<1.0	<1.0
1,1,1-Trichloroethane	200	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene		1.3	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	1	**3.4**	<15	**5.3**	<1.0		**10**	<1.0	<15	<1.0	<1.0	<1.0	<1.0	**4.6**	<1.0
Gases (ug/L)															
Ethane		<1	<1	<1	<1		<1	32	<1	<1.0	27	29	27	26	<1
Ethene		<1	<1	<1	<1		<1	<1	<1	<1	<1	<1	<1	<1	<1
Geochemical Parameters (mg/L)										L			L		
Alkalinity		265	271	268	85		31	181	342	NA	69	129	NA	275	181
Ammonia		1	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	NA	<0.1	<0.1	NA	0.884	<0.10
Carbon Dioxide		130	114	31	125		225	64	82	66	145	136	71	75	104
Chloride		22	22	16	15		22	18	15	NA	2.1	4.6	NA	26	23
DO Winkler		<0.1	NA	0.2	0.2		0.1	<0.1	<0.1	NA	0.7	<0.1	NA	90.5 R	<0.1
DOC		NA	NA	NA	NA		NA	NA	NA	NA	NA	4.2 R	NA	NA	NA
Ferric Iron		<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	NA	<1.0	<1.0	NA	<1.0	<1.0
Ferrous Iron		7.2	7.8	11	10		8.5	8.6	7.8	NA	3.5	8.5	NA	12	4.4
Manganese		<0.80	<0.80	<0.80	<0.80		<0.80	5.9	<0.80	NA	<0.80	<0.80	NA	2.14	<0.8
Methane		0.51	0.36	0.33	0.63		0.27	0.14	0.76	0.173	0.962	0.79	0.094	0.187	0.09
Nitrate		0.38	0.68	0.6	0.9		0.44	<1.0	<1.0	NA	<1.0	<1.0	NA	<1.0	<1.0
Nitrite		0.02	0.019	<0.010	<0.010		<0.010	0.015	<0.010	NA	<0.010	<0.010	NA	<0.010	<0.010
Sulfate		<1.0	<1.0	9.9	<1.0		<1.0	<1.0	<1.0	NA	<1.0	<1.0	NA	<1.0	<1.0
Sulfide		<0.02	<0.02	<0.02	<0.02		<0.02	<0.02	<0.02	NA	<0.02	<0.02	NA	<0.02	<0.02
Field Measured Parameters				L	non-stable			L	L	L	L		L	L	L
pH (Units)		6.76	6.66	NA	6.36		6	NA	NA	NA	NA	6.54	NA	NA	NA
Temperature (°C)		25	24.6	NA	23		24.1	NA	NA	NA	NA	23.2	NA	NA	NA
Conductivity (uhmos)		704	390	NA	338		390	NA	NA	NA	NA	380	NA	NA	NA
ORP (mV)		-121	-86	NA	-243		-224	NA	NA	NA	NA	28	NA	NA	NA
DO Membrane (mg/L)		0.05	0.25	NA	0.86		1.62	NA	NA	NA	NA	0.22	NA	NA	NA

Notes:
NA - Not Analyzed
Concentrations in BOLD exceed the ROD clean-up goals
L - Very little water produced - Generally only enough for VOC analysis
R - Data was rejected (See text for explanation)

BONE VALLEY ANALYTICAL RESULTS SUMMARY
ROUND 2.0 NAE
SYDNEY MINE WASTE DISPOSAL SITE

Sample Location		TN6-0.5	TN6-0.5	TN6-0.5	TN6-0.5	TN 6-1	TN 6-1	TN 6-1	TN 6-1	TN 6-1	TN 6-1	TN 6-2	TN 6-2	TN 6-2	TN 6-2
Interval Sampled (ft BGS)	***ROD Clean-Up***	40-41	46.5-47.5	55-56	60-61	33.5-34.5	37-38	45-46	51.5-52.5	57.5-58.5	63-64	32-33	38.5-39.5	46.5-47.5	54-55
Date Sampled	***Goals***	02/08/00	02/08/00	02/09/00	02/09/00	02/01/00	02/01/00	02/01/00	02/01/00	02/01/00	02/01/00	01/28/00	01/28/00	01/28/00	01/28/00
Volitile Organics (ug/L)															
Benzene	1	<1.0	<1.0	<1.0	<1.0	**50**	**62**	**22**	<1.0	7.0	**13.0**	**60**	**57**	**68**	**6.9**
Chlorobenzene	100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane		<1.0	<1.0	<1.0	<1.0	14	20	2.3	<1.0	1.2	3.2	9.8	6.9	2.5	<1.0
1,1-Dichloroethane	3	<1.0	<1.0	<1.0	<1.0	**6.3**	**11**	**6.4**	<1.0	<1.0	<1.0	**6.8**	**6.2**	**13**	**5.8**
1,2-Dichloroethane	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.3	<1.0
Cis-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	700	<1.0	<1.0	<1.0	<1.0	1.8	2.5	2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	2,000	<1.0	<1.0	<1.0	<1.0	4.9	5.5	5.5	<1.0	<1.0	<1.0	4.7	5.2	5.6	6.7
1,1,1-Trichloroethane	200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	1	<1.0	<1.0	<1.0	<1.0	**3.9**	**5.4**	**11**	<1.0	**3.8**	**3.8**	**4.7**	**4.8**	**11**	<1.0
Gases (ug/L)															
Ethane		<1	<1	<1	<1	27	25	<1	<1	<1	27	<1	45	40	<1
Ethene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Geochemical Parameters (mg/L)									L	L					L
Alkalinity		83	79	107	304	24	413	220	NA	NA	553	66	140	101	NA
Ammonia		<0. 10	<0. 10	0.884	<0. 10	<0. 10	<0. 10	<0. 10	NA	NA	<0.10	<0.1	<0.1	<0.1	NA
Carbon Dioxide		126	126	201	107	115	121	123	45	73	48	138	141	167	73
Chloride		13	18	23	22	24	23	24	NA	NA	35	21	16	19	NA
DO Winkler		<0.1	<0.1	<0.1	<0.1	0.2	0.3	<0.1	NA	NA	<0.1	10.4 R	<0.1	<0.1	NA
DOC		NA	NA	NA	NA	NA	NA	NA	NA	NA	10 R	NA	NA	NA	NA
Ferric Iron		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	NA	<1.0	<1.0	<1.0	<1.0	NA
Ferrous Iron		6.9	7.5	5.8	4	5.8	5.1	8.4	NA	NA	11	7.1	8.9	9.9	NA
Manganese		<0.8	<0.8	<0.8	<0.8	<0.80	<0.80	<0.80	NA	NA	<0.80	<0.80	<0.80	<0.80	NA
Methane		0.139	0.015	0.101	0.045	0.636	0.701	0.182	0.017	0.148	0.142	1.1	1.14	1.059	0.092
Nitrate		2	4.5	<1.0	<1.0	<1.0	<1.0	<1.0	NA	NA	<1.0	2.4	3.8	3.3	NA
Nitrite		0.012	<0.010	0.013	<0.010	<0.010	<0.010	<0.010	NA	NA	<0.010	<0.010	<0.010	<0.010	NA
Sulfate		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	NA	<1.0	<1.0	<1.0	<1.0	NA
Sulfide		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	NA	NA	0.15	<0.02	<0.02	<0.02	NA
Field Measured Parameters			L						L	L					L
pH (Units)		NA	NA	5.96	6.76	5.93	6.51	6.24	NA	NA	6.97	6.22	6.68	6.17	NA
Temperature (°C)		22.8	NA	19.7	21.8	18.9	19.9	19.5	NA	NA	22.4	21.4	19.7	21.7	NA
Conductivity (uhmos)		324	NA	381	552	387	454	491	NA	NA	94	362	431	504	NA
ORP (mV)		77	NA	-24	-20	180	156	130	NA	NA	8	170	144	23	NA
DO Membrane (mg/L)		1.29	NA	1.88	0.33	2.39	2.04	3.35	NA	NA	0.31	3.24	6.20	3.12	NA

Notes:
NA - Not Analyzed
Concentrations in BOLD exceed the ROD clean-up goals
L - Very little water produced - Generally only enough for VOC analysis
R - Data was rejected (See text for explanation)

BONE VALLEY ANALYTICAL RESULTS SUMMARY
ROUND 2.0 NAE
SYDNEY MINE WASTE DISPOSAL SITE

Sample Location		TN 6-2	TN 6-2.5	TN 6-2.5	TN 6-2.5	TN 6-2.5	TN 6-2.5	TN 6-3	TN 6-3	TN 6-3WP	TN 6-3	TN 6-3WP	TN 6-3	TN 6-3	TN 6-3
Interval Sampled (ft BGS)	***ROD Clean-Up***	61.5-62.5	30.5-31.5	35.5-36.5	43.5-44.5	48.5-49.5	53-54	28-29	33-34	35.5-36.5	43.5-44.5	45.5-46.5	52-53	56.5-57.5	60.5-61.5
Date Sampled	***Goals***	01/28/00	01/18/00	01/18/00	01/18/00	01/19/00	01/19/00	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00	01/18/00	01/18/00
Volitile Organics (ug/L)															
Benzene	1	**51**	Dry	**83**	**94**	**6.4**	<1.0	<1.0	**89**	**NA**	**103**	**NA**	**27**	**11**	<1.0
Chlorobenzene	100	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**NA**	<1.0	**NA**	<1.0	<1.0	<1.0
Chloroethane		51		<1.0	4.9	<1.0	<1.0	<1.0	<1.0	**NA**	<1.0	**NA**	<1.0	<1.0	<1.0
1,1-Dichloroethane	3	**15**		**6.2**	**8.8**	<1.0	<1.0	<1.0	<1.0	**NA**	<1.0	**NA**	<1.0	<1.0	<1.0
1,2-Dichloroethane	3	<1.0		<1.0	**6.1**	<1.0	<1.0	<1.0	<1.0	**NA**	2.1	**NA**	<1.0	<1.0	<1.0
1,1-Dichloroethene	7	3.2		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**NA**	<1.0	**NA**	<1.0	<1.0	<1.0
Cis-1,2-Dichloroethene		<1.0		<1.0	5.1	<1.0	<1.0	<1.0	<1.0	**NA**	<1.0	**NA**	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene		<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**NA**	<1.0	**NA**	<1.0	<1.0	<1.0
Ethylbenzene	700	24		2.1	<1.0	<1.0	<1.0	<1.0	<1.0	**NA**	<1.0	**NA**	<1.0	<1.0	<1.0
Toluene	2,000	<1.0		6.4	<1.0	6.6	5.9	<1.0	<1.0	**NA**	<1.0	**NA**	<1.0	**4.4**	<1.0
1,1,1-Trichloroethane	200	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**NA**	<1.0	**NA**	<1.0	<1.0	<1.0
Trichloroethene		<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**NA**	<1.0	**NA**	<1.0	<1.0	<1.0
Vinyl Chloride	1	**7.4**		**9.6**	**21**	<1.0	<1.0	<1.0	**5.8**	**NA**	**7.6**	**NA**	**3.3**	**1.3**	<1.0
Gases (ug/L)															
Ethane		24		<1	<1	<1	<1	<1	<1	**NA**	<1	**NA**	<1		<1
Ethene		<1		<1	<1	<1	<1	<1	<1	**NA**	<1	**NA**	<1		<1
Geochemical Parameters (mg/L)											L		L		L
Alkalinity		413		33	47	196	NA	38	37	79	NA	41	NA	468	294
Ammonia		<0.1		<0.010	<0.010	<0.010	NA	<0.010	<0.010	<0.010	NA	<0.010	NA	1.1	<0.010
Carbon Dioxide		70		200	117	67	14	201	198	228	110	219	50	70	17
Chloride		24		24	27	24	NA	17	13	16	NA	22	NA	21	21
DO Winkler		<0.1		0.2	0.4	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.2	NA	1.1	<0.1
DOC		NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ferric Iron		1.7		<1.0	<1.0	2.9	NA	<1.0	<1.0	<1.0	NA	<1.0	NA	1.3	<1.0
Ferrous Iron		4.6		8.5	11	2.4	NA	8.7	7.3	8.4	NA	<1.0	NA	**4.4**	<1.0
Manganese		<0.80		<0.80	<0.80	<0.80	NA	<0.80	<0.80	<0.80	NA	<0.80	NA	<0.80	<0.80
Methane		0.530		0.78	1.011	0.058	0.048	1.1	1.1	1.1	0.31	1	0.079	0.25	0.082
Nitrate		<1.0		<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0
Nitrite		<0.010		<0.010	<0.010	<0.010	NA	<0.010	<0.010	<0.010	NA	<0.010	NA	<0.010	<0.010
Sulfate		<1.0		<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0
Sulfide		<0.02		<0.020	<0.020	<0.020	NA	<0.02	<0.02	<0.02	NA	<0.02	NA	<0.02	<0.02
Field Measured Parameters						L	L				L		L		L
pH (Units)		6.95		5.84	6.13	NA	NA	5.89	5.71	NA	NA	NA	NA	7.02	NA
Temperature (°C)		21.2		24.1	23.8	NA	NA	23.9	23.8	NA	NA	NA	NA	23	NA
Conductivity (uhmos)		96		336	417	NA	NA	256	296	NA	NA	NA	NA	683	NA
ORP (mV)		70		187	152	NA	NA	128	146	NA	NA	NA	NA	110	NA
DO Membrane (mg/L)		2.11		3.86	6.17	NA	NA	2.87	2.22	NA	NA	NA	NA	0.63	NA

Notes:
NA - Not Analyzed
Concentrations in BOLD exceed the ROD clean-up goals.
L - Very little water produced - Generally only enough for VOC analysis
R - Data was rejected (See text for explanation)

BONE VALLEY ANALYTICAL RESULTS SUMMARY
ROUND 2.0 NAE
SYDNEY MINE WASTE DISPOSAL SITE

Sample Location		TN 6-3.5	TN 6-3.5	TN 6-3.5	TN 6-3.5	TN 6-3.5	TN 6-3.5	TN 6-4	TN 6-4	TN 6-4	TN 6-4	TN 6-4	TN 7-1.5	TN 7-1.5	TN 7-1.5
Interval Sampled (ft BGS)	***ROD Clean-Up***	24.5-25.5	28-29	32-33	35-36	41-42	48.5-49.5	25-26	29.5-30.5	34.5-35.5	40-41	44-45	33.5-34.5	40-41	45-46
Date Sampled	***Goals***	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/26/80	01/26/80	01/27/00	01/27/00	01/27/00	02/10/00	02/10/00	02/10/00
Volitile Organics (ug/L)															
Benzene	1	Dry	**7.5**	**14**	**3.1**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	100		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane			<1.0	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	3		<1.0	**3.4**	<1.0	<1.0	<1.0	<1.0	<1.0	1.7	**3.2**	**5.5**	<1.0	<1.0	<1.0
1,2-Dichloroethane	3		<1.0	2.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.1	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	7		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cis-1,2-Dichloroethene			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	700		1.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	2,000		4.2	8	1.7	11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	200		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene			<1.0	4.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	1		<1.0	**1.7**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**3.3**	<1.0	<1.0	<1.0
Gases (ug/L)															
Ethane			<1	<1	<1	<1	<1	27	27	26	<1	27	<1	<1	<1
Ethene			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Geochemical Parameters (mg/L)											L		L	L	L
Alkalinity			42	36	154	334	330	29	47	92	NA	161	NA	NA	NA
Ammonia			<0.010	<0.010	<0.010	<0.010	<0.010	<0.1	<0.1	<0.1	NA	<0.1	NA	NA	NA
Carbon Dioxide			212	170	115	46	92	177	173	142	98	121	17	58	100
Chloride			13	17	14	22	23	14	12	13	NA	15	NA	NA	NA
DO Winkler			<0.1	<0.1	<0.1	<0.1	<0.1	0.3	0.8	<1.0	<1.0	<0.1	NA	NA	6.6
DOC			NA	NA	NA	NA	NA	3.8 R	NA	3.7 R	NA	NA	NA	NA	NA
Ferric Iron			<1.0	<1.0	<1.0	6.9	<1.0	<1.0	5.5	<1.0	NA	<1.0	NA	NA	NA
Ferrous Iron			4.8	<1.0		<1.0	12	4.0	<1.0	6.9	NA	5.5	NA	NA	NA
Manganese			<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	NA	<0.80	NA	NA	NA
Methane			0.88	0.9	0.25	0.053	0.55	1.035	1.050	0.816	0.074	0.355	0.016	0.013	0.013
Nitrate			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	NA	NA
Nitrite			<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	NA	<0.010	NA	NA	NA
Sulfate			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	NA	NA
Sulfide			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	NA	<0.02	NA	NA	NA
Field Measured Parameters										L	L	L	L	L	L
pH (Units)			6.97	6.01	6.53	7.25	6.95	6.24	6.07	NA	NA	NA	NA	NA	NA
Temperature (°C)			23.6	24.7	24.6	25	24.7	18.9	15.7	NA	NA	NA	NA	NA	NA
Conductivity (uhmos)			171	331	313	475	604	216	221	NA	NA	NA	NA	NA	NA
ORP (mV)			161	198	147	140	180	120	90	NA	NA	NA	NA	NA	NA
DO Membrane (mg/L)			6.16	3.4	4.67	7.54	4.02	3.85	3.32	NA	NA	NA	NA	NA	NA

Notes:
NA - Not Analyzed
Concentrations in BOLD exceed the ROD clean-up goals
L - Very little water produced - Generally only enough for VOC analysis.
R - Data was rejected (See text for explanation)

BONE VALLEY ANALYTICAL RESULTS SUMMARY
ROUND 2.0 NAE
SYDNEY MINE WASTE DISPOSAL SITE

Sample Location		TN 7-1.5	TN 7-1.5	TN 7-2	TN 7-2	TN 7-2	TN 7-2	TN 7-3	TN 7-3	TN 7-3	TN 7-3	TN 7-4	TN 7-4	TN 7-4	TN 7-4
Interval Sampled (ft BGS)	***ROD Clean-Up***	51-52	57-58	37-38	43-44	48.5-49.5	61.5-62.5	34-35	44.5-45.5	50-51	54.5-55.5	29-30	43-44	49.5-50.5	56-57
Date Sampled	***Goals***	02/10/00	02/10/00	02/07/00	02/08/00	02/07/00	02/07/00	02/08/00	02/07/00	02/08/00	02/08/00	02/10/00	02/10/00	02/10/00	02/10/00
Volitile Organics (ug/L)															
Benzene	1	<1.0	Abandoned	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	100	<1.0	hit refusal	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane		<1.0	at 53'	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	3	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	3	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	7	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cis-1,2-Dichloroethene		<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene		<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	700	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	2,000	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	200	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene		<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	1	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Gases (ug/L)															
Ethane		<1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethene		<1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Geochemical Parameters (mg/L)					L	L		L		L	L		L		
Alkalinity		467		212	NA	NA	303	NA	69	NA	NA	91	NA	155	218
Ammonia		<0.10		<0.10	NA	NA	<0.10	NA	<0.10	NA	NA	<0.10	NA	<0.10	<0.10
Carbon Dioxide		60		65	60	44	91	14	153	23	28	191	47	103	83
Chloride		11		13	NA	NA	15	NA	11	NA	NA	15	NA	15	8.1
DO Winkler		<0.1		<0.1	NA	NA	<0.1	NA	<0.1	NA	NA	21.7 R	NA	<0.1	<0.1
DOC		4.9 R		NA	NA	NA	NA	NA	2.7 R	NA	NA	NA	NA	3.0 R	NA
Ferric Iron		2.6		<1.0	NA	NA	2	NA	<1.0	NA	NA	<1.0	NA	<1.0	1.0
Ferrous Iron		1.1		8.8	NA	NA	1.3	NA	7.9	NA	NA	8.9	NA	<1.0	5.9
Manganese		<0.8		<0.8	NA	NA	<0.8	NA	<0.8	NA	NA	<0.80	NA	<0.80	<0.80
Methane		0.016		0.013	0.039	0.022	0.136	0.017	0.701	0.016	0.04	0.387	0.028	0.394	0.482
Nitrate		<1.0		<1.0	NA	NA	<1.0	NA	<1.0	NA	NA	<1.0	NA	<1.0	<1.0
Nitrite		<0.010		<0.010	NA	NA	<0.010	NA	<0.010	NA	NA	<0.010	NA	<0.010	<0.010
Sulfate		<1.0		44 R	NA	NA	<1.0	NA	<1.0	NA	NA	<1.0	NA	<1.0	<1.0
Sulfide		<0.02		<0.02	NA	NA	<0.02	NA	<0.02	NA	NA	<0.02	NA	<0.02	<0.02
Field Measured Parameters				L	L	L	L	L		L	L	L	L	L	
pH (Units)		7.15		NA	NA	NA	NA	NA	6.43	NA	NA	6.14	NA	NA	6.76
Temperature (°C)		21.4		NA	NA	NA	NA	NA	20.4	NA	NA	15.2	NA	NA	19.7
Conductivity (uhmos)		636		NA	NA	NA	NA	NA	174	NA	NA	326	NA	NA	459
ORP (mV)		153		NA	NA	NA	NA	NA	240	NA	NA	183	NA	NA	203
DO Membrane (mg/L)		0.6		NA	NA	NA	NA	NA	NA	NA	NA	5.12	NA	NA	0.7

Notes:
NA - Not Analyzed
Concentrations in BOLD exceed the ROD clean-up goals
L - Very little water produced - Generally only enough for VOC analysis.
R - Data was rejected (See text for explanation)

BONE VALLEY ANALYTICAL RESULTS SUMMARY
ROUND 2.0 NAE
SYDNEY MINE WASTE DISPOSAL SITE

Sample Location		TN 7-4	TN 7-4	TN 8-(-1)	TN 8-(-1)	TN 8-(-1)	TN 8-(-1)	TN 8-(-1)	TN 8-0.0	TN 8-0.0	TN 8-0.0	TN 8-0.0	TN 8-0.0	TN 8-0.0	TN 8-0.5
Interval Sampled (ft BGS)	***ROD Clean-Up***	63.5-64.5	69.5-70.5	36.5-37.5	43.5-44.5	49-50	58.5-59.5	66-67	39-40	43-44	49-50	53.5-54.5	60-61	67-68	40.5-41.5
Date Sampled	***Goals***	02/10/00	02/10/00	02/10/00	02/10/00	02/10/00	02/11/00	02/11/00	01/28/00	01/27/00	01/27/00	01/27/00	01/28/00	01/27/00	01/25/80
Volitile Organics (ug/L)															
Benzene	1	<1.0	Abandoned	<1.0	<1.0	<1.0	**3.5**	<1.0	**58**	**16**	**14**	**17**	<1.0	**22**	**12**
Chlorobenzene	100	<1.0	hit refusal	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane		<1.0	at 61'	<1.0	<1.0	<1.0	<1.0	<1.0	9.2	<1.0	<1.0	<1.0	<1.0	2.5	<1.0
1,1-Dichloroethane	3	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	**6.4**	3	**6.4**	**8.4**	2.8	2.6	**4.0**
1,2-Dichloroethane	3	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	7	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cis-1,2-Dichloroethene		<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene		<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	700	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	8.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	2,000	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.2	3.6
1,1,1-Trichloroethane	200	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene		<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	1	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	**3.2**	**1.8**	<1.0	**3.4**	<1.0	**6.8**	**2.6**
Gases (ug/L)															
Ethane		<1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethene		<1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Geochemical Parameters (mg/L)											L			L	L
Alkalinity		419		127	82	81	**445**	460	200	103	NA	151	265	NA	NA
Ammonia		<0.10		<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	NA	<0.1	<0.1	NA	NA
Carbon Dioxide		25		97	91	131	59	57	168	201	107	146	20	95	207
Chloride		13		14	17	18	25	23	28	21	NA	26	25	NA	NA
DO Winkler		<0.1		0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	NA
DOC		3.4 R		NA	6.1 R	NA	5.4 R	NA	NA	NA	NA	NA	5.5 R	NA	NA
Ferric Iron		<1.0		1.5	<1.0	1.9	1.3	1.9	<1.0	<1.0	NA	<1.0	<1.0	NA	NA
Ferrous Iron		2.6		4.1	5.8	4.8	5.3	3.8	15	12	NA	8.8	9.4	NA	NA
Manganese		<0.80		<0.8	<0.8	<0.8	<0.8	<0.8	<0.80	<0.80	NA	<0.80	<0.80	NA	NA
Methane		0.21		0.081	0.042	0.046	0.393	0.31	0.266	0.455	0.028	0.793	0.047	0.349	0.015
Nitrate		<1.0		3.3	1.4	1.8	<1.0	<1.0	<1.0	<1.0	NA	<1.0	<1.0	NA	NA
Nitrite		<0.010		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	NA	<0.010	<0.010	NA	NA
Sulfate		<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	<1.0	NA	NA
Sulfide		<0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	NA	<0.02	<0.02	NA	NA
Field Measured Parameters					L						L		L	L	L
pH (Units)		7.38		6.61	NA	5.79	6.78	6.62	5.85	6.08	NA	5.82	NA	NA	NA
Temperature (°C)		19.2		21.5	NA	21.8	19.9	19.1	19.5	18.5	NA	18.9	NA	NA	NA
Conductivity (uhmos)		602		319	NA	304	707	503	408	427	NA	730	NA	NA	NA
ORP (mV)		49		137	NA	-19	-88	-25	121	64	NA	134	NA	NA	NA
DO Membrane (mg/L)		0.25		2.35	NA	2.4	0.63	1.32	1.47	2.83	NA	2.27	NA	NA	NA

Notes:
NA - Not Analyzed
Concentrations in BOLD exceed the ROD clean-up goals
L - Very little water produced - Generally only enough for VOC analysis
R - Data was rejected (See text for explanation)

BONE VALLEY ANALYTICAL RESULTS SUMMARY
ROUND 2.0 NAE
SYDNEY MINE WASTE DISPOSAL SITE

Sample Location		TN 8-0.5	TN 8-0.5	TN 8-0.5	TN 8-1	TN 8-1	TN 8-1	TN 8-1	TN 8-1	TN 8-1	TN 8-1.5	TN 8-1.5	TN 8-1 5	TN 8-1.5	TN 8-1.5
Interval Sampled (ft BGS)	***ROD Clean-Up***	49-50	52.5-53.5	62.5-63.5	34.5-35.5	38-39	415-12.5	48-49	54-55	63.5-64.5	36.5-37.5	42.5-43.5	46.5-47.5	53-54	66-67
Date Sampled	***Goals***	01/25/80	01/25/80	01/25/80	01/20/00	01/19/00	01/19/00	01/19/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
Volitile Organics (ug/L)															
Benzene	1	**54**	**31**	**24**	**27**	**102**	**111**	**107**	**41**	**23**	**19**	**83**	**17**	**35**	<1.0
Chlorobenzene	100	<1.0	<1.0	<1.0	<1,0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane		<1.0	<1.0	<1.0	<1.0	1.9	5.3	2.1	<1.0	<1.0	<1.0	2.3	1.1	<1.0	<1.0
1,1-Dichloroethane	3	**8.6**	**7.2**	**10**	<1.0	**7.4**	**12**	**6.8**	**4.6**	**9.7**	**5.1**	**8.5**	**11**	**11**	<1.0
1,2-Dichloroethane	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cis-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	700	<1.0	<1.0	<1.0	<1.0	1.3	2.1	1.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	2,000	3.7	2.6	<1.0	7.5	4.5	4.3	5.3	6.9	8	3.5	4.2	3.5	1.8	8.4
1,1,1-Trichloroethane	200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0
Trichloroethene		<1.0	<1.0	<10	<1.0	<1.0	<1.0	<1.0	**4.3**	**4.2**	**4.5**	<1.0	8.4	5.2	<1.0
Vinyl Chloride	1	**4.8**	**5.6**	**4.3**	<1.0	**6.9**	**8.5**	**5.2**	**3.3**	**6**	**1.2**	**10**	**6.3**	**8.9**	<1.0
Gases (ug/L)															
Ethane		<1	<1	<1	<1	136	<1	146	<1	<1	<1	<1	<1	<1	<1
Ethene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<I	<1	<1
Geochemical Parameters (mg/L)											L		L		L
Alkalinity		269	265	531	154	54	64	48	86	435	NA	66	NA	38	NA
Ammonia		<0.1	0.42	0.34	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	NA	<0.10	NA	<0.10	NA
Carbon Dioxide		195	200	34	103	218	239	232	192	147	59	209	130	200	47
Chloride		26	27	26	24	26	24	29	24	24	NA	22	NA	21	NA
DO Winkler		<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	NA	<0.1	NA
DOC		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ferric Iron		<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	1.4	1.5	NA	<1.0	NA	<1.0	NA
Ferrous Iron		12	6.7	7.5	7.2	7.5	5.4	5.9	6.7	4.9	NA	6.2	NA	6.3	NA
Manganese		<0.8	<0.8	<0.8	0.80	<0.80	<0.80	<0.80	<0.80	<0.80	NA	<0.80	NA	<0.80	NA
Methane		0.73	0.125	0.474	1.09	1.079	1.113	1.023	0.944	1.011	0.888	1.056	0.73	0.944	0.019
Nitrate		<1.0	5.1	2.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	NA
Nitrite		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0010	NA	<0.010	NA	<0.010	NA
Sulfate		<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	NA
Sulfide		<0.020	<0.020	<0.020	<0.020	<0.02	<0.02	<0.02	<0.02	<0.02	NA	<0.02	NA	<0.02	NA
Field Measured Parameters		L	L		L				L		L		L		L
pH (Units)		NA	NA	6.6	NA	5.53	5.93	6.02	NA	6.42	NA	6.37	NA	5.76	NA
Temperature (°C)		NA	NA	20.6	NA	23	22.7	22.6	NA	24.4	NA	24.4	NA	24.7	NA
Conductivity (uhmos)		NA	NA	101	NA	337	480	460	NA	729	NA	375	NA	386	NA
ORP (mV)		NA	NA	-23	NA	11	14	24	NA	4	NA	18	NA	40	NA
DO Membrane (mg/L)		NA	NA	1.52	NA	3.31	2.5	2.6	NA	2.53	NA	3.16	NA	2.58	NA

Notes:

NA - Not Analyzed

Concentrations in BOLD exceed the ROD clean-up goals.

L - Very little water produced - Generally only enough for VOC analysis.

R - Data was rejected (See text for explanation)

BONE VALLEY ANALYTICAL RESULTS SUMMARY
ROUND 2.0 NAE
SYDNEY MINE WASTE DISPOSAL SITE

Sample Location		TN 8-15	TN 8-2	TN 8-2	TN 8-2	TN 8-2	TN 8-2	TN 8-2	TN 8-2.5	TN 8-2.5	TN 8-2.5	TN 8-2.5	TN 8-2.5	TN 8-3	TN 8-3
Interval Sampled (ft BGS)	***ROD Clean-Up***	71-72	31-32	37.5-38.5	42.5-43.5	475-18.5	53-54	57-58	36.5-37.5	40.5-41.5	45.5-46.5	54-55	60-61	26-27	32.5-33.5
Date Sampled	***Goals***	01/24/00	01/20/00	01/20/00	01/24/00	01/24/00	01/24/00	01/24/00	01/28/00	01/28/00	01/28/00	01/28/00	01/28/00	02/03/00	02/08/00
Volitile Organics (ug/L)															
Benzene	1	<1.0	**5.4**	**13**	**3**	**32**	Dry	<1.0	<1.0	**11**	<1.0	Dry	<1.0	Dry	<1.0
Chlorobenzene	100	<1.0	<1.0	<10	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0		<1.0		<1.0
Chloroethane		<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0		<1.0		<1.0
1,1-Dichloroethane	3	<1.0	<1.0	**7.1**	<1.0	<1.0		<1.0	<1.0	**3.6**	**3.5**		<1.0		<1.0
1,2-Dichloroethane	3	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0		<1.0		<1.0
1,1-Dichloroethene	7	<1.0	<1.0	<10	<1.0	2.6		<1.0	<1.0	<1.0	<1.0		<1.0		<1.0
Cis-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0		<1.0		<1.0
Trans-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0		<1.0		<1.0
Ethylbenzene	700	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0		<1.0		<1.0
Toluene	2,000	4.2	5.7	1.7	6.3	1.4		<1.0	<1.0	<1.0	<1.0		6.6		<1.0
1,1,1-Trichloroethane	200	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0		<1.0		<1.0
Trichloroethene		<1.0	4.1	9.6	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0		<1.0		<1.0
Vinyl Chloride	1	<1.0	<1.0	<1.0	<1.0	**5.9**		<1.0	<1.0	<1.0	<1.0		<1.0		<1.0
Gases (ug/L)															
Ethane		<1	<1	<1	<1	<1		<1	<1	26	<1		<1		<1
Ethene		<1	<1	<1	<1	<1		<1	<1	<1	<1		<1		<1
Geochemical Parameters (mg/L)			L						L				L		
Alkalinity		359	NA	91	124	46		575	NA	75	102		NA		38
Ammonia		0.34	NA	<0.10	<0.10	<0.10		<0.10	NA	<0.10	<0.10		NA		<0.10
Carbon Dioxide		21	144	204	136	189		67	152	112	107		23		153
Chloride		13	NA	19	19	21		23	NA	19	18		NA		17
DO Winkler		<0.1	NA	3.6	<0.1	<0.1		<0.1	18.2 R	0.1	1.8		NA		<0.1
DOC		NA	NA	NA	NA	NA		NA	NA	NA	NA		NA		
Ferric Iron		1.1	NA	<1.0	1.1	1.1		<1.0	NA	<1.0	2.0		NA		<1.0
Ferrous Iron		2.1	NA	8	2.1	2.1		4.5	NA	4.1	4.0		NA		6.0
Manganese		<0.80	NA	<0.70	<0.80	<0.80		<0.80	NA	<0.80	<0.80		NA		<0.8
Methane		0.223	0.483	0.071	0.051	1.015		0.790	0.311	0.865	0.136		0.029		0.701
Nitrate		<1.0	NA	<1.0	<1.0	<1.0		<1.0	NA	1.0	1.0		NA		<1.0
Nitrite		<0.010	NA	<0.010	<0.010	<0.010		<0.010	NA	<0.010	<0.010		NA		<0.010
Sulfate		<1.0	NA	<1.0	1.0	1.0		1.0	NA	<1.0	<1.0		NA		<1.0
Sulfide		<0.02	NA	8.0	6.1	6.1		6.1	NA	<0.02	<0.02		NA		<0.02
Field Measured Parameters			L		L			L	L		L		L		L
pH (Units)		6.56	NA	6.13	NA	5.76		NA	NA	6.07	NA		NA		NA
Temperature (°C)		21.7	NA	23.4	NA	20.9		NA	NA	18.4	NA		NA		NA
Conductivity (uhmos)		426	NA	375	NA	303		NA	NA	234	NA		NA		NA
ORP (mV)		-108	NA	4	NA	41		NA	NA	133	NA		NA		NA
DO Membrane (mg/L)		0.26	NA	4.56	NA	2.31		NA	NA	3.83	NA		NA		NA

Notes:

NA - Not Analyzed

Concentrations in BOLD exceed the ROD clean-up goals.

L - Very little water produced - Generally only enough for VOC analysis.

R - Data was rejected (See text for explanation)

BONE VALLEY ANALYTICAL RESULTS SUMMARY
ROUND 2.0 NAE
SYDNEY MINE WASTE DISPOSAL SITE

Sample Location		TN 8-3	TN 8-3	TN 8-3	TN 8-3	TN SWL	TN SWL	TN SWL	TN SWL	TN SWL	TN SWL
Interval Sampled (ft BGS)	***ROD Clean-Up***	39.5-40.5	44-45	53-54	62-63	30-31	36-37	42-43	48-49	54-55	60-61
Date Sampled	***Goals***	02/08/00	02/03/00	02/08/00	02/08/00	02/11/00	02/11/00	02/11/00	02/11/00	02/11/00	02/11/00
Volitile Organics (ug/L)									Abandoned	Abandoned	Abandoned
Benzene	1	**2.5**	**7.1**	Dry	**1.9**	<1.0	Dry	<1.0	hit refusal	hit refusal	hit refusal
Chlorobenzene	100	<1.0	<1.0		<1.0	<1.0		<1.0	at 43’	at 43’	at 43’
Chloroethane		<1.0	<1.0		<1.0	<1.0		<1.0			
1,1-Dichloroethane	3	3.0	**4.7**		1.4	<1.0		<1.0			
1,2-Dichloroethane	3	<1.0	<1.0		<1.0	<1.0		<1.0			
1,1-Dichloroethene	7	<1.0	<1.0		<1.0	<1.0		<1.0			
Cis-1,2-Dichloroethene		<1.0	<1.0		<1.0	<1.0		<1.0			
Trans-1,2-Dichloroethene		<1.0	<1.0		<1.0	<1.0		<1.0			
Ethylbenzene	700	<1.0	<1.0		<1.0	<1.0		<1.0			
Toluene	2,000	<1.0	<1.0		<1.0	<1.0		<1.0			
1,1,1-Trichloroethane	200	<1.0	<1.0		<1.0	<1.0		<1.0			
Trichloroethene		<1.0	<1.0		<1.0	<1.0		<1.0			
Vinyl Chloride	1	1.0	**2.8**		<1.0	<1.0		<1.0			
Gases (ug/L)											
Ethane		<1	<1		<1	<1		<1			
Ethene		<1	<1		<1	<1		<1			
Geochemical Parameters (mg/L)		L						L			
Alkalinity		NA	38		353	127		NA			
Ammonia		NA	<0.10		<0.10	<0.10		NA			
Carbon Dioxide		154	192		102	189		38			
Chloride		NA	13		13	14		NA			
DO Winkler		NA	<0.1		<0.1	0.4		NA			
DOC						2.7 R		NA			
Ferric Iron		NA	<1.0		1.1	1.5		NA			
Ferrous Iron		NA	6.9		4.4	4.1		NA			
Manganese		NA	<0.8		<0.8	<0.8		NA			
Methane		0.17	0.801		0.303	0.073		0.054			
Nitrate		NA	<1.0		<1.0	3.3		NA			
Nitrite		NA	<0.010		<0.010	<0.010		NA			
Sulfate		NA	<1.0		<1.0	<1.0		NA			
Sulfide		NA	<0.02		<0.02	<0.02		NA			
Field Measured Parameters		L	L		L			L			
pH (Units)		NA	NA		NA	6.26		NA			
Temperature (°C)		NA	NA		NA	21.9		NA			
Conductivity (uhmos)		NA	NA		NA	151		NA			
ORP (mV)		NA	NA		NA	157		NA			
DO Membrane (mg/L)		NA	NA		NA	1.43		NA			

Notes:

NA - Not Analyzed

Concentrations in BOLD exceed the ROD clean-up goals.

L - Very little water produced - Generally only enough for VOC analysis

R - Data was rejected (See text for explanation)

Table 4 - Existing and Proposed Monitoring Program

TABLE 6.1

EXISTING MONITORING PROGRAM
ROUND 2.0 NAE
SYDNEY MINE WASTE DISPOSAL SITE

REVISED August 1998*

SAMPLING LOCATION	Annual May '00	Quarterly	Semi-Annual November '00	Quarterly	Annual May '01	Quarterly	Semi-Annual November '01
SL-5							
SL-6							
BONE VALLEY							
BV-1	X		X		X		X
BV-3	X		X		X		X
BV-6	X				X		
BV-7	X				X		
BV-8	X				X		
BV-9	X				X		
BVR-4	X		X		X		X
BVR-5	X		X		X		X
BVR-6	X		X		X		X
SL-20							
NORTH DIKE							
BC-1	X		X		X		X
NDW-6	X		X		X		X
ND-3D	X				X		
SPOIL ROW							
SRW-1							
CH-5D							
SRW-2	X		X		X		X
SRW-3	X		X		X		X
SRW-4	X		X		X		X
SRW-5	X		X		X		X
SRW-6	X		X		X		X
NMW-1							
NMW-3							
NMW-4							
SAND TAILINGS							
ND-4S							
CH-5							
SW-PZ							
SE-PZ							
SL-21							
OIL POND							
OPRW-2	X				X		
OPRW-9	X				X		
OPRW-12	X				X		
CH-5							
ND-3S							
SL-23							
HAWTHORN							
HW-2	X		X		X		X
HW-4	X		X		X		X
P-4	X		X		X		X
Total Samples	23	0	15		23	0	15

Notes:
*Revised in accordance with 9/2/97 and 9/17/96 letters from USEPA, and August 1998 conversation with Galo Jackson.
Water levels are obtained at a total of 81 wells completed in four water bearing units and one wetland staff gauge on a semi-annual basis.
All samples analyzed following USEPA Method 8021 (modified to include additional constituents). Three quality control samples obtained for each sampling event.

TABLE 6.2

PROPOSED MONITORING PROGRAM
ROUND 2.0 NAE
SYDNEY MINE WASTE DISPOSAL SITE

SAMPLING LOCATION	Annual May '00	Semi-Annual November '00	Annual May '01	Semi-Annual November '01
BONE VALLEY				
BV-1	X	X	X	X
BV-3	X	X	X	X
BV-6	X		X	
BV-7	X		X	
BV-8	X		X	
BV-9	X		X	
BVR-4	X	X	X	X
BVR-5	X	X	X	X
BVR-6	X	X	X	X
BV-11-00		X	X	X
BV-12-00		X	X	X
BV-13-00		X	X	X
NORTH DIKE				
BC-1	X		X	
NDW-6	X		X	
ND-3D	X		X	
SPOIL ROW				
SRW-2	X	X	X	X
SRW-3	X			
SRW-4	X	X	X	X
SRW-5	X	X	X	X
SRW-6	X			
OIL POND (SAND TAILINGS)				
OPRW-2	X		X	
OPRW-9	X		X	
OPRW-12	X		X	
HAWTHORN				
HW-2	X	X	X	X
HW-4	X	X	X	X
P-4	X	X	X	X
Total Samples	23	14	24	14

Notes:

*Revised in accordance with 9/2/97 and 9/17/96 letters from USEPA, and August 1998 conversation with Galo Jackson.
Water levels are obtained at a total of 81 wells completed in four water bearing units and one wetland staff gauge on a semi-annual basis.
All samples analyzed following USEPA Method 8021 (modified to include additional constituents). Three quality control samples obtained for each sampling event.

Photographs

Photograph #1 **March 16, 2000**
Location: Sydney Mine Sludge Ponds, Valrico, Hillsborough County, Florida.
Description: Project Sign.

Photograph #2 **March 16, 2000**
Location: Sydney Mine Sludge Ponds, Valrico, Hillsborough County, Florida.
Description: Site Entrance.

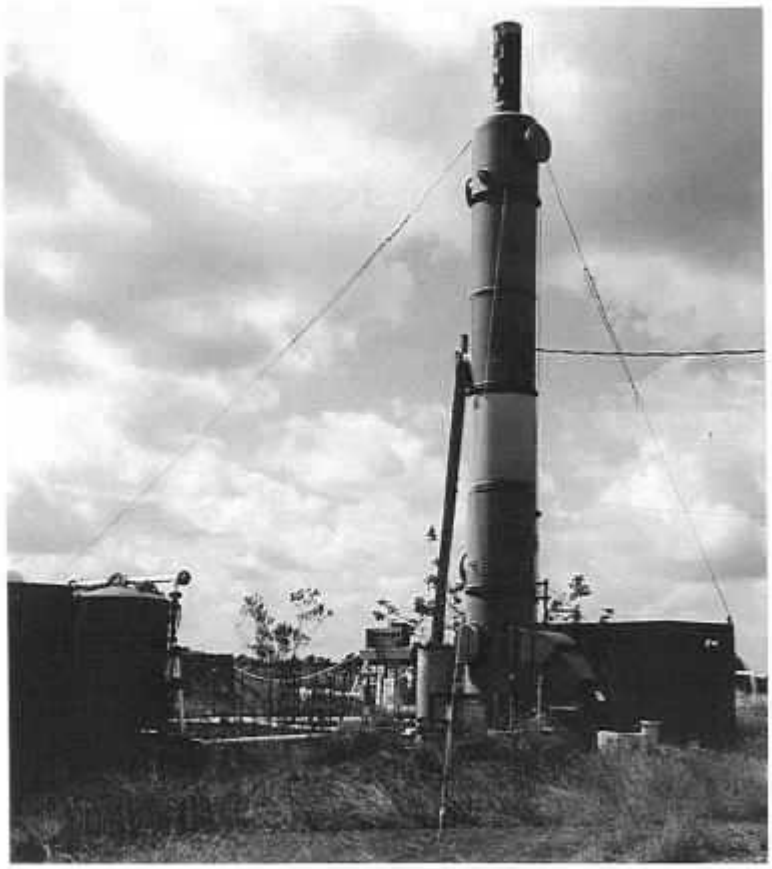
Photograph #3 **March 16, 2000**
Location: Sydney Mine Sludge Ponds, Valrico, Hillsborough County, Florida.
Description: Control Pad near Former Sludge Pond .

Photograph #4 **March 16, 2000**
Location: Sydney Mine Sludge Ponds, Valrico, Hillsborough County, Florida.
Description: Extraction Well near former Sludge Pond.

Photograph #5 **March 16, 2000**
Location: Sydney Mine Sludge Ponds, Valrico, Hillsborough County, Florida.
Description: Influent Tank, filled with rain water.

Photograph #6 **March 16, 2000**
Location: Sydney Mine Sludge Ponds, Valrico, Hillsborough County, Florida.
Description: Effluent Tank; north wall collapsed.

Photograph #7 **March 16, 2000**
Location: Sydney Mine Sludge Ponds, Valrico, Hillsborough County, Florida.
Description: Treatment Plant; carbon filtration and holding tanks



Photograph #8 **March 16, 2000**
Location: Sydney Mine Sludge Ponds, Valrico, Hillsborough County, Florida.
Description: Treatment Plant; Air Stripping Tower

Photograph #9 **March 16, 2000**
Location: Sydney Mine Sludge Ponds, Valrico, Hillsborough County, Florida.
Description: Turkey Creek Wetlands.

Photograph #10 **March 16, 2000**
Location: Sydney Mine Sludge Ponds, Valrico, Hillsborough County, Florida.
Description: South Spray Irrigation Field.

Attachments

Attachment A

Documents Reviewed

Reports and Memorandums

Seaburn and Robertson, Inc., Hydrogeologic Evaluation of the Sydney Mine Waste Disposal Site, October, 1980

CH2M Hill, Investigation of Additional Contaminated Areas, January 1986

CH2M Hill, Phase II Cleanup Activities Report, March, 1988

USEPA Region IV, Record of Decision, September 29, 1989

Blasland, Bouck & Lee, Inc., Final Remedial Design Report, March 1992

Blasland, Bouck & Lee, Inc., Remedial Action Report, April 1993

Blasland, Bouck & Lee, Inc., Technical Impractibility Evaluation Report, Bone Valley Water Bearing Unit, Sydney Mine Waste Disposal Site, March 1994

Blasland, Bouck & Lee, Inc., Remedial Action Report Addendum, May 1995

Blasland, Bouck & Lee, Inc., Intrinsic Bioremediation Evaluation, July 1996

Blasland, Bouck & Lee, Inc., Bone Valley Water Bearing Unit Remedial Evaluation, February 1997

Conestoga-Rovers & Associates, Phase II Natural Attenuation Evaluation Rounds 1.0 and 1.5 – Interim Report, August 24, 1998

USEPA Region IV, Superfund Preliminary Close-Out Report, June 28, 1999

Conestoga-Rovers & Associates, Phase II Natural Attenuation Evaluation Final Report, June 2000

Attachment B

Site Inspection Checklist

Please note that "O&M" is referred to throughout this document. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist (Template)

(Working document for site inspection. Information may be completed by hand and attached to the five-year review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION	
Site name: Sydney Mine Sludge Ponds	Date of inspection: 3-16-00
Location and Region: Valrico, FL	EPA ID: FLD000648055
Agency, office or company leading the five-year review: USACE	Weather/temperature: warm, sunny, 80° F
Remedy Includes (Check all that apply) □ Landfill cover/containment ☒ Groundwater pump and treatment □ Surface water collection and treatment ☒ Other natural attenuation as a provisional remedy	
□ Inspection team roster attached ☒ Site map attached see report	
II. INTERVIEWS (Check all that apply)	
1. O&M site manager Tom Hastings Site Mngr. 3-16-00 Name Title Date Interviewed ☒ at site □ at office □ by phone Phone no. _____ Problems, suggestions; ☒ Report attached _____	
2. O&M staff _____ _____ _____ Name Title Date Interviewed □ at site □ at office □ by phone Phone no. _____ Problems, suggestions; □ Report attached _____	

3. Local regulatory authorities and response agencies (i.e., State and Tribal offices, emergency response office, police department, office of public health or envirnomental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; □ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; □ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; □ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; □ Report attached _____
_____

4. Other interviews (optional) ☒ Report attached.

See 5-YR Review report

III. ONSITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Manual and As-Builts** ☒ Readily available ☐ Up to date ☐ N/A
   ☐ As-builts ☒ Readily available ☐ Up to date ☐ N/A
   ☐ Maintenance Logs ☒ Readily available ☐ Up to date ☐ N/A
   Remarks_____

2. **Site Specific Health and Safety Plan** ☐ Readily available ☐ Up to date ☒ N/A
   ☐ Contingency plan/emergency response plan ☐ Readily available ☐ Up to date ☒ N/A
   Remarks N/A

3. **O&M and OSHA Training Records** ☒ Readily available ☐ Up to date ☐ N/A
   Remarks_____

4. **Permits and Service Agreements**
   ☐ Air discharge permit ☐ Readily available ☐ Up to date ☒ N/A
   ☐ Effluent discharge ☐ Readily available ☐ Up to date ☒ N/A
   ☐ Waste disposal, POTW ☐ Readily available ☐ Up to date ☒ N/A
   ☐ Other permits_____ ☐ Readily available ☐ Up to date ☐ N/A
   Remarks pump & treat system not active since 1996

5. **Gas Generation Records** ☐ Readily available ☐ Up to date ☒ N/A
   Remarks_____

6. **Settlement Monument Records** ☐ Readily available ☐ Up to date ☒ N/A
   Remarks_____

7. **Groundwater Monitoring Records** ☒ Readily available ☐ Up to date ☐ N/A
   Remarks_____

8. **Leachate Extraction Records** ☐ Readily available ☐ Up to date ☒ N/A
   Remarks_____

9. **Discharge Compliance Records**
   ☐ Air ☐ Readily available ☐ Up to date ☒ N/A
   ☐ Water (effluent) ☐ Readily available ☐ Up to date ☒ N/A
   Remarks_____

10. **Daily Access/Security Logs**
☒ Readily available ☐ Up to date ☐ N/A
Remarks _____
_____

IV. O&M COSTS

1. **O&M Organization**
☐ State in-house ☐ Contractor for State
☐ PRP in-house ☒ Contractor for PRP
☐ Other _____
_____

2. **O&M Cost Records**
☒ Readily available ☐ Up to date
☐ Funding mechanism/agreement in place
Original O&M cost estimate_____ ☐ Breakdown attached

Total annual cost by year for review period if available

From annual To _____ ~$50,000 ☐ Breakdown attached
Dates Total cost
From_____To_____ _____ ☐ Breakdown attached
Dates Total cost
From_____To_____ _____ ☐ Breakdown attached
Dates Total cost
From_____To_____ _____ ☐ Breakdown attached
Dates Total cost
From_____To_____ _____ ☐ Breakdown attached
Dates Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**
Describe costs and reasons: _____
_____
_____
_____
_____
_____

V. GENERAL SITE CONDITIONS
Whenever possible, actual site conditions should be documented with photographs.

A. Fencing

1.	Fencing damaged ☐ Location shown on site map ☒ Gates secured ☐ N/A Remarks good condition
B.	**Site Access**
1.	Access restrictions, signs, other security measures ☐ Location shown on map ☐ N/A Remarks project sign and access warning signs clearly visible
C.	**Perimeter Roads**
1.	Roads damaged ☐ Location shown on site map ☒ Roads adequate ☐ N/A Remarks
D.	**General**
1.	Vandalism/trespassing ☐ Location shown on site map ☒ No vandalism evident Remarks
2.	Land use changes onsite ☒ N/A Remarks
3.	Land use changes offsite ☒ N/A Remarks
4.	Institutional controls (site conditions imply institutional controls not being enforced) ☒ N/A Agency _____ Contact _____ _____ _____ _____ Name Title Date Phone no. Problems; suggestions; ☐ Report attached _____
	VI. LANDFILL COVERS ☐ Applicable ☒ Not applicable
A.	**Landfill Surface**
1.	**Settlement** (Low spots) ☐ Location shown on site map ☐ Settlement not evident Areal extent_____ Depth_____ Remarks

2. **Cracks** ☐ Location shown on site map ☐ Cracking not evident
Lengths_____ Widths_____ Depths_____
Remarks_____
_____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
Areal extent_____ Depth_____
Remarks_____
_____

4. **Holes** ☐ Location shown on site map ☐ Holes not evident
Areal extent_____ Depth_____
Remarks_____
_____

5. **Vegetative Cover** ☐ Grass ☐ Cover properly established ☐ No signs of stress
☐ Trees/Shrubs (indicate size and locations on a diagram)
Remarks_____
_____

6. **Alternative Cover (armored rock, concrete, etc.)** ☐ N/A
Remarks_____
_____

7. **Bulges** ☐ Location shown on site map ☐ Bulges not evident
Areal extent_____ Height_____
Remarks_____
_____

8. **Wet Areas/Water Damage** ☐ Wet areas/water damages not evident
☐ Wet areas ☐ Location shown on site map Areal extent_____
☐ Ponding ☐ Location shown on site map Areal extent_____
☐ Seeps ☐ Location shown on site map Areal extent_____
☐ Soft subgrade ☐ Location shown on site map Areal extent_____
Remarks_____
_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map ☐ No evidence of slope instability
Areal extent_____
Remarks_____
_____

B. **Benches** ☐ Applicable ☐ Not applicable
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** □ Location shown on site map □ N/A or okay
Remarks_____
_____

2. **Bench Breached** □ Location shown on site map □ N/A or okay
Remarks_____
_____

3. **Bench Overtopped** □ Location shown on site map □ N/A or okay
Remarks_____
_____

C. Letdown Channels □ Applicable □ Not applicable
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** □ Location shown on site map □ No evidence of settlement
Areal extent_____ Depth_____
Remarks_____
_____

2. **Material Degradation** □ Location shown on site map
□ No evidence of degradation
Material type_____ Areal extent_____
Remarks_____
_____

3. **Erosion** □ Location shown on site map □ No evidence of erosion
Areal extent_____ Depth_____
Remarks_____
_____

4. **Undercutting** □ Location shown on site map □ No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____
_____

5. **Obstructions** Type_____ □ No obstructions
□ Location shown on site map Areal extent_____
Size_____
Remarks_____
_____

6. **Excessive Vegetative Growth** Type_____
   - ☐ No evidence of excessive growth
   - ☐ Vegetation in channels does not obstruct flow
   - ☐ Location shown on site map Areal extent_____

   Remarks_____

D. Cover Penetrations ☐ Applicable ☐ Not applicable

1. **Gas Vents** ☐ Active ☐ Passive ☐ Properly secured/locked ☐ Functioning
   ☐ Routinely sampled ☐ Good condition ☐ Needs O&M ☐ Evidence of leakage at penetration
   ☐ N/A

   Remarks_____

2. **Gas Monitoring Probes** ☐ Properly secured/locked ☐ Functioning
   ☐ Routinely sampled ☐ Good condition ☐ Needs O&M ☐ Evidence of leakage at penetration
   ☐ N/A

   Remarks_____

3. **Monitoring Wells** (within surface area of landfill) ☐ Properly secured/locked
   ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Needs O&M
   ☐ Evidence of leakage at penetration ☐ N/A

   Remarks_____

4. **Leachate Extraction Wells** ☐ Properly secured/locked ☐ Functioning
   ☐ Routinely sampled ☐ Good condition ☐ Needs O&M
   ☐ Evidence of leakage at penetration ☐ N/A

   Remarks_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A

   Remarks_____

E. Gas Collection and Treatment

1. **Gas Treatment Facilities**
   ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
   ☐ Good condition ☐ Needs O&M

   Remarks_____

2.	**Gas Collection Wells, Manifolds and Piping** □ Good condition □ Needs O&M Remarks_____ _____
F.	**Cover Drainage Layer** □ Applicable □ Not applicable
1.	**Outlet Pipes Inspected** □ Functioning □ N/A Remarks_____ _____
2.	**Outlet Rock Inspected** □ Functioning □ N/A Remarks_____ _____
G.	**Detention/Sedimentation Ponds** □ Applicable □ Not applicable
1.	**Siltation** Areal extent_____ Depth_____ □ N/A □ Siltation not evident Remarks_____ _____
2.	**Erosion** Areal extent_____ Depth_____ □ Erosion not evident Remarks_____ _____
3.	**Outlet Works** □ Functioning □ N/A Remarks_____ _____
4.	**Dam** □ Functioning □ N/A Remarks_____ _____
H.	**Retaining Walls** □ Applicable □ Not applicable
1.	**Deformations** □ Location shown on site map □ Deformation not evident Horizontal displacement_____ Vertical displacement_____ Rotational displacement_____ Remarks_____ _____
2.	**Degradation** □ Location shown on site map □ Degradation not evident Remarks_____ _____

I.	**Perimeter Ditches/Off-Site Discharge** ☐ Applicable ☐ Not applicable
1.	**Siltation** ☐ Location shown on site map ☐ Siltation not evident Areal extent_____ Depth_____ Remarks_____ _____
2.	**Vegetative Growth** ☐ Location shown on site map ☐ N/A ☐ Vegetation does not impede flow Areal extent_____ Type_____ Remarks_____ _____
3.	**Erosion** ☐ Location shown on site map ☐ Erosion not evident Areal extent_____ Depth_____ Remarks_____ _____
4.	**Discharge Structure** ☐ Functioning ☐ N/A Remarks_____ _____
	VII. VERTICAL BARRIER WALLS ☐ Applicable ☒ Not applicable
1.	**Settlement** ☐ Location shown on site map ☐ Settlement not evident Areal extent_____ Depth_____ Remarks_____ _____
2.	**Performance Monitoring** Type of monitoring_____ ☐ Performance not monitored Frequency_____ ☐ Evidence of breaching Remarks_____ _____
	VIII. GROUNDWATER/SURFACE WATER REMEDIES ☒ Applicable ☐ Not applicable
A.	**Groundwater Extraction Wells, Pumps, and Pipelines** ☒ Applicable ☐ Not applicable

1. **Pumps, Wellhead Plumbing, and Electrical**
   □ Good condition □ All required wells located ☒ Needs O&M □ N/A
   Remarks Unused ; obsolete wells should be abandoned. If reactivated, treatment system will need to be rehabilitated.
2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   □ Good condition ☒ Needs O&M
   Remarks

B. **Surface Water Collection Structures, Pumps, and Pipelines**
   □ Applicable ☒ Not applicable

1. **Collection Structures, Pumps, and Electrical**
   □ Good condition □ Needs O&M
   Remarks
2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   □ Good condition □ Needs O&M
   Remarks

C. Treatment System ☒ Applicable □ Not applicable

1. **Treatment Train** (Check components that apply)
   □ Metals removal □ Oil/water separation □ Bioremediation
   ☒ Air stripping ☒ Carbon adsorbers
   □ Filters_____ □ Others_____
   □ Good condition ☒ Needs O&M
   □ Sampling ports properly marked and functional
   □ Sampling/maintenance log displayed and up to date
   □ Equipment properly identified
   □ Quantity of groundwater treated annually_____
   □ Quantity of surface water treated annually_____
   Remarks System off-line since 1996. Needs rehabilitation if re-activated.
2. **Electrical Enclosures and Panels** (prooerly rated and functional) □ N/A
   □ Good condition ☒ Needs O&M
   Remarks see note above
3. **Tanks, Vaults, Storage Vessels** □ N/A
   □ Good condition □ Proper secondary containment ☒ Needs O&M
   Remarks Effluent tank wall has collapsed.

4.	**Discharge Structure and Appurtenances** □ N/A □ Good condition □ Needs O&M Remarks_____
5.	**Treatment Building(s)** ☒ N/A □ Good condition □ Needs repair □ Chemicals and equipment properly stored Remarks_____
6.	**Monitoring Wells** (pump and treatment remedy) □ Properly secured/locked □ Functioning ☒ Routinely sampled □ Good condition □ All required wells located ☒ Needs O&M □ N/A Remarks unused and obsolete wells require proper abandonment. Select wells are routinely sampled.
D.	**Monitored Natural Attenuation**
1.	**Monitoring Wells** (natural attenuation remedy) □ Properly secured/locked ☒ Functioning □ Routinely sampled □ Good condition □ All required wells located □ Needs O&M □ N/A Remarks_____

IX. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

X. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

see Section VI of 5-Year Review Report

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

O&M adequate

C.	**Early Indicators of Potential Remedy Failure**
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.
	See Section VII of 5-YR Review Report

D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.
	See Section VIII of 5-YR Review Report

Attachment C

Review Comments for Draft Five Year Review Report from Conestoga-Rovers & Associates (8/11/00)

DP-5

Conestoga-Rovers & Associates
11100 Metro Airport Center Drive, Suite #160
Romulus, Michigan 48174
(734) 942-0909 Office (734) 942-1858 Fax

August 11, 2000 Reference No. 11904-50

Mr. Richard E. Bonner, P.E.
Deputy District Engineer for Project Management
Department of the Army
Jacksonville District Corp of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Dear Mr. Bonner:

Re: Draft Superfund Five Year Review Reports
Sydney Mine Sludge Pond
Belrico, Hasboro County, Florida

On behalf of the Sydney Mine Steering Committee, Conestoga-Rovers & Associates, Inc. (CRA) is providing comments on the above-referenced draft report.

1) Section IV.C, Remedial Design, Page 12 first paragraph. The plume referenced in this paragraph is actually in the Bone Valley water bearing unit, not the intermediate aquifer system. Secondly, the wetland area is now understood to be the result of former borrow activity and not a relic sinkhole.

2) Section V.B, Interview of Ms. Deirdra Lloyd, Page 15. The report indicates that Ms. Lloyd referred to a state standard for considering natural attenuation of 100 µg/L for benzene. The standard that she references is from Chapter 62-777, Contaminant Cleanup Target Levels. This Chapter applies to cleanup of contamination at sites that are governed by the terms of a Brownfield Site Agreement (Chapter 62-785), Petroleum Site Cleanups (Chapter 62-770), Dry-Cleaning Solvent Criteria (Chapter 62-782), and to treatment of soil facilities permitted pursuant to Chapter 62-713. The standard referenced is arbitrary, and Sydney Mine Site is not subject to any of these Chapters. Criteria for evaluating natural attenuation under CERCLA are determined based on site-specific investigations.

3) Section VII.C, page 24. We suggest that the wording for this paragraph be changed to:

Assuming natural attenuation is selected as a permanent remedy, based on the estimated degradation timeframe for benzene, long term protectiveness needs to be demonstrated through monitoring.

4) Section VII.C. If it is determined through on-going monitoring that natural attenuation is not an effective remedy then other remedial technologies should be evaluated. There are a number of remedial technologies that may be appropriate and should be considered beyond chemical oxidation, if natural attenuation alone cannot ensure long-term protectiveness.

We appreciate the opportunity to review the draft and please contact me if you have any questions or comments.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Frederick W. Blickle, P.E.
Project Manager

FWB/rm/1/Det.
Encl.

c.c.: Galo Jackson RPM, U.S. EPA
Andi Kenney, Esq. – Seyfarth, Shaw, Fairweather & Geraldson
Bruce White, Esq. – Karaganis & White
Joel Jerome – Cy-Tech
Daniel Richardson – Winn-Dixie Stores
Douglas D. Macauley – Reynolds Metals
Jack Shumate – Butzel Long
James McKinnon, Esq. – Reynolds Metals
Julia A. Wiseman, Esq. – Swidler & Berlin
March Smith – Waste Management
Theresa Stone – Waste Management

Attachment D

Memorandum; Review Comments for Phase II NAE
from
Florida Department of Environmental Protection (8/1/00)

Florida Department of

Memorandum **Environmental Protection**

TO: Diedre Lloyd
Hazardous Waste Cleanup Section

THROUGH: Tim Bahr, P.G.
Technical Review Section, BWC

FROM: Jeff Lockwood, P.E.
Technical Review Section, BWC

DATE: August 1, 2000

SUBJECT: Phase II Natural Attenuation Evaluation (Final)
Sydney Mine Waste Disposal Site
Brandon, Hillsborough County

I have reviewed the document referenced above. Please note that this memo is a revision to my previous memo dated July 17. The data and analysis appear adequate. The most significant concern appears to be the persistence of benzene especially in the Bone Valley unit. There is also speculation that additional sources (besides the Oil Pond and Septage Pond) may be contributing to Bone Valley contamination. The other key issue is defining the flow conditions in the Bone Valley north and east of the wetland. I have the following additional comments:

1. On page 48 the report acknowledges that long-term degradation of COCs beyond the wetland, particularly benzene, is an issue that still requires resolution. It discusses OSWER Directive 9200.4-17 in a footnote on that page with regard to estimation of natural attenuation of chlorinated aliphatic hydrocarbons. However, benzene is not an aliphatic, but rather an aromatic hydrocarbon. Does EPA have a comparable directive for aromatic hydrocarbons?

2. I noted an isolated occurrence of sulfate in TN 5-3 at the 75 foot depth (see Table 4.2). Inspection of Figure 5.16 shows a corresponding isolated detection of vinyl chloride and an inferred depression in the Bone Valley formation in this area. This area should be monitored to determine if reducing conditions are consistently occurring in the Bone Valley formation. Ethene, methane, and CO_2 were all low or non-detect at the 75 foot depth. Sulfates are low even at shallower depths at this transect location.

3. I noted that many of the contaminant profile contours show significant contaminant levels even at the lowest sampling depth at a given transect point (for instance, 56.5 µg/L DCE at TN-5-3.5, Figure 5.20). Thus the maximum depth of contamination is inferred at these locations. It would

be preferable to distinguish the contours at such locations with a dashed line to show such inference. To lend evidence that there is no continuing source (such as DNAPL streamers or pools) in these areas, I would suggest monitoring these locations especially closely with more frequent samplings at the lowest depths so trends can be monitored. I agree with the finding that the horizontal extent of contamination appears to be well defined. The proposed monitoring wells north and west of the wetland should be effective in helping to confirm the effectiveness of natural attenuation.

JDL/wp

Attachment E

Memorandum; Addendum to First Five Year Review
EPA (9/13/01)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

Ref: 4WD-SSMB **SEP 13 2001**

MEMORANDUM

SUBJECT: Addendum to First Five-Year Review for the Sydney Mine Sludge Ponds National Priorities List Site Brandon, Hillsborough County, FL

FROM: Galo Jackson GJ
Remedial Project Manager
South Site Management Branch

TO: File

Since the completion of this first Five-Year Review, EPA has been informed that the owner of the property, which includes subject National Priorities List Site, has applied to the Hillsborough County Planning & Growth Management Department for rezoning of the 1,700 acres from agricultural to residential. The application is attached. This application for rezoning indicates that the potable water source for these residences is proposed to be individual water wells. To EPA's knowledge this is the second such attempt at rezoning.

The Selected Remedy in the 1989 Record of Decision includes, "...evaluation of the need for deed restrictions for areas of the site which may continue to be impacted by ground-water contamination after the best available remediation technology has been implemented."

The site has been a mined-out phosphate mine since phosphate ore was last extracted in the 1950's. All 1,700 acres of the property have been unoccupied since then, except for the years during which it was used for liquid waste disposal.

This first Five-Year Review evaluated site conditions as they currently are, an unoccupied former phosphate mine. In the event that the owner successfully has the property rezoned, a formal evaluation of the need for deed restrictions will be conducted by EPA, in consultation with the Florida Department of Environmental Protection and Hillsborough County. This evaluation is believed to be necessary because a Natural Attenuation Study completed in 2000 concludes that groundwater contaminants may remain above State and federal standards for decades.

Attachment

I. HILLSBOROUGH COUNTY PLANNING & GROWTH MANAGEMENT DEPARTMENT APPLICATION

OFFICIAL USE ONLY 86133.0000, 86131.0000,

APPLICATION #: 01-1284 FOLIO #: 86770.0000 and 86802.0000

ZHM DATE: 10-8-01 SEC: 27,28,33 and 34 TWN: 29 RNG: 21

BOCC DATE: 11-13-01 ATLAS PAGE:

GENERAL ACREAGE: 1700 ± ZONING: AR LU: AR

LOCATION: Southeast corner of Dover and Hwy. 60

PGMD TECH: GZ TECH: RECEIPT #:

Planning & Growth Management Planner Who Provided Land Use Counseling:

TYPE OF APPLICATION:

BOCC Action	**Administrative Action**	**LUHO Action**
[x] Rezoning	[ ] Administrative Waiver	[ ] Special Use Permit
[ ] Personal Appearance	[ ] Administrative Review	[ ] Alcoholic Beverage Zoning
[ ] Major Modification	[ ] Specified Use	
	[ ] Alcoholic Beverage Zoning (No Waivers)	
	[ ] Non-Conforming Lot (NCL)	
	[ ] Non-Conforming Use (NCU)	
[ ] Other:	[ ] Other:	[ ] Other:

SITE INFORMATION: Tax Folio # 86133.0000, 86131.0000, 86770.0000 and 86802.0000

Street Address: None

Current Use: Vacant

(Additional information, see Exhibit "A")

REPRESENTATIVE/PRIMARY CONTACT: Vincent A. Marchetti, Esq., Piper Marbury Rudnick & Wolfe LLP

Phone: Daytime (813) 229 - 2111 Evening ( )

Address: 101 E. Kennedy Blvd., Suite 2000

City Tampa State FL Zip: 33602-5148

Is this application accompanied by other applications?

If yes, what are the application numbers? No

If this is a DRI, list the project name and number: N/A

If this is an Annual Report Submittal: Anniversary Date: N/A

Reporting Period to

I HEREBY SWEAR OR AFFIRM THAT ALL THE INFORMATION PROVIDED IN THE SUBMITTED APPLICATION PACKET IS TRUE AND ACCURATE, TO THE BEST OF MY KNOWLEDGE, AND AUTHORIZE THE REPRESENTATIVE LISTED ABOVE TO ACT ON MY BEHALF ON THIS PETITION.

PIPER MARBURY RUDNICK & WOLFE LLP,

By:

Signature of the Applicant

Vincent A. Marchetti, Esq.

Type or Print Name Legibly

I HEREBY AUTHORIZE THE PROCESSING OF THIS APPLICATION AND RECOGNIZE THAT THE FINAL ACTION TAKEN ON THIS PETITION SHALL BE BINDING TO THE PROPERTY AS WELL AS TO THE CURRENT, AND ANY FUTURE OWNERS.

PIPER MARBURY RUDNICK & WOLFE LLP,

By:

Signature of the Applicant

Vincent A. Marchetti, Esq.

Type or Print Name Legibly

PLANNING & GROWTH MANAGEMENT DEPT. DATE RECEIVED:

HILLSBOROUGH COUNTY PLANNING & GROWTH MANAGEMENT DEPT. APPLICATION
EXHIBIT "A"

APPLICATION # 01-1284 **TYPE:** Rezoning

SITE INFORMATION

86133.0000, 86131.0000, 27, 28, 33
Folio # 86770.0000, 86802.0000 Section and 34 Township 29 Range 21
Acreage 1700 ±

APPLICANT Vincent A. Marchetti, Esq., Piper Marbury Rudnick & Wolfe LLP
Address 101 E. Kennedy Blvd., Suite 2000

City Tampa State FL Zip 33602-5148

Daytime Phone (813) 229 - 2111
Evening Phone ( ) -

PROPERTY OWNER Waste Resources of Tampa, Inc.
Address 3003 Butterfield Rd.

City Oak Brook State IL Zip 60528

Daytime Phone ( ) -
Evening Phone ( ) -

UTILITIES TO BE UTILIZED

Water: ☐ Public Water ☒ Private Water (well)

Wastewater: ☐ Public Sewer ☒ Septic Tank ☐ Interim Treatment Plant

ZONING VIOLATIONS

Are you in zoning violation? ☐ Yes ☒ No

Have you been issued a citation? ☐ Yes ☒ No
If so, when were you cited? _____

Are you scheduled for the Code Enforcement Board? ☐ Yes ☒ No

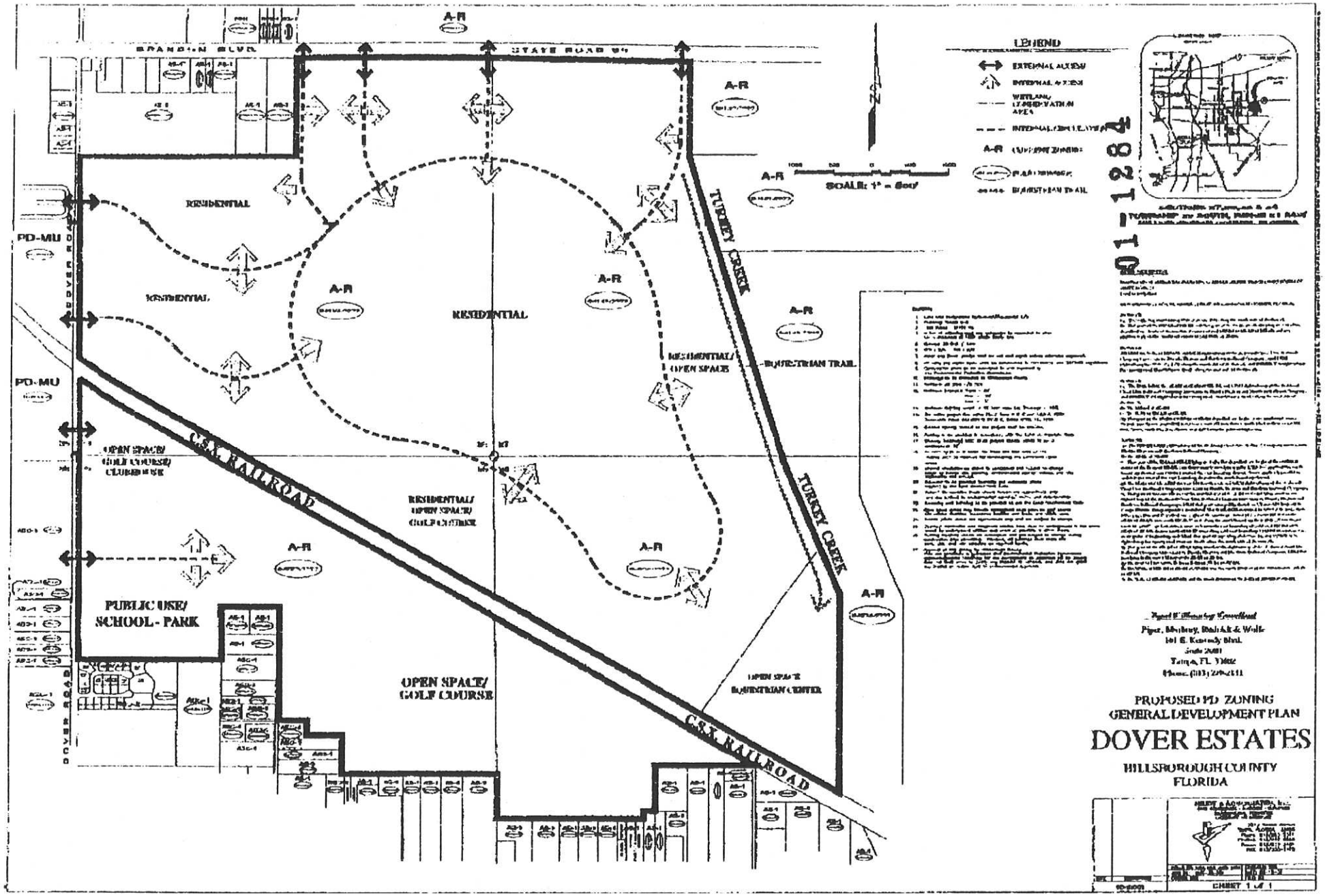
If a DRI, is the Project in noncompliance with the terms of the Development Order? ☐ Yes ☒ No

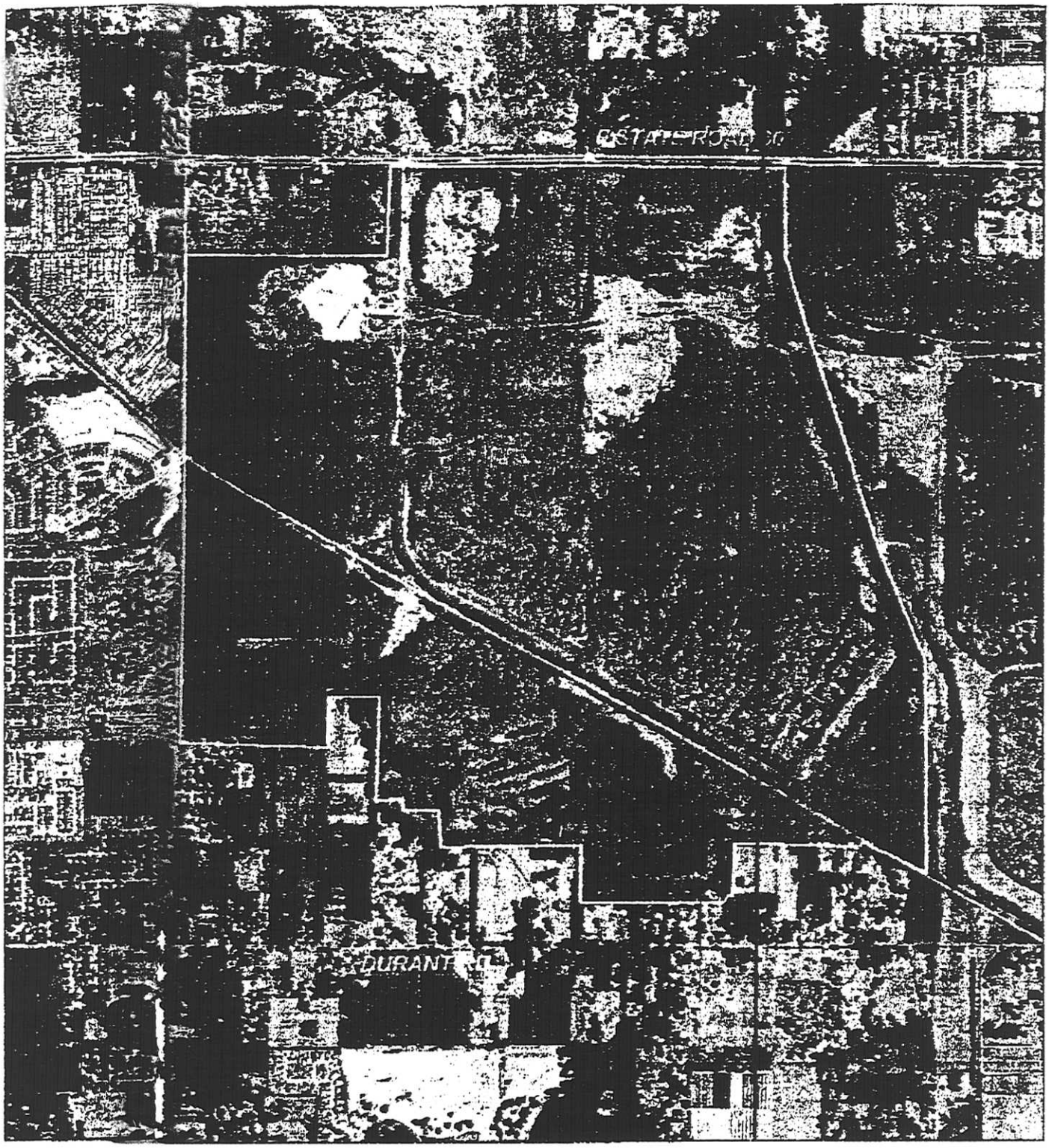
ZONING HISTORY

Has the property received an approval as a Non-Conforming Lot (NCL) or a Non-Conforming Use (NCU)?
☐ Yes ☒ No
If yes, please list the petition number: _____

If a Zoning or Special Use petition has been heard on this property in the past year, provide the petition number: _____

APPLICANT'S INTITIALS: ✓ **OWNER'S INITIALS:** ✓


A-R
BRANDON BLVD.
STATE ROAD 60
RESIDENTIAL
PD-MU
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL/
OPEN SPACE
EQUESTRIAN TRAIL
TURKEY CREEK
DOVER ROAD
OPEN SPACE/
GOLF COURSE/
CLUBHOUSE
CSX RAILROAD
RESIDENTIAL/
OPEN SPACE/
GOLF COURSE
PUBLIC USE/
SCHOOL - PARK
OPEN SPACE/
GOLF COURSE
OPEN SPACE
EQUESTRIAN CENTER
LEGEND
SCALE: 1" = 600'
01-1284
PROPOSED PD ZONING
GENERAL DEVELOPMENT PLAN
DOVER ESTATES
HILLSBOROUGH COUNTY
FLORIDA
SHEET 1 of 1



RZ 01-1284

Project Area

Parcels

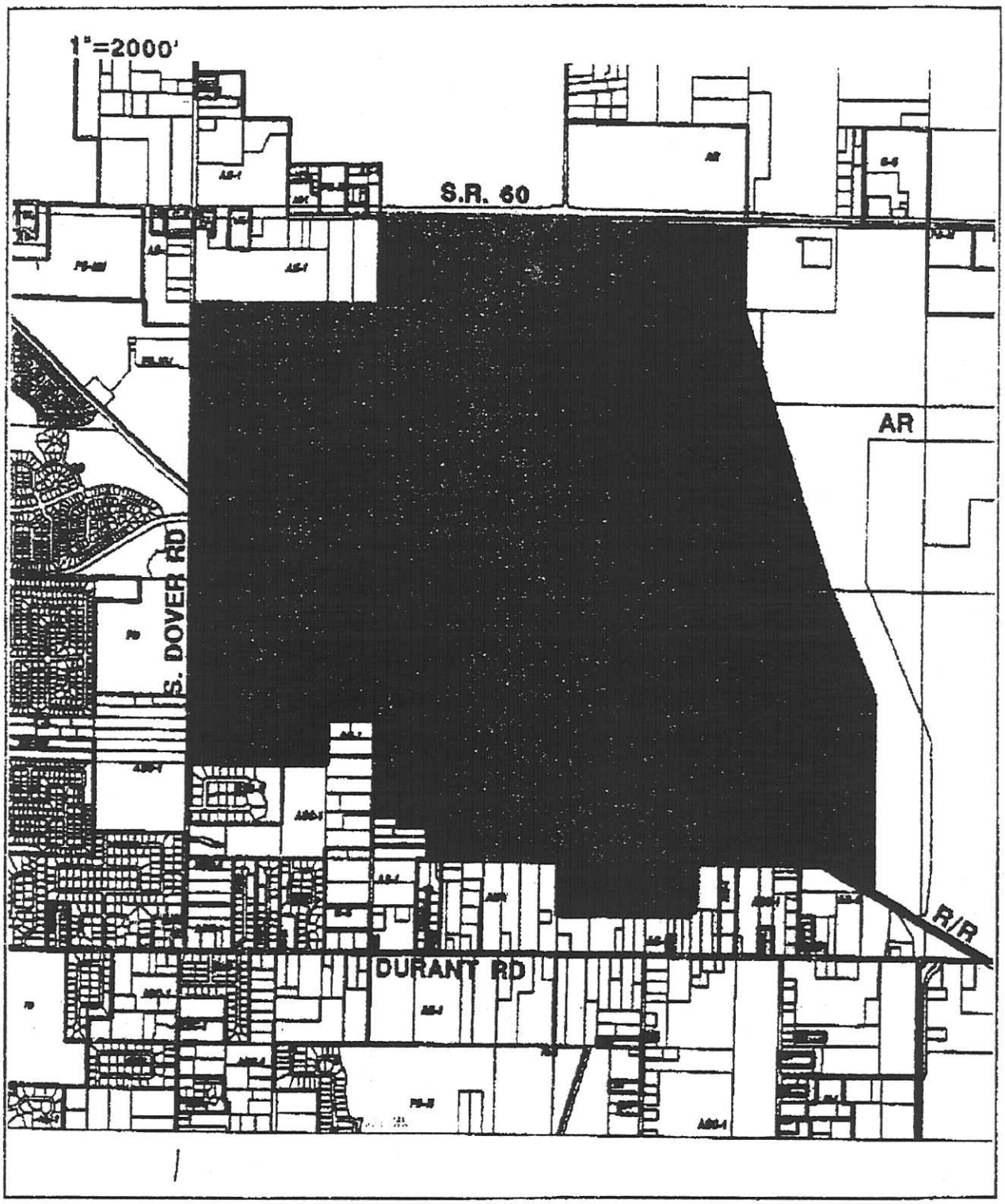
Sign Postings

Hillsborough County
Florida

PLANNING & GROWTH MANAGEMENT

N

N.T.S.



Application Number: RZ 01-1284

Project Area

Hillsborough County
Florida

N

PLANNING AND GROWTH MANAGEMENT