



UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

REGION III

STATEMENT OF BASIS

AMETEK U.S. GAUGE DIVISION

SELLERSVILLE, PENNSYLVANIA

PAD 002 342 236

STATEMENT OF BASIS

AMETEK U.S. Gauge Division
Sellersville, Pennsylvania
EPA ID #: PAD 002342236

I. INTRODUCTION

This Statement of Basis (SB) explains the remedy proposed by the United States Environmental Protection Agency (EPA) to address the contamination found at the AMETEK U.S. Gauge Division Plant #2 in Sellersville, Pennsylvania (hereafter referred to as “Plant #2”), which is owned and operated by Ametek, Inc. (hereafter “AMETEK”). All property under the ownership and control of AMETEK including but not limited to Plant #1 and Plant #2 shall be referred to hereafter as “Site.”

EPA is issuing this SB consistent with public participation provisions of the Resource Conservation Recovery Act (RCRA). The public is encouraged to review and comment on the proposed remedy. If the comments are such that significant changes are made to the remedy, EPA will seek additional public comments on the revised proposed remedy. If there are no comments that result in a change to the proposed remedy, the remedy will become final.

A detailed description of the environmental activities at the Site is included in the following sections and in the Administrative Record. Key information used in generating the proposed remedy is from reports and sources contained in the Administrative Record. The Administrative Record is available for review at the following locations:

United States Environmental Protection Agency, Region III

1650 Arch Street
Mail Code: 3LC30
Philadelphia, PA 19103-2029
Contact: Khai M. Dao
Voice 215-814-5467
Fax: 215-814-3113
Email: dao.khai@epa.gov
Hours: Monday-Friday: 8:30 am – 5:00 pm

and

Pennsylvania Department of Environmental Protection (PADEP)
2 East Main Street
Norristown, PA 19401
Contact: Ms. Jennifer Wilson
Voice: 484-250-5744
Hours: 8:00 am – 4:00 pm

Note: Appointment is needed to review the Administrative Record

II. SUMMARY OF PROPOSED REMEDY

Based on a review of past and present Site environmental practices, soil and groundwater sampling activities, historical investigations and ongoing remedial activities at the Site (i.e., operation of a groundwater pump and treat system), groundwater is the medium of concern for continued environmental activities at the Site, and the focal point for the proposed remedy. Moreover, long term goals for groundwater, discussed in greater detail in subsequent sections, are 1) The eventual attainment of EPA Maximum Contaminant Levels (MCLs), codified at 40 C.F.R. Part 141, and promulgated pursuant to the Safe Drinking Water Act, of the chlorinated volatile organic compound (VOC) Constituents of Concern (COCs) in groundwater beyond the Plant #2 property, and 2) The continued monitoring of 1,4-Dioxane in groundwater with respect to EPA's Tapwater Risk Based Screening Concentration of 6.1 µg/l during remediation to attain the aforementioned VOC MCLs.

The proposed remedy consists of the following:

- Establishment of a Technical Impracticability (TI) Boundary for groundwater. The TI Boundary conforms to the Site's conceptual hydrogeological model, and incorporates elements of EPA's *Guidance for Evaluating the Technical Impracticability of Groundwater Restoration* (EPA/540-R-93-080). The TI Boundary is the Plant #2 property boundary and is shown on Figure 1;
- Continued operation and maintenance of the Site's groundwater pump and treat system;
- Long-term groundwater COC stability monitoring and reporting; and
- Institutional controls to address long term Site development restrictions, and groundwater-related use restrictions at the Site which may be implemented through an environmental covenant pursuant to the Pennsylvania Uniform Environmental Covenants Act (Act 68). This covenant, if executed, would be signed by AMETEK and EPA and will be enforceable by EPA.

A detailed description of the proposed remedy is provided in the remaining sections of this SB.

III. BACKGROUND

Plant #2 is located at 900 Clymer Avenue in Sellersville, Bucks County, Pennsylvania and was the location of a pressure and vacuum gauge manufacturing business from 1957 to 2008 (i.e., manufacturing operations ceased in 2008). Currently, Plant #2 is used only for administrative and engineering offices and as a warehouse for the storage, shipping and receiving of various metal components.

Machining of metal components, solvent degreasing and metal electroplating operations were associated with the manufacturing processes at Plant #2. Past operational practices related to the use of solvent degreasers, including trichloroethene (TCE) and 1,1,1-trichloroethane (TCA), have resulted in the degradation of the groundwater at the Site.

Groundwater beneath the Site occurs in bedrock. The bedrock is composed of a variety

of inter-bedded sedimentary rocks that slope gently to the northwest. As shown on the geologic cross section A to A' in Figure 2, the rock units beneath the Site have been designated as follows; Unit 1 (generally soft, reddish-brown siltstones, shales and fine-grained sandstones), Unit 2 (generally grayish shale and hard gray to black argillite), Unit 3 (reddish sedimentary rocks similar to Unit 1), Unit 4 (gray to black rocks similar to Unit 2), and Unit 5 (rocks similar to Units 1 and 3). Site bedrock is typically covered by a thin veneer of soil that is generally less than 10 feet thick.

Groundwater occurs in fractures and bedding planes in bedrock; these openings are known as zones of secondary porosity. Under non-pumping conditions, groundwater beneath the Site, specifically in Unit 1, can be expected to flow in a northerly direction; a direction roughly commensurate with the direction of the slope of the bedrock (known as the bedrock dip direction), and the slope of the landscape toward the East Branch of the Perkiomen Creek. However, the investigative work completed to date indicates that groundwater flow, and hence Site COC distribution, has also followed an easterly course over time (i.e., a direction along the length of the local bedrock units known as the bedrock strike). This distribution is believed to be a manifestation of the historic pumping activities within bedrock Unit 1 that occurred in areas located to the east and northeast of the Site.

Based on the results of the investigative work conducted to date, groundwater COC within bedrock Unit 1 and within the Plant #2 TI Boundary must be controlled and reduced via the extraction and treatment of Site groundwater. The basis for this is the potential for groundwater withdrawal/usage from bedrock Unit 1 from areas around the Site and outside of the TI Boundary. The following corrective measure objectives have been identified for the COCs and 1,4-Dioxane in Site groundwater:

1. Reduction of chlorinated VOC concentrations in groundwater to MCLs beyond the Plant #2 TI Boundary;
2. Hydraulic control and groundwater contamination stability and reduction within the Plant #2 TI Boundary; and
3. Ongoing monitoring to demonstrate the reduction of reported 1,4-Dioxane concentrations with respect to the EPA's Tapwater Risk Based Screening Concentration for 1,4-Dioxane of 6.1 µg/l.

EPA has determined that these objectives are protective of human health and the environment.

IV. REGULATORY HISTORY

A. PADEP Order

A PADEP Order was issued to AMETEK in September 1988 to conduct a hydrogeological investigation at Plant #2. The results of the 1988-1989 investigation confirmed the presence of VOCs in groundwater. In February 1990, EPA informed AMETEK that the

primary regulatory responsibility for further investigation and remedial efforts was being assumed by EPA at the request of PADEP.

B. EPA Administrative Order on Consent (Consent Order)

A Consent Order was issued to AMETEK on June 29, 1990 by the EPA under Section 3008(h) of RCRA, as amended by the Hazardous and Solid Waste Amendments of 1984, 42 U.S.C. Section 6928(h), for Plant #2 located in Sellersville, Pennsylvania. The Consent Order was signed by AMETEK on June 11, 1990.

In December 1991, AMETEK completed a Phase II Hydrogeological Investigation (HI) of the Site under the terms of the Consent Order and submitted a Draft HI Report to EPA. The Draft HI Report indicated that offsite migration of dissolved phase Site-related VOCs may be occurring. In 1992, AMETEK received EPA's written comments on the Draft HI Report. EPA concluded that the HI did not fulfill the requirements of a RCRA Facility Investigation (RFI), and identified issues that would need to be addressed. AMETEK addressed EPA's comments during the performance of the RFI.

C. Interim Measures

Interim Measures (IMs) were implemented by AMETEK pursuant to the Consent Order to control and stabilize potential impacts to the nearby offsite private wells. The IMs included the design, installation, and operation of an IM groundwater pump and treat system (i.e., the existing groundwater treatment system), and a residential water supply survey. The existing groundwater pump and treat system has been in operation since July 1993.

The original residential water supply survey conducted by AMETEK in the winter and spring of 1993, described in *Interim Measures for Nearby Private Wells Report*, Groundwater Technology, Inc., April 26, 1993, revealed 34 residences with domestic supply wells within a one mile radius of the Site. Most residents granted access for routine sampling for chlorinated VOCs as part of the EPA approved IM drinking water sampling program. Between 1993 and 2004, the number of residences included in the sampling program decreased to nine as residents accepted AMETEK's offer to connect to the local public drinking water supply. Groundwater sampling results from the nine residences included in the final IM sampling events, conducted from April 2007 to March 2008, showed no detectable COCs.

The final sampling event of the residential IM groundwater sampling program was conducted on March 5, 2008. As approved by the EPA in January 2007, three sampling events were conducted in 2007, and one event, the March 5, 2008 event, was conducted in 2008. These events, conducted 30 days, 90 days, six months and one year after the deactivation of local public supply well Perkasio Borough Authority (PBA) number 10 (PBA-10) on March 23, 2007, revealed no reported detections of COCs. AMETEK's final offer to provide a connection to the public water supply was repeated following each of the last four sampling events. The residents who accepted AMETEK's final offer were connected to the public water supply in September 2010.

V. SUMMARY OF INVESTIGATION

A. Draft RCRA Facility Investigation (RFI) Report (1997)

The results of the RFI completed by AMETEK pursuant to the Consent Order were presented to the EPA in the Draft RCRA Facility Investigation Report, Groundwater Technology, Inc., dated February 24, 1997 (Draft RFI Report). The scope of the RFI activities included the characterization of Site groundwater, soil, surface water, and sediment, a soil gas survey, continuous hydrogeologic groundwater level monitoring survey (i.e., various aquifer testing activities), and a Baseline Risk Assessment (BRA). The Draft RFI Report provided details on the following potential Plant #2 COC source areas;

- Northern Areas – Former Wet Lagoon Area, Paint Storage Shed, Chip Shed and the Former Process Waste Transport Line.
- Southern Area – Former Dry Lagoon Area.

The history of remedial actions (e.g. sludge and soil removal) conducted in the Former Wet Lagoon Area and the Former Dry Lagoon Area in 1983, as well as investigation work conducted in these areas and the other areas listed above, are discussed extensively in the Draft RFI report.

Based on the characterization data collected and the results of the BRA, the primary potential exposure pathway was concluded to be the migration of VOCs from groundwater into downgradient offsite residential wells. EPA provided comments on the Draft RFI Report in a letter dated September 11, 1997, and in response, AMETEK prepared a report titled RCRA Facility Investigation Response Letter Report to EPA Comments dated December 19, 1997. This report set the stage for the additional groundwater-related Site characterization activities conducted by AMETEK from 1999 to 2008.

As established during the RFI, the VOCs of concern in groundwater are the chlorinated VOCs cis-1,2-dichloroethene (cis-1,2-DCE), 1,1-dichloroethene (1,1-DCE), tetrachloroethene (PCE), toluene, 1,1,1-trichloroethane (1,1,1-TCA), and trichloroethylene (TCE). Based on the findings presented in the Draft RFI report and EPA comments, additional characterization activities were conducted from 1999 through 2008 as described below.

B. Additional Groundwater Investigation (1999 – 2008)

Various additional environmental investigation activities have been conducted at the AMETEK Site since the submittal of the Draft RFI report. Based on the results of the 1997 RFI, Site investigation activities were focused on the primary medium of concern, groundwater.

As described in the Third Quarterly Letter Report on Additional Environmental Investigation Activities, dated December 2003, EPA was concerned that 1,4-Dioxane may be

present in groundwater. 1,4-Dioxane was historically used as a primary stabilizer for 1,1,1-TCA. Given the elevated levels of 1,1,1,-TCA detected in some of the monitoring wells, 1,4-Dioxane was added to the list of constituents sampled during the semi-annual groundwater sampling events in August 2003.

Based on the results of the groundwater investigation, EPA has made the following conclusions:

- Hydraulic control of the impacted groundwater at the Site is maintained via the Site's existing IM groundwater pump and treat system;
- Site groundwater with COC levels (e.g., chlorinated VOCs) above EPA MCLs, is attributed to past operations at Plant #2;
- Site groundwater with 1,4-Dioxane levels above EPA's Tapwater Risk Based Screening Concentration of 6.1 µg/l is attributed to past operations at Plant #2;
- Remaining local residences served by domestic water supply wells have been shown to be free of impacts by Site COCs during 12 sampling events conducted from 2003 to 2008;
- The closest known public water supply well, PBA-10, located approximately three quarters of a mile northeast of the Site, has been deactivated by the PBA. While in operation, water provided by PBA-10 was treated with an air stripper to remove VOCs prior to distribution;
- A preliminary wellhead protection area (WHPA) has been established for the boroughs of Perkasio and Pennridge. Only the WHPA for well PBA-10 contacts the Plant #2 boundaries, and as described above, well PBA-10 has been deactivated;
- Based on Perkasio Borough Ordinance 186-14, if public water is accessible to a residence within Perkasio Borough, the PBA will not issue a permit for a private well. Presently, public water is available to all residents in Perkasio Borough; therefore, no new private wells may be drilled; and
- Indoor vapor intrusion as a result of the Site groundwater plume is negligible and does not pose a human health risk.

C. RFI Approval (1997 – 2009)

In a letter dated May 14, 2009, the EPA issued a final approval of the AMETEK RFI. Based on the data collected as part of the RFI, EPA has concluded that Site groundwater is the medium of concern. Long term goals for Site groundwater are 1) the eventual attainment of the MCLs beyond the TI boundary of the chlorinated VOC COCs, and 2) the continued monitoring

of 1,4-Dioxane levels in groundwater with respect to EPA's Screening Concentration for 1,4-Dioxane of 6.1 µg/l (Screening Concentration) during remediation to attain the aforementioned MCLs.

VI. PROPOSED REMEDY AND RATIONALE

Given the elevated levels and the nonaqueous phase liquid (NAPLs) characteristics of the VOC contamination and the constraints of the hydrogeological conditions (i.e., fractures and bedding planes in the bedrock) at the Site, EPA has concluded that it is technically impracticable to attain EPA Groundwater Protection Standards (namely MCLs) throughout the groundwater plume within the Plant #2 property boundary. It is often necessary to remove virtually all NAPL before concentration levels in groundwater near the source of the contamination can approach concentration levels commensurate with the MCLs. Presently, there are no technologies which have been proven to be economical and capable of removing all NAPL in groundwater from large sites where NAPL is widely distributed laterally and vertically, and where the stratigraphy is highly heterogeneous and complex as presented at the Site. EPA evaluated over twenty years of Site groundwater data and regional hydrogeology investigation to conclude that total removal of VOC contamination in bedrock fractures is effectively impossible and that attainment of MCLs within the current Plant #2 property boundaries is technically impracticable. Additional details of the Site analyses and evaluation of the VOC groundwater data in heterogeneous bedrock fractures are presented in the Final RFI Report.

Because of the constraints of VOC contamination in groundwater and the hydrogeological conditions at the Site that prevent MCL attainment throughout the groundwater plume, EPA is proposing that continued operation of the existing groundwater pump and treat system and monitoring, along with the establishment of a Technical Impracticability Zone (TI zone) will be the most practical and economical remedy that will continue to be protective of human health and the environment. The groundwater pump and treat system will achieve drinking water standards at the monitoring locations beyond the TI zone. The TI zone will define the area of hydraulic control that will ensure groundwater contamination stability within the Plant #2 property. Long-term monitoring is proposed through performance sampling and gauging of the proposed TI Boundary monitoring well network, and monitoring wells MW-21S, MW-21D (new) and MW-22D.

A. Technical Impracticability Zone

The proposed remedy for the Site assumes the development and management of a TI Zone within which the hydraulic stability of the groundwater COCs will be maintained via continued groundwater recovery and treatment.

The Site's TI Zone is a three dimensional framework that includes the TI Boundary (i.e., the Plant #2 property boundary), and a defined portion of the bedrock aquifer beneath Plant #2. Within the TI Zone the following will occur:

1. Hydraulic control will be maintained through operation of the existing groundwater

pump and treat system;

2. Hydraulic control will be monitored through gauging of the TI Boundary monitoring wells; and
3. Groundwater COC stability will be monitored with respect to MCLs for VOCs, and concentrations of 1,4-Dioxane will be recorded and evaluated with respect to EPA's Tapwater Risk Based Screening Concentration of 6.1 µg/l.

Figure 1 shows the monitoring wells that comprise the TI monitoring well network at the Site. The TI Boundary monitoring well network will be re-evaluated over time, and recommendations on refining the network will be made based on an annual evaluation of future monitoring results. The basis for inclusion of each of the TI Boundary monitoring wells is explained in detail in the January 2011 Corrective Measures Study (CMS) Report. Site area and subsurface geology details are shown in Figure 1 and Figure 2, respectively.

Monitoring wells MW-21S and MW-21D (new) are outside of the Plant #2 TI Boundary/TI Zone, and are not part of the TI monitoring well network. The goal of the long-term remedy for the COCs in MW-21S and MW-21D (new) groundwater is to reduce concentrations to respective MCLs through groundwater pump and treat system. Monitoring wells MW-21S and MW-21D (new) will be gauged and sampled during future TI Boundary monitoring well gauging and sampling events.

If increasing COC concentration trends are observed in MW-21S and MW-21D (new), further evaluation may be needed for localized groundwater remediation for specific COCs.

Monitoring well MW-22D is also outside the Plant #2 TI Boundary/TI Zone, and is not part of the TI monitoring well network. The 1,4-Dioxane levels in MW-22D have been above the EPA's 1,4-Dioxane Screening Concentration of 6.1 µg/l for some time. As such, MW-22D will be sampled for 1,4-Dioxane during future TI Boundary monitoring well gauging and sampling events, and will be evaluated against the Screening Concentration. Decisions on changes to groundwater monitoring procedures and/or Site groundwater recovery and treatment operations will be based on this evaluation.

B. Existing Groundwater Treatment System

The existing (i.e., IM) groundwater pump and treat system has been in operation since 1993 and withdraws groundwater from three pumping wells located at Plant #2. These wells, RW-1, MW-6S and MW-10S, pump on average 50 gallons per minute (gpm), 9 gpm and 8 gpm, respectively. Under the proposed remedy, the existing groundwater pump and treat system would remain in operation. If Site conditions change, AMETEK may re-evaluate the conditions and propose to modify the groundwater pump and treat system (e.g., number of recovery wells, adjust pumping rates, etc), with the approval of the EPA, to improve or maintain the efficacy of the groundwater remediation strategy for the Site.

The main components of the treatment system include an air stripper, two vapor-phase

granular activated carbon (GAC) units (for the capture of VOCs/control of vapor emissions from the systems' air stripper), and various ancillary equipment (e.g., two centrifugal blowers, air stripper sump pump, control panels, etc.). Groundwater is pumped from the three recovery wells, through a particulate filter (for removal of suspended solids), and then to the top of the air stripper. The VOC removal efficiency from the extracted groundwater is approximately 99%. Counter-current air flow through the air stripper transfers the dissolved organics to the vapor phase. The airstream is routed through the vapor-phase GAC units to remove vapor-phase organics. Treated groundwater is discharged to the unnamed tributary behind the treatment building in accordance with Ametek's National Pollutant Discharge Elimination System (NPDES) Permit No. PA0056014 ("NPDES Permit") issued by PADEP. The current NPDES Permit became effective on April 1, 2009 and will expire on March 31, 2014.

Influent and effluent water samples are collected once per month, as required by the aforementioned NPDES permit, and analyzed for five VOCs: 1,1- DCE, PCE, 1,1,1- TCA, TCE and cis-1,2- DCE. At the request of the EPA, AMETEK expanded the required third and fourth quarter discharge monitoring report (DMR) groundwater sampling events for calendar year (CY) 2003 to include the collection of groundwater samples for analysis for 1,4-Dioxane via EPA Method 1624m. As a result of this change in the groundwater sampling program, all DMR monitoring and sampling events since September 2003 were expanded to include the collection of samples for 1,4 Dioxane.

In accordance with the RCRA process, AMETEK will be required to submit an annual report to the EPA summarizing monthly groundwater pump and treat system performance and groundwater influent/effluent data. In the event additional hydraulic control is needed, the groundwater recovery system could potentially be scaled up to its maximum rated and permitted capacity of 100 gpm (i.e., the maximum flow rate permitted for the system's existing air stripping components).

C. Long-Term COC Stability and Groundwater Level Monitoring

The proposed remedy includes long-term monitoring, which would be performed through sampling and gauging of the proposed TI Boundary monitoring well network and monitoring wells MW-21S, MW-21D (new) and MW-22D (for 1,4-Dioxane as previously described). To obtain representative Site groundwater elevations, the entire Site monitoring well network will be included in a comprehensive groundwater level measurement event to be conducted at the beginning of the sampling event. AMETEK will submit an annual report to the EPA summarizing the groundwater elevation and groundwater quality data for VOCs and 1,4-Dioxane obtained from the TI Boundary monitoring well network sampling event. This report will be submitted to the EPA approximately two months after the annual groundwater monitoring event.

If the water elevation in any TI Boundary monitoring well exceeds the maximum historical water elevation reported for a given monitoring well, an investigation will be performed to determine whether hydraulic control has been maintained.

In the event that future data indicate that additional Site groundwater recovery is needed

to meet the Site's aforementioned groundwater cleanup objectives, the groundwater pump and treat system could potentially be scaled up to its maximum rated and permitted capacity of 100 gpm to maintain hydraulic control and groundwater contamination stability within the Plant #2 property (i.e., the maximum flow rate permitted for the system's existing air stripping components).

VII. MEDIA CLEANUP STANDARDS AND POINTS OF COMPLIANCE

The media cleanup standards for groundwater are the Maximum Contaminant Levels (MCLs) for cis-1,2-DCE, 1,1-DCE, PCE, toluene, 1,1,1-TCA, and TCE, 40 C.F.R. §141. In addition, Site groundwater will be monitored with respect to the current screening value of 6.1 µg/l for 1,4-Dioxane. However, the referenced concentration may change if and when an MCL is established for 1,4-Dioxane. The point of compliance is the TI Boundary as shown in Figure 1. With the exception of monitoring wells MW-21S, MW-21D (new) and MW-22D, the Site groundwater has achieved site specific media cleanup objectives beyond the Plant #2 Boundary/TI Zone. Under the TI concept, hydraulic control of the groundwater plume within the TI zone with COC levels that exceed stated cleanup standards for the Site (namely, MCLs for VOCs) will be maintained through the continued operation of the existing groundwater pump and treat system. Therefore, corrective action at Plant #2 will consist of the continued operation of the existing groundwater pump and treat system, and related periodic TI Boundary monitoring well gauging and sampling to evaluate groundwater recovery system performance (i.e., for maintenance of hydraulic control/groundwater stability within the TI Zone, and long-term COC level reduction (toward MCLs) within the TI Zone). The TI Boundary network of wells will be reevaluated at least once a year and recommendations on refining the network of wells will be made based on future monitoring sample results and the changes to Site conditions.

VIII. INSTITUTIONAL CONTROLS AND OVERSIGHT

The area of the Site within the TI Boundary/TI Zone, and its supporting network of monitoring wells, will be subject to land use and development restrictions with regard to Site groundwater constituents. These restrictions will be in place during the time needed to reduce groundwater COCs to MCLs, and monitor 1,4-Dioxane levels against the Screening Concentrations, via the continued operation of the existing groundwater pump and treat system. As potential risks related to other Site media were found to be negligible, Site land use/development restrictions will be primarily related to Site groundwater.

Proposed land use restrictions and engineering controls are as follows:

- Continued use of the Site for industrial purposes only;
- Prohibition of the installation of public or domestic groundwater supply wells within the TI Boundary and on the Site;
- Continued operation and monitoring of the existing groundwater pump and treat

system for removal of Site groundwater COCs at groundwater extraction rates necessary to maintain hydraulic control. Modifications will be made to the TI Boundary monitoring well network and extraction rates as necessary based on future monitoring results; and

- Prohibition of construction of buildings on the Site property without prior written EPA approval.

The institutional controls may be in the form of an environmental covenant pursuant to the Pennsylvania Uniform Environmental Covenants Act (UECA – Act 68). The purpose of the environmental covenant will be to memorialize the future use of the property with regard to the groundwater TI-related institutional controls described herein. There is a potential risk of vapor intrusion into future buildings that may be constructed at the Site. To mitigate that risk EPA will use an institutional control to prohibit construction of any building onsite without prior written approval from EPA. As part of its review process, EPA will verify that appropriate vapor intrusion mitigation (such as a sub-slab vapor recovery/venting system) is included in the building design.

IX. EVALUATION OF PROPOSED REMEDY

This section provides a description of the criteria EPA considers in a remedy and are set forth in EPA's *Advance Notice of Proposed Rulemaking*, 61 Federal Register, no. 85:19451-52 (1996). There are three performance standards and seven balancing/evaluation criteria that determine the overall effectiveness of the selected remedy. The performance standards and balancing/evaluation criteria are summarized below with the rationale for selecting the proposed cleanup.

The following five remedial alternatives were evaluated by EPA for the cleanup of the groundwater contamination:

- In Situ Chemical Oxidation (ISCO)
- Electrical Resistance Heating (ERH)
- Enhanced Bioremediation
- Groundwater Recovery and Reinjection
- Continued operation of the existing groundwater pump and treat system and long-term groundwater stability monitoring

The alternatives were evaluated based on implementability, short-term and long-term effectiveness, reduction in toxicity/mobility, State acceptance, and cost. Although the five corrective measures alternatives can be technically and administratively implemented, the challenging hydrogeological conditions at the Site (e.g., bedrock fractures and bedding planes) and the NAPL characteristics of the elevated VOC concentrations will prohibit any chosen remedy from successfully cleaning up the site-wide groundwater to the Groundwater Protection Standards of the MCLs. Given the limitations of any viable alternatives to achieve the MCLs throughout the groundwater plume, the proposed remedial approach is to continue with the

existing groundwater pump and treat system for hydraulic control and long-term groundwater monitoring to evaluate the effectiveness of the system in attaining stability of the groundwater contamination. The pump and treat system will achieve MCLs beyond Plant #2. However, given the highly elevated VOC concentrations within the property boundaries and the challenging hydrogeological conditions that will prohibit MCLs attainment, the establishment of the Technical Impracticability Zone (TI zone) will define the area of hydraulic control that will ensure groundwater contamination stability within the Plant #2 property. The proposed remedy of the groundwater pump and treat system, long-term monitoring and institutional controls, along with the establishment of the TI zone, will be protective of human health and the environment. Additional details explaining the evaluation of the five remedial alternatives are presented in the January 2011 Final Corrective Measures Study Report. The performance standards and balancing/evaluation criteria are summarized below with the rationale for selecting the proposed remedy.

A. Performance Standards

1. Protect Human Health and the Environment

Overall Protection of Human Health and the Environment addresses whether a remedy provides adequate protection and describes how risks are eliminated, reduced, or controlled.

EPA has determined that operation of the existing groundwater pump and treat system and long-term COC stability and groundwater level monitoring will be protective of human health and the environment. There are no human health threats associated with the contaminated groundwater originating from Plant #2 because with the previously reported deactivation of local municipal supply well PBA-10, and completion of the residential supply well IM program, no known groundwater receptors are present within the vicinity of the Site. In addition, the East Branch of the Perkiomen Creek (closest potential surface water receptor) was shown to be a losing stream (i.e., does not receive groundwater recharge in the area adjacent to the Site).

Presently there are no current consumptive uses of Site-contaminated groundwater. To ensure that groundwater will not be used for potable purposes, EPA is proposing to require institutional controls, as necessary, to prevent consumptive use of the groundwater, as described in Section VIII.

2. Attainment of Media Cleanup Standards

Attainment of Cleanup Standards addresses whether a remedy will meet the appropriate Federal and State cleanup standards.

With the exception of monitoring wells MW-21S, MW-21D (new) and MW-22D, Site-specific media cleanup objectives have been met beyond the Plant #2 Boundary/TI zone. As a result of the continued operation of the existing groundwater pump and treat system, contaminant levels at MW-21S, MW-21D (new) and MW-22D are declining and will be monitored until they meet media cleanup standards. Under the TI concept, control of the groundwater within the TI zone with COC levels that exceed stated cleanup standards for the Site (namely, MCLs for

VOCs) will be maintained through the continued operation of the existing groundwater pump and treat system.

3. Control Source of Releases

Controlling the Sources of Contamination relates to the ability of the proposed remedy to reduce or eliminate, to the maximum extent practicable, further releases.

Manufacturing operations ceased in 2008, and currently, Plant #2 is used only for administrative and engineering offices and as a warehouse for the storage, shipping and receiving of various metal components. The operation of the existing groundwater pump and treat system as the Proposed Remedy addresses the remediation of the remaining contaminants already in Site groundwater, as well as those that may be contributing to Site groundwater contamination via transport from residual Site source areas.

B. Balancing/Evaluation Criteria

1. Long-Term Reliability and Effectiveness

The long-term reliability and effectiveness standard is intended to address protection of human health and the environment over the long term. The existing groundwater pump and treat system is effective in maintaining hydraulic control and stabilizing and reducing COC concentrations in groundwater. The proposed remedy will maintain protection of human health and the environment over time by controlling exposure to the hazardous constituents remaining in groundwater.

2. Reduction of Toxicity, Mobility or Volume of Waste

For this criterion, remedies that employ treatment and/or source removal and containment that are capable of permanently reducing the overall risk posed by the remediation wastes are preferred. Site groundwater with COC levels above MCLs is largely confined to the Plant #2 property boundaries and a related network of groundwater monitoring wells. The existing groundwater pump and treat system has been shown to maintain hydraulic control and prevent further migration of Site COCs. Additionally, reported groundwater results show that groundwater constituent concentrations have stabilized or are following decreasing concentration trends within the aforementioned Site monitoring well network. Lastly, the substantial reduction of offsite groundwater pumping influence, specifically via the elimination of local residential supply wells, and the deactivation of public supply well PBA-10, will continue to enhance the hydraulic control afforded by the Site's groundwater pump and treat system.

3. Short-Term Effectiveness

The short-term effectiveness criterion is intended to address hazards posed during the implementation of the remedy. Short-term effectiveness is designed to take into consideration

the impact on Site workers and nearby residents during construction before the final cleanup levels are achieved. The only possible exposure to groundwater at the Site is to workers taking environmental samples. AMETEK will be required to continue to adhere to existing, published Site groundwater sampling practices that provide for proper worker training, and the wearing of protective clothing if exposure to contaminated groundwater is expected.

4. Implementability

The implementability criterion addresses the regulatory constraints in employing the cleanup approach. The proposed remedy is fully implementable. All necessary components of the groundwater pump and treat system and the TI Boundary monitoring well network are in place and are currently operational; therefore, no new regulatory constraints are anticipated.

5. Cost

The EPA's overriding mandate under RCRA is protection of human health and the environment. However, relative cost is a relevant and appropriate consideration that EPA is permitted to weigh when selecting among alternatives that achieve the cleanup requirements. The necessary components of the groundwater pump and treat system and monitoring network at the Site are in place and are currently operational. The only recurring costs are operations and maintenance, monitoring, and reporting costs. Therefore, continued operation of the existing groundwater pump and treat system and long-term COC stability monitoring is a cost effective remedy for the Site.

6. Financial Assurance

AMETEK will demonstrate and maintain financial assurance for the performance of the proposed remedy.

7. Community Acceptance

There have been no known conflicts with regards to the remediation efforts and community acceptance. The community acceptance of EPA's selected remedy will be evaluated based on comments received during the public comment period.

8. State Acceptance

This criterion addresses technical and administrative preferences and issues that the PADEP may have regarding the proposed remedy. Operation of the existing groundwater extraction and treatment system, and the corresponding groundwater monitoring and sampling methodologies established through the Site investigations conducted from 1999 to 2008 have been proven to be acceptable to the PADEP.

X. COMMUNITY INVOLVEMENT/PUBLIC PARTICIPATION

EPA is requesting comments from the public on the proposed remedy for remediation of the contamination at the Site. The public comment period will last thirty (30) calendar days after the public notice first appears on August 23, 2011 in the Intelligencer. Comments should be sent to EPA in writing at the address listed below. The EPA must receive the comments within the 30-day period ending September 22, 2011.

A public hearing will be held upon request. Requests for a public hearing should be made to Mr. Khai M. Dao of the EPA Region III Office (215-814-5467). A hearing will not be scheduled unless one is requested.

EPA may modify the proposed remedy based on new information and/or public comments. Therefore, the public is encouraged to review the Administrative Record, and to comment on the proposed remedy presented in this document.

Key information used in generating the proposed remedy is from reports and sources contained in the Administrative Record. The Administrative Record is available to the public for review and can be found at the following locations:

United States Environmental Protection Agency, Region III

1650 Arch Street

Mail Code: 3LC30

Philadelphia, PA 19103-2029

Contact: Khai M. Dao

Voice 215-814-5467

Fax: 215-814-3113

Email: dao.khai@epa.gov

Hours: Monday-Friday: 8:30 am – 5:00 pm

and

Pennsylvania Department of Environmental Protection (PADEP)

2 East Main Street

Norristown, PA 19401

Contact: Ms. Jennifer Wilson

Voice: 484-250-5744


Hours: 8:00 am – 4:00 pm

Note: Appointment is needed to review the Administrative Record

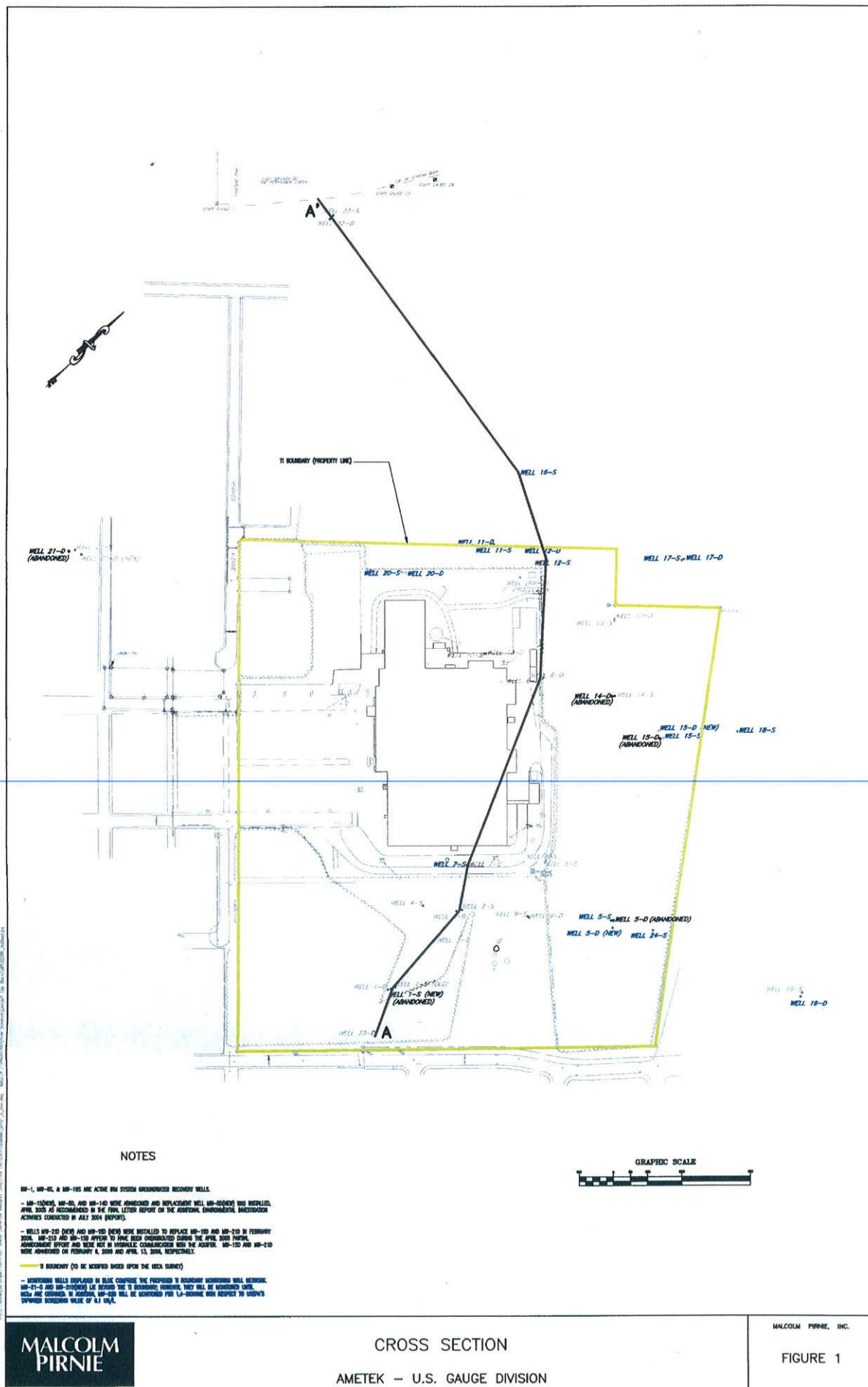
Following the thirty (30) calendar day public comment period, EPA will prepare a final decision that will address all significant comments received during the public comment period. If EPA determines that new information or public comments warrant a modification to the proposed remedy, EPA will modify the proposed remedy or select other alternatives based on such new

information and/or public comments. If there are no significant comments that will change the proposed remedy, the proposed remedy will become final. EPA will describe its final decision in a document entitled the Final Decision and Response to Comments (FDRTC). Any person who comments on the proposed remedy will receive a copy of the FDRTC. Any other person wishing to receive a copy of the FDRTC may obtain one by contacting Mr. Khai M. Dao.

8/23/11
Date


Abraham Ferdas, Director
EPA Region III
Land and Chemicals Division

Attachments:
Figure 1- TI Boundary
Figure 2- Geologic Cross Section



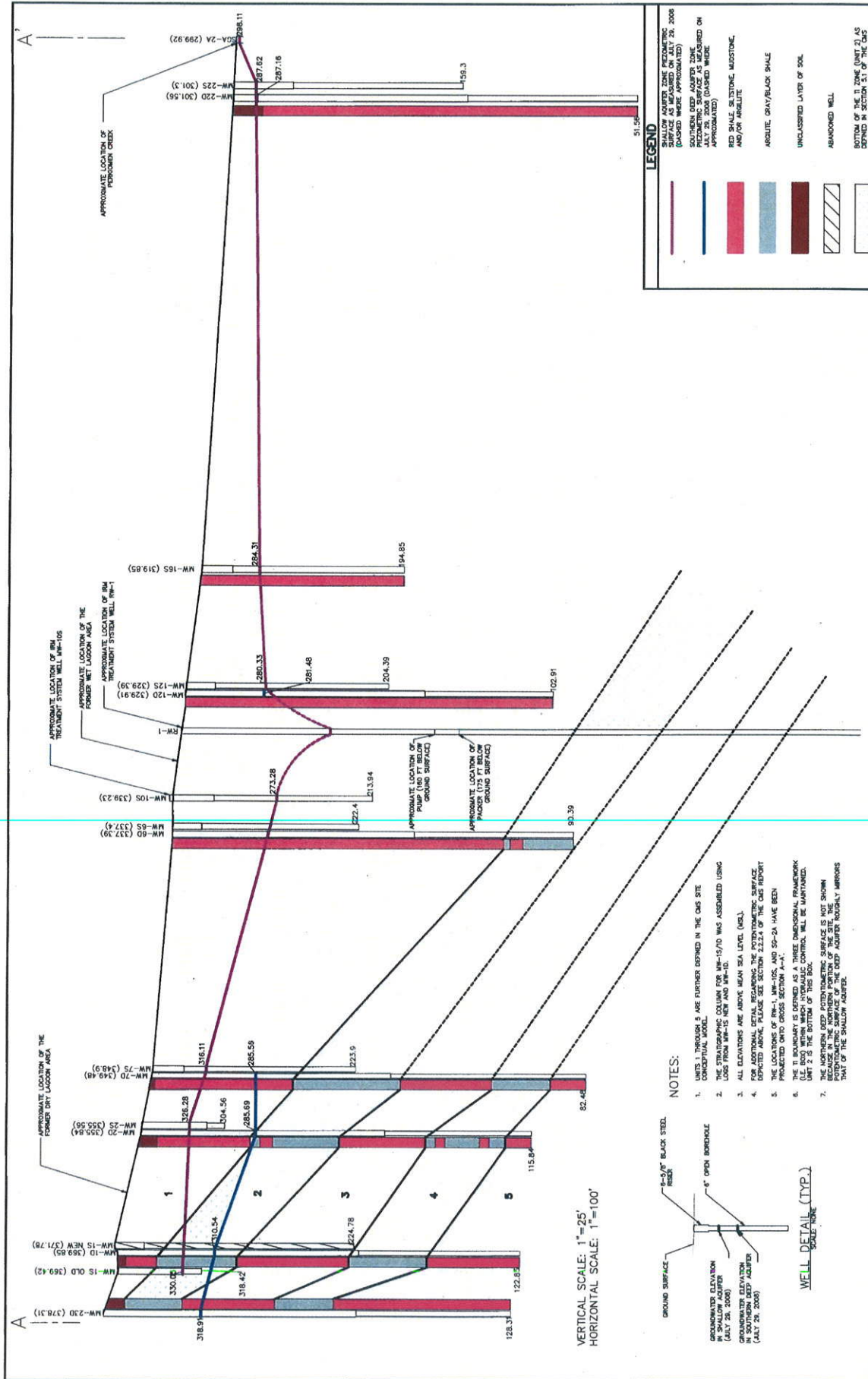
NOTES

- MW-1, MW-45, & MW-105 ARE ACTIVE RIM SYSTEM GROUNDWATER MONITORING WELLS.
- MW-105(NEW), MW-45, AND MW-105(D) WERE ABANDONED AND REPLACEMENT WELL MW-20(NEW) WAS INSTALLED, APRIL 2008 AS RECOMMENDED IN THE FINAL LETTER REPORT ON THE ADDITIONAL ENVIRONMENTAL INVESTIGATION ACTIONS CONDUCTED IN JULY 2008 (REF: 08-07).
- WELLS MW-105(D) NORTH AND MW-105(D) SOUTH WERE REINSTALLED TO REPLACE MW-105 AND MW-105(D) IN FEBRUARY 2008. MW-213 AND MW-105 APPEAR TO HAVE BEEN OBSOLETE DURING THE APRIL 2008 FINAL ENVIRONMENTAL INVESTIGATION EFFORT AND WERE NOT IN PHYSICAL CONTACT WITH THE PLANT. MW-105 AND MW-213 WERE ABANDONED ON FEBRUARY 6, 2008 AND APRIL 13, 2008, RESPECTIVELY.
- BOUNDARY (TO BE RECORDED BASED UPON THE WELLS SHOWN)
- MONITORING WELLS OUTLINED IN BLUE COMPRISE THE PROPOSED TO BOUNDARY MONITORING WELL NETWORK. MW-213-S AND MW-205(D) ARE BEYOND THE 10' BOUNDARY. HOWEVER, THEY WILL BE MONITORED UNTIL WELLS ARE CORRECTED. IN ADDITION, MW-450 WILL BE MONITORED FOR LA-DETECT WITH RESPECT TO USTDS'S TYPICAL DETECTION VALUE OF 0.1 USTDS.



CROSS SECTION
AMETEK - U.S. GAUGE DIVISION

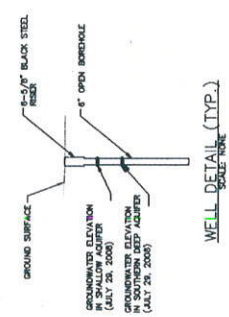
MALCOLM PIRNIE, INC.
FIGURE 1



LEGEND

- SHALLOW AQUIFER ZONE POTENTIOMETRIC SURFACE AS MEASURED ON JULY 29, 2008 (DASHED WHERE APPROXIMATED)
- POTENTIOMETRIC SURFACE AS MEASURED ON JULY 29, 2008 (DASHED WHERE APPROXIMATED)
- RED SHALE, SILTSTONE, MUDSTONE, AND/OR ARGILLITE
- ARGILLITE, GRAY/BLACK SHALE
- UNCLASSIFIED LAYER OF SOIL
- ABANDONED WELL
- BOTTOM OF THE T1 ZONE (UNIT 2) AS DEFINED IN SECTION 5.1 OF THE OAS

- NOTES:**
- UNITS 1 THROUGH 5 ARE FURTHER DEFINED IN THE OAS SITE CONCEPTUAL MODEL.
 - THE STRATIGRAPHIC COLUMN FOR MW-15/70 WAS ASSEMBLED USING LOGS PROVIDED BY THE FORMER DIRT LAGOON AREA.
 - ALL ELEVATIONS ARE ABOVE MEAN SEA LEVEL (MSL).
 - THE STRATIGRAPHIC COLUMN FOR MW-105 WAS ASSEMBLED USING LOGS PROVIDED BY THE FORMER DIRT LAGOON AREA.
 - THE LOCATIONS OF MW-1, MW-105, AND 50-2A HAVE BEEN PROJECTED ONTO CROSS SECTION A-A'.
 - THE T1 BOUNDARY IS DEFINED AS A THREE DIMENSIONAL FRAMEWORK (UNIT 2) OF THE OAS. THE CONTROL WILL BE MAINTAINED.
 - THE POTENTIOMETRIC SURFACE IS NOT SHOWN BECAUSE IN THE NORTHERN PORTION OF THE SITE, THE SHALLOW AQUIFER IS NOT DEEP ADAPTER ROUGHLY PARALLEL TO THAT OF THE SHALLOW AQUIFER.



VERTICAL SCALE: 1"=25'
 HORIZONTAL SCALE: 1"=100'

SITE STRATIGRAPHY

CROSS SECTION A-A'

AMETEK, U.S. GAUGE DIVISION
 SELLERSVILLE, PA

MALCOLM PIRNIE

FIGURE 2

VERTICAL SCALE: 1"=25'; HORIZONTAL SCALE: 1" = 100'