

APPENDIX B

EXPLANATION OF SIGNIFICANT DIFFERENCES

for the

ALUMINUM COMPANY OF AMERICA SITE

RIVERDALE, SCOTT COUNTY, IOWA

Prepared by:

United States Environmental Protection Agency
Region VII
901 North 5th Street
Kansas City, Kansas 66101

July 2007

1.0 INTRODUCTION

The United States Environmental Protection Agency (EPA) is issuing an Explanation of Significant Difference (ESD) for the Aluminum Company of America (Alcoa) Site located in Riverdale, Iowa. This ESD describes the significant differences from the original remedy that was selected in the September 28, 2004, Record of Decision (ROD). The new performance standards and monitoring levels identified in this ESD will not fundamentally alter the groundwater remedy specified in the ROD (i.e., the selected technology for the containment, extraction, and treatment of groundwater will not change). This information is provided so the public can review and comment on the differences thereby facilitating public involvement in the remedy selection process.

Section 3.1 of this ESD clarifies the compounds and chemical-specific applicable or relevant and appropriate requirements (ARARs) that will be used as groundwater performance standards and monitoring levels in the subsequent implementation of the groundwater monitoring program. Section 3.2 of this ESD clarifies the compounds and associated discharge limitations that will be used as effluent performance standards in the subsequent implementation of the effluent monitoring program for the treated groundwater (i.e., the effluent) from the groundwater containment, extraction, and treatment system. The September 2004 ROD also presented the remedy for the Mississippi River Pool 15 (MRP15) Site. Changes to the remedy for the MRP15 Site are not necessary.

EPA has served as lead agency for this project, with support from the Iowa Department of Natural Resources (DNR). This ESD was prepared in accordance with Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. 9617(c), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and Section 300.435(c)(2)(i) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR, Part 300. In accordance with Section 300.825(b) of the NCP, EPA will hold an additional public comment period concerning EPA's selected response action for the Alcoa Site as modified in this ESD. Comments on the performance standards and monitoring levels for the groundwater monitoring program and the performance standards for the effluent monitoring program as described herein may be submitted in accordance with Section 6.0 of this ESD. Public comments received during the comment period will be reviewed by EPA to determine if additional changes to the groundwater monitoring program and/or the effluent monitoring program are warranted.

This ESD, along with other pertinent documents, will be included in the Administrative Record in accordance with Section 300.825(a)(2) of the NCP. The Administrative Record for the Alcoa Site is available for public review at the Bettendorf Public Library, 2950 Learning Campus Drive, Bettendorf, Iowa and at the EPA Region 7 offices, 901 N. 5th Street, Kansas City, Kansas.

2.0 SITE BACKGROUND

2.1 Site History

The Alcoa-Davenport Works manufactures aluminum sheet and plate products and has been in operation since 1948. The facility also produces aluminum ingots as feedstock for the rolling process. The facility is located in the town of Riverdale, adjacent to Bettendorf (one of the Iowa-Illinois Quad Cities), on a roughly rectangular, 460-acre tract of land on a gently sloping flood plain adjacent to the Mississippi River (see Figure 1 of this ESD). The facility has steadily grown and expanded since its original construction and start of operations. Manufacturing processes have resulted in contamination of groundwater and soil at the Alcoa facility and sediments and fish in MRP15. Consequently, areas within the Alcoa facility and portions of MRP15 have been the subject of investigations and evaluations by Alcoa Inc., formerly known as the Aluminum Company of America (Alcoa), pursuant to a series of Administrative Orders on Consent (AOCs) between Alcoa and the EPA.

From 1956 to 1979, Alcoa used an unlined waste oil surface impoundment, located approximately 150 feet from the Mississippi River, for storage of oil and grease, pickling fluids, solvents, and paint wastes. At its greatest extent, the impoundment, now referred to as the Former Waste Disposal Site (FWDS), covered approximately 14 acres and ranged from 8 to 20 feet deep. In 1979, Alcoa determined that the waste oil in the impoundment was contaminated with polychlorinated biphenyls (PCBs) and that action was necessary to control releases. By June 1981, Alcoa had removed all pumpable waste oil and sludge (2.8 million gallons) from the impoundment. The remaining sludge was solidified with cement kiln dust to further control PCB releases. Alcoa installed groundwater monitoring wells around the perimeter of the surface impoundment.

Alcoa conducted groundwater monitoring and sampling between 1980 and 1984 which indicated PCBs and various volatile organic compounds (VOCs) were present in the groundwater in the vicinity of the surface impoundment. Alcoa installed an oil interception and recovery trench to collect oil released from the impoundment before it entered the river. In addition, the impoundment was capped with a low permeability compacted clay. These response actions have helped to reduce the release of PCBs and other contaminants from the former waste oil impoundment to the Mississippi River. Alcoa subsequently disposed of the PCB-containing oil and cleaned up the three 1 million gallon tanks that were used to store the reclaimed oil, as well as, the fuel oil pump house, equipment, and associated piping.

In 1986, Alcoa formulated and implemented a detailed groundwater monitoring plan to further assess the effect of impoundment contaminants on public health and the environment. Monitoring wells were installed and samples confirmed earlier findings that PCBs and VOCs were present in the alluvial aquifer and VOCs were present in the underlying bedrock aquifer in the vicinity of the FWDS. In August 1989, Alcoa informed the EPA of PCB contamination in soil and groundwater in the northwest portion of the Alcoa facility, near the 86-Inch Continuous Heat Treatment (CHT) line. In December 1989, Alcoa informed Iowa DNR of VOC

contamination, specifically tetrachloroethylene contamination (often referred to as tetrachloroethene or perchlor [PCE]), that was discovered during maintenance and excavation activities in the northwest portion of the Alcoa facility near two PCE storage tanks. PCE replaced trichloroethylene (often referred to as trichloroethene [TCE]) in the mid-1970s as the degreasing solvent used at the Alcoa facility to clean aluminum prior to entering the finish lines. Prior to 1989, an Alcoa process well (i.e., PW-06) was used for industrial water demands at the facility and this seasonal use influenced groundwater flow patterns in the western portion of the Alcoa facility. Since 1989, Alcoa has operated PW-06 to provide hydraulic containment of contaminated groundwater. An air stripper is used to treat the groundwater prior to discharge to the Mississippi River. The air-stripping system removes VOCs from the extracted groundwater. Another industrial process well (i.e., PW-05) has been connected to the groundwater containment/extraction/treatment system to serve as a backup to PW-06, if needed. Over the last several years, optimum extraction rates have been difficult to achieve at PW-06 despite numerous efforts to rehabilitate the well. Because of the reduced pumping capacity at PW-06, a back-up extraction well (PW-05) has served as the primary extraction well since November 2006. Alcoa is planning to construct a new extraction well to replace PW-06 as the primary extraction well.

Alcoa has also conducted a Remedial Investigation (RI) and Feasibility Study (FS) for groundwater. A review of groundwater investigation activities and groundwater data is presented in the May 2002 Groundwater RI Report. Groundwater sampling focused on VOCs and PCBs in areas near the facility boundaries. The RI Report also includes the Baseline Risk Assessment (BLRA) for groundwater. The results of the RI and groundwater BLRA formed the basis for the remedial alternatives presented in the May 2004 Alcoa-Davenport Works Groundwater FS Report and the subsequent selection of the remedy for the Alcoa Site as documented in the September 2004 ROD.

2.2 Remedy Selected in the September 2004 ROD

The remedy, as described in the September 2004 ROD, is groundwater containment, which includes groundwater extraction and treatment, source area remediation, groundwater monitoring, and institutional controls. Operation of a groundwater containment/extraction/treatment system will provide containment of groundwater contamination. The ROD states that the treated groundwater will be either discharged to the Mississippi River at levels protective of human health and the environment or recycled for plant re-use under the guidelines of the Davenport Water Pollution Control Pretreatment program.

The remedy for the Alcoa Site takes into account the technical impracticability of restoring groundwater within certain areas of the aquifer to drinking water standards in a reasonable timeframe (e.g., in less than 100 years). The restoration of the groundwater to meet chemical-specific ARARs is technically impracticable from an engineering perspective due to hydrogeologic and contaminant-related factors, specifically the presence of non-aqueous phase liquid (NAPL) sources in a fractured bedrock aquifer. Chemical-specific ARARs are health-based or risk-based numerical values or methodologies used to establish an acceptable

concentration of a chemical in the media of concern (e.g., groundwater). The Technical Impracticability (TI) Evaluation Report was included as Appendix A to the Groundwater FS Report.

As documented in the September 2004 ROD, a TI ARAR waiver for chemical-specific ARARs was deemed by EPA to be appropriate for groundwater within the TI Zone at the Alcoa Site. The horizontal extent of the TI Zone is an area that lies within the Alcoa facility boundary (see Figure 2 of this ESD). The vertical extent of the TI Zone includes the unconsolidated zone aquifer and the bedrock aquifers. The TI ARAR Waiver applies only to groundwater within the TI Zone. As stated in the ROD, the groundwater monitoring component will provide the necessary information to assure that the groundwater containment system is effectively controlling groundwater migration and be used to assess the quality of the groundwater in areas outside and inside the TI Zone. The selected remedy also includes institutional controls that will be used to control exposure to groundwater in off-site areas and on-site areas.

The remedial action objectives (RAOs) with respect to different portions of the groundwater plume are described in the ROD as follows: (1) manage and monitor the migration of on-site groundwater that contains site-related contaminants at levels above ARARs to prevent contaminant migration in the vicinity of South Bellingham Street; (2) manage and monitor the migration of on-site groundwater to prevent the discharge of site-related contaminants at levels that would result in an unacceptable risk to surface water receptors in MRP15; and (3) monitor the migration of chemicals of potential concern (COPCs) in groundwater that currently flows off the facility to the east to ensure concentrations remain below ARARs and manage the off-site flow if groundwater concentrations exceed ARARs. The remedy selected in the September 2004 ROD for the Alcoa Site was designed to achieve the RAOs.

3.0 BASIS FOR THE ESD AND DESCRIPTION OF SIGNIFICANT DIFFERENCES

Section 3.1 and Section 3.2 below describe modifications to the groundwater monitoring program and the effluent monitoring program for the remedy at the Alcoa Site as described in the September 2004 ROD. The revised remedy will achieve the RAOs described in the ROD and will consist of all the same components as the original remedy selected in the ROD.

As stated in the September 2004 ROD, the expected outcome of the selected remedy for the Alcoa Site is that there will not be any ingestion of contaminated groundwater in areas outside the TI Zone or in areas within the TI Zone. The changes to the groundwater monitoring program described in this ESD will not impact the expected outcome of the remedy. Due to an increase in groundwater monitoring requirements, it is likely that there will be additional costs above those anticipated in the ROD.

The changes to the requirements for the monitoring of the effluent from the groundwater containment, extraction, and treatment system will not impact the expected outcome of the remedy. The treated groundwater from the groundwater containment, extraction, and treatment system will be discharged to the Mississippi River at levels that are still considered to be protective of human health and the environment. Due to an increase in effluent monitoring requirements, it is likely that there will be additional costs above those anticipated in the ROD.

3.1 Clarification of Standards for Groundwater Monitoring

As set forth in the RAOs described in the ROD, the performance goal for groundwater remediation at the Alcoa Site is containment, extraction, and treatment of groundwater so that concentrations of site-related groundwater contaminants in areas outside the TI Zone do not exceed chemical-specific ARARs. To determine if the performance goal of groundwater containment is being achieved, chemical-specific ARAR concentration values for site-related groundwater contaminants will be used as groundwater performance standards and monitoring levels. This section explains the selection of the compounds and the associated chemical-specific ARAR concentration values set forth in Table 1 and Table 2 of this ESD.

The potential federal and state chemical-specific ARARs and to-be-considered (TBC) guidance were listed in Table 3-2 of the Groundwater FS Report, including the Maximum Contaminant Levels (MCLs) established under the Safe Drinking Water Act, the groundwater action levels per Chapter 567 Iowa Administrative Code (IAC) 133, and the Iowa statewide groundwater standards per Chapter 567 IAC 137. The Iowa statewide groundwater standards per Chapter 567 IAC 137 were considered as TBC guidance during the development of the FS and ROD. The groundwater action levels per Chapter 567 IAC 133 were cited as relevant and appropriate requirements in the ROD. The chemical-specific ARAR and TBC concentration values for the VOCs, semi-VOCs (including polynuclear aromatic hydrocarbons (PAHs)), and PCBs detected in groundwater were listed in Table 3-3 of the Groundwater FS Report. EPA approved the Groundwater FS Report and Tables 3-2 and 3-3 were included as attachments to the September 2004 ROD.

The Iowa DNR has since provided clarification that the Iowa statewide groundwater standards per Chapter 567 IAC 137 are relevant and appropriate requirements and that these promulgated standards should be used to establish response action standards in lieu of the approach for determining action levels per Chapter 567 IAC 133. Therefore, in view of this ARAR clarification, it is necessary to update and clarify the federal and state chemical-specific ARAR concentration values for VOCs and semi-VOCs originally listed in Table 3-3 of the Groundwater FS Report. The updated chemical-specific ARAR concentration values that will be used as groundwater performance standards for VOCs, semi-VOCs, and PCBs in the groundwater monitoring program at the Alcoa Site are set forth in Table 1 of this ESD. A summary of the revisions to Table 3-3 of the Groundwater FS Report has also been included as an attachment to Table 1.

The chemical-specific performance standards for groundwater listed in Table 1 of this ESD are based on the following hierarchy: (1) MCLs; (2) EPA lifetime Health Advisory Levels (HALs) and (3) risk-based values calculated in accordance with the methodology described in subrule 567 IAC 137.5(4)(a) (i.e., statewide standards for groundwater in a protected groundwater source). The statewide standards for groundwater in a protected groundwater source are based on groundwater ingestion and calculated using a target cancer risk of 5×10^{-6} for group A and B chemicals; a noncancer target hazard quotient (THQ) of 0.02 for group C chemicals; and a noncancer THQ of 0.2 for group D and E chemicals. The potential

carcinogenicity of chemicals is based on the weight-of-evidence classification system utilized by the EPA (i.e., Group A, B, C, D, and E). A 1×10^{-6} risk level is an estimate of the concentration of a carcinogenic compound that may result in one additional cancer case per million people, beyond what is expected from all other sources. The potential for noncarcinogenic health effects is referred to as the hazard quotient. A hazard quotient less than one means the compound is not likely to cause harm or adverse health effects. A hazard quotient higher than one means there is a potential for harm or adverse health effects.

In addition to the compounds listed in Table 1 of this ESD, the groundwater monitoring program will include analysis for the inorganic compounds, including metals, listed in Table 2 of this ESD. The inorganic compounds listed in Table 2 have been selected following a review of historical groundwater monitoring data. The chemical-specific ARAR concentration values in Table 2 are based on the same hierarchy described in the preceding paragraph and will be used as groundwater monitoring levels for the inorganic compounds. If inorganic compounds are detected in the groundwater at concentrations above the monitoring levels, additional sampling (including background sampling) may be necessary to investigate and characterize the situation. Following characterization, EPA will determine if groundwater performance standards protective of human health and the environment need to be established for inorganic compounds.

All data from the groundwater monitoring program, including the inorganic analytical data, will be used to further assess groundwater quality and determine if the remedy remains protective of human health and the environment.

3.2 Clarification of Standards for Effluent Monitoring

This ESD modifies the remedy for the Alcoa Site to clarify that effluent discharges from the groundwater extraction and treatment system at the Alcoa Site must comply with the discharge standards set forth in Table 3 of this ESD. This section explains the basis for this change.

Since October 28, 2002, treated groundwater from the air-stripper has been discharged from Outfall 007 at the Alcoa facility pursuant to a facility-wide National Pollution Discharge Elimination System (NPDES) Permit Number 82-78-1-00 issued by Iowa DNR. The NPDES permit contains an effluent limitation of 15 micrograms per liter ($\mu\text{g/L}$) for PCE. A Consent Administrative Order issued by Iowa DNR on September 17, 2003, requires discharges from Outfall 007 to comply with an interim effluent limit of 50 $\mu\text{g/L}$ for PCE.

The September 2004 ROD stated that the treated groundwater from the groundwater containment, extraction, and treatment system will be discharged to the Mississippi River at levels protective of human health and the environment or recycled for plant re-use under the guidelines of the Davenport Water Pollution Control Pretreatment program. The ROD further stated that discharge limits for the COPCs and the chemicals of potential ecological concern (COPECs) will need to be part of the NPDES permit and if no NPDES permit discharge

limitation exists for a COPC or a COPEC, then the MCLs established under the Safe Drinking Water Act will be the discharge limit.

Because the NPDES permit regulated only one constituent at Outfall 007, namely PCE, the ROD had the effect of limiting the potential discharge of any other constituent from Outfall 007 to the applicable Safe Drinking Water Act standard. The ESD revises this determination by developing standards for constituents discharged from Outfall 007 based on the substantive standards of the NPDES program and the Clean Water Act (CWA). These standards are set forth in Table 3 of this ESD.

In developing the limits set forth in Table 3 of this ESD, the NPDES program was treated as a relevant and appropriate requirement. As such, the State of Iowa NPDES Water Program and the EPA Region 7 Water Program have been consulted regarding the derivation of the effluent limits set forth in Table 3. The effluent discharge limits set forth in Table 3 meet the substantive requirements of the CWA and the NPDES program.

The Mississippi River adjacent to the Alcoa facility is the receiving stream for the discharge of effluent from outfall 007. The waters of this segment of the Mississippi River have been designated by Iowa DNR as Class "A1" and Class "B(WW)." Class "A1" waters are designated as primary contact recreational use waters and further defined by Iowa DNR as "Waters in which recreational or other uses may result in prolonged and direct contact with the water, involving considerable risk of ingesting water in quantities sufficient to pose a health hazard. Such activities would include, but are not limited to, swimming, diving, water skiing, and water contact recreational canoeing." Class "B(WW)" waters are designated as significant resource warm waters and further defined by Iowa DNR as "Waters in which temperature, flow and other habitat characteristics are suitable for the maintenance of a wide variety of reproducing populations of warm water fish and associated aquatic communities, including sensitive species." Class "B(WW)" waters are to be protected for wildlife, fish, aquatic, and semi-aquatic life. The Mississippi River adjacent to the Alcoa facility is not designated as a drinking water supply due to the fact there is no potable drinking water supply intake at that specific location in the river (i.e., it is not a Class "C" stream at the point of the Alcoa discharge). The ROD indicates that MCLs will be the discharge limits for COPCs and COPECs not included in the NPDES permit. However, drinking water standards (e.g., MCLs) are not the most appropriate values to use as discharge limits. Therefore, instead of MCLs, EPA will use the technology-based effluent limits in Table 3 that were developed in accordance with the CWA and NPDES regulations.

The compounds in Table 3 (i.e., PCE, TCE, and cis-1,2-dichloroethylene [DCE]) have been the only VOCs consistently detected in both the influent and effluent from the air-stripper. The air-stripper is considered to be the Best Available Technology (BAT) for treatment of VOCs. In accordance with the CWA and NPDES regulations, the following technology-based effluent limits have been developed and proposed by Alcoa for these compounds: PCE=33 µg/l, TCE=10 µg/l, and cis-1,2-DCE=78 µg/l. Alcoa's development of these technology-based effluent limits included an assessment regarding the reasonable potential for causing or contributing to an

instream excursion above a State water quality standard (WQS). The reasonable potential analysis was conducted using site-specific data, including effluent data collected from the air-stripper from January 2003 through January 2006. The results show that there is no reasonable potential for the discharge to cause instream excursions above a WQS. EPA Region 7 Water Program and the State of Iowa NPDES Water Program also assessed the protectiveness of the technology-based effluent limits proposed by Alcoa. The State of Iowa NPDES Water Program conducted a Wasteload Allocation that showed no reasonable potential for the discharge to violate State water quality standards. Therefore, the technology-based effluent limits in Table 3 of this ESD are protective of human health and the environment and will be used as the effluent performance standards that apply to discharges of effluent from the groundwater treatment system. Such discharges occur through Outfall 007 at the Alcoa facility.

The compounds listed in Table 4 of this ESD have been selected following a review of historical groundwater monitoring data, an evaluation of the frequency of detection in groundwater samples, a review of influent and effluent data from the air-stripper, an evaluation of biological and chemical transformation pathways for chlorinated solvents (i.e., breakdown products), and a comparison of the analytical data to human health criteria and ecological criteria. The VOCs in Table 4 of this ESD have only been detected intermittently or not at all in the influent and the effluent from the air-stripper and, therefore, a statistical derivation of effluent performance standards for these compounds is not possible. However, the groundwater regime could change during the long-term operation of the groundwater containment, extraction, and treatment system and, therefore, periodic analysis of the effluent for these VOCs is warranted. Analytical data for PAHs, PCBs, and inorganic compounds has not been collected from the influent or effluent from the air-stripper. Based on a review of the groundwater monitoring data for PAHs and PCBs, the lack of mobility of PAHs and PCBs in groundwater due to partitioning to soil, and the fact that the extraction wells draw water from the intermediate and deep bedrock zones, it is unlikely that PAHs and PCBs would be present in the influent or effluent from the groundwater treatment system (i.e., the air-stripper). However, the groundwater regime could change during the long-term operation of the groundwater containment, extraction, and treatment system and, therefore, periodic analysis of the effluent for PAHs and PCBs is warranted. Similarly, periodic analysis of the effluent for the inorganic compounds (e.g., the metals) is also necessary. Therefore, in addition to the compounds listed in Table 3 of this ESD, the effluent monitoring program will include analysis for the VOCs, PAHs, PCBs, and inorganic compounds listed in Table 4 of this ESD.

The analytical data from the effluent monitoring program will be used to assess the need for modifications to the groundwater treatment system and to assure that the remedy remains protective of human health and the environment.

Since the issuance of the ROD, EPA has also revisited the question of whether discharges of treated groundwater at the Alcoa Site should be subject to the existing NPDES permit. EPA has determined that under the NCP and applicable EPA guidance, the remedial action at the Alcoa Site, including the discharge from Outfall 007, will be conducted entirely on-site, because

the discharge occurs within very close proximity to the Alcoa Site and is necessary for the implementation of the remedy. Therefore, pursuant to Section 121(e)(1) of CERCLA, 42 U.S.C. §9621(e)(1), the NCP, and applicable EPA guidance, Alcoa is not required to have an NPDES permit for the discharge of effluent from the air-stripper.

CERCLA, the NCP, and applicable EPA guidance require on-site remedial action discharges to navigable waters to comply with the substantive requirements of the NPDES program and the Clean Water Act. The Clean Water Act assures protection of public water supplies and aquatic life, protects waters of the United States for recreational use, and prevents the discharge of pollutants in quantities that pose an unacceptable risk to human health and the environment.

4.0 SUPPORT AGENCY COMMENTS

This section provides a discussion of comments and recommendations provided by the Iowa DNR.

The Iowa DNR cites the Iowa statewide groundwater standards per 567 IAC 137 as a potential State ARAR (i.e., relevant and appropriate). In the event that a compound does not have an MCL or HAL for use as a groundwater performance standard, Iowa DNR prefers the use of Iowa statewide groundwater standards over EPA Region 9 Preliminary Remediation Goals (PRGs) for groundwater performance standards and monitoring levels. Instead of EPA Region 9 PRGs, the Iowa statewide groundwater standards will be used in the groundwater monitoring program as described in Section 3.1 above.

As stated in Section 3.2, EPA has determined that under the NCP and applicable EPA guidance, the remedial action at the Alcoa Site, including the discharge from Outfall 007, will be conducted entirely on-site, because the discharge occurs within very close proximity to the Alcoa Site and is necessary for the implementation of the remedy. On-site discharges from a CERCLA site are expected to meet the substantive requirements of any federal and state environmental laws that are identified as ARARs, but compliance with the administrative requirements associated with the permitting process is not required. Therefore, pursuant to Section 121(e)(1) of CERCLA, 42 U.S.C. §9621(e)(1), the NCP, and applicable EPA guidance, Alcoa is not required to have an NPDES permit for the discharge of effluent from the air-stripper. The Iowa DNR agrees that the discharge limitations selected by EPA for Outfall 007 are consistent with the substantive requirements of the NPDES Program under the Clean Water Act.

5.0 STATUTORY DETERMINATIONS

The remedy for the Alcoa Site, as originally set forth in the September 2004 ROD, satisfied the requirements of Section 121 of CERCLA, 42 U.S.C. §9621. The original remedy as modified by this ESD also satisfies the requirements of CERCLA Section 121. The revised remedy for the Alcoa Site is protective of human health and the environment, complies with

federal and state applicable ARARs (except where justified by a waiver), is cost-effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. As with the original remedy, the treatment system (e.g., air-stripper) will effectively reduce VOC concentrations in extracted groundwater and, therefore, the revised remedy for the Alcoa Site also satisfies the statutory preference for treatment as a principal element of the remedy (i.e., reduces the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal element through treatment).

As with the original remedy, the Alcoa Site will be subject to the statutory five-year review process under the revised remedy.

6.0 PUBLIC PARTICIPATION

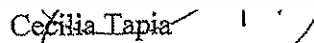
The ESD and other site-related documents are part of the Administrative Record for the Alcoa Site, available for public review at the Bettendorf Public Library, 2950 Learning Campus Drive, Bettendorf, Iowa and at EPA Region 7 offices, 901 N. 5th Street, Kansas City, Kansas. The ESD is issued to meet public participation provisions set out in Section 300.435(c)(2)(i) of the NCP. The public comment period for this ESD extends from July 12, 2007 through August 10, 2007.

All written comments should be addressed to:

Beckie Himes, Community Involvement Coordinator
Office of External Programs
U.S. EPA, Region 7
901 N. 5th Street
Kansas City, Kansas 66101
Telephone: 1-913-551-7003 or
Toll-free: 1-800-223-0425

7.0 DECLARATION

For the foregoing reasons, by my signature below, the EPA is issuing this Explanation of Significant Differences for the Aluminum Company of America Site in Riverdale, Iowa.


Cecilia Tapia
Director, Superfund Division
U.S. Environmental Protection Agency
Region VII

7/5/07
Date

ATTACHMENTS
to
EXPLANATION OF SIGNIFICANT DIFFERENCES
for the
ALUMINUM COMPANY OF AMERICA SITE

Figure 1 – Location and Physical Setting of Alcoa-Davenport Works

Figure 2 – TI Zone Boundary

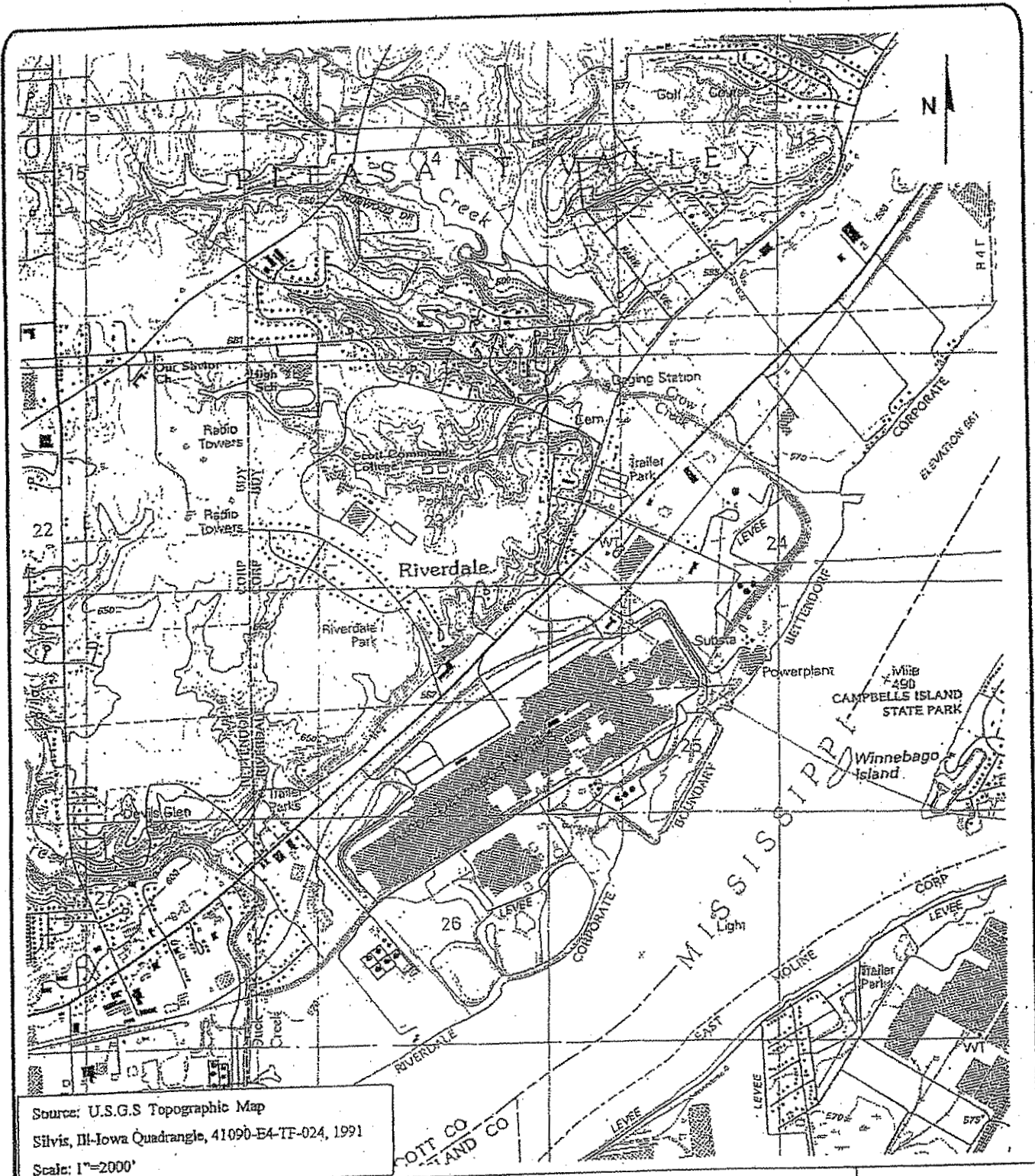
Table 1 – Groundwater Performance Standards – Chemical-specific ARAR Concentration Values (Revised Table 3-3 of Groundwater FS Report)

Table 1 – Attachment – Summary of Revisions to Table 3-3 of Groundwater FS Report

Table 2 – Groundwater Monitoring Levels – Chemical-specific ARAR Concentration Values for Inorganic Compounds

Table 3 – Chemical-specific Performance Standards for Groundwater Treatment System Effluent

Table 4 – Chemical-specific Monitoring Parameters for Effluent Monitoring Program

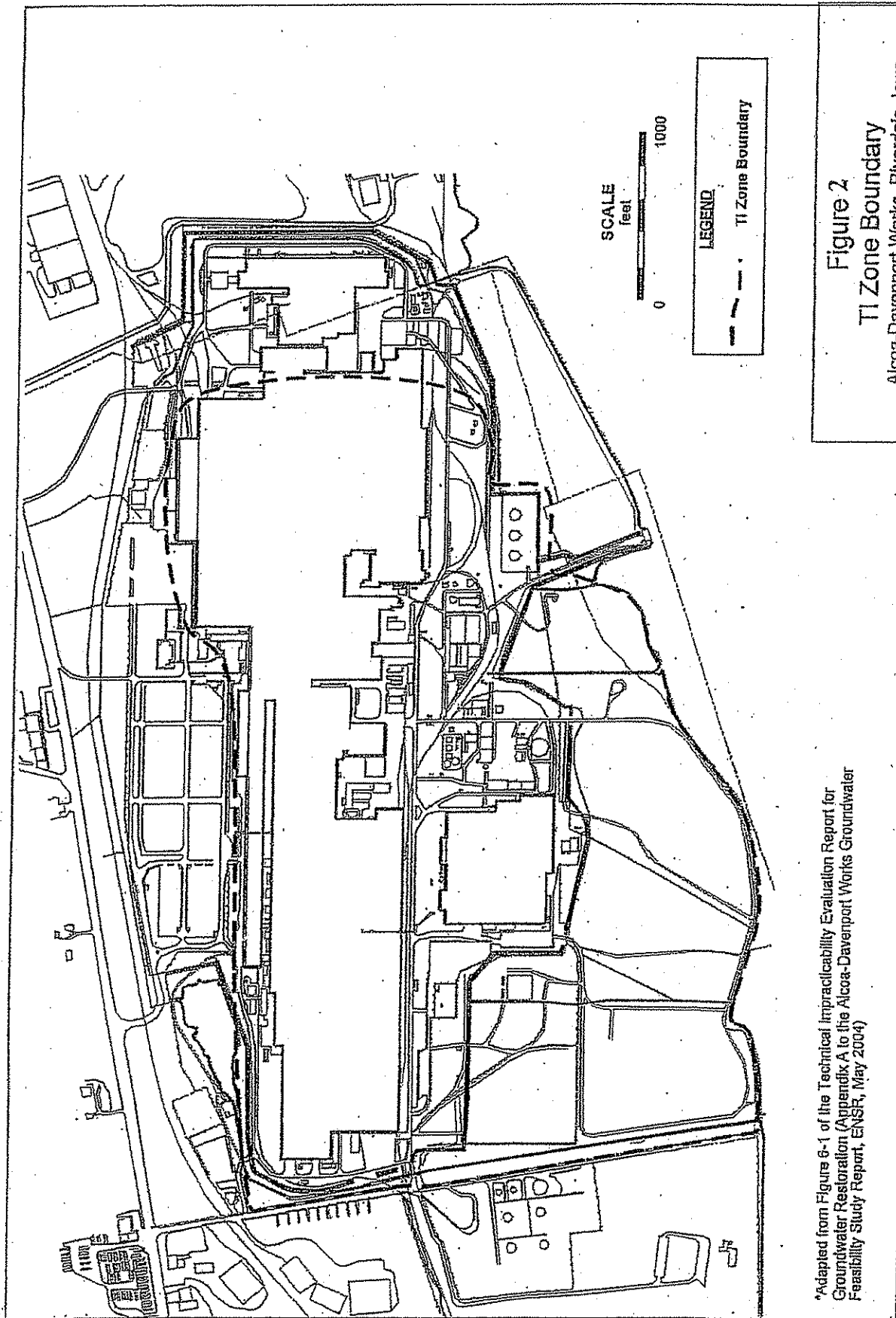


Source: U.S.G.S Topographic Map
 Silvis, Ill-Iowa Quadrangle, 41090-E4-TF-024, 1991
 Scale: 1"=2000'

Figure 1



Location and Physical
 Setting of Alcoa-Davenport Works
 Riverdale, Iowa



*Adapted from Figure 6-1 of the Technical Impracticability Evaluation Report for Groundwater Restoration (Appendix A to the Alcoa-Davenport Works Groundwater Feasibility Study Report, ENSR, May 2004)

Figure 2
TI Zone Boundary
Alcoa-Davenport Works, Riverdale, Iowa

Table 1
Groundwater Performance Standards
Chemical-specific ARAR Concentration Values
(Revised Table 3-3 of Groundwater FS Report)

Parameter Group	Compound	EPA MCL ¹ (ug/L)	EPA HAL (Lifetime) ² (ug/L)	Iowa Statewide Groundwater Standards ³ (ug/L)
VOCs	1,1,1-Trichloroethane	200	--	--
	1,1,2,2-Tetrachloroethane	NA	0.3	--
	1,1,2-Trichloroethane	5	--	--
	1-1 Dichloroethane	NA	NA	140
	1-1 Dichloroethene	7	--	--
	1,2- Dichlorobenzene (o-DCB)	600	--	--
	1,2- Dichloroethane	5	--	--
	Cis-1,2- Dichloroethene	70	--	--
	2- Butanone (Methyl ethyl ketone)	NA	4000	--
	Methyl isobutyl ketone (4-methyl-2-pentanone) (hexone)	NA	NA	560
	Acetone	NA	NA	6300
	Acrolein	NA	NA	3.5
	Benzene	5	--	--
	Bromoform	80*	--	--
	Carbon disulfide	NA	NA	700
	Carbon Tetrachloride	5	--	--
	Chlorobenzene	100	--	--
	Chloroethane	NA	NA	60
	Chloroform	80*	--	--
	Chloromethane	NA	30	--
	Dibromochloromethane	80*	--	--
	Ethylbenzene	700	--	--
	Methylene chloride (dichloromethane)	5	--	--
	Tetrachloroethene	5	--	--
	Toluene	1000	--	--
	Trans-1,2-Dichloroethene	100	--	--
	Trans-1,3-Dichloropropene	NA	NA	1.8
	Trichloroethene	5	--	--
	Vinyl chloride	2	--	--
	Xylenes(total)	10,000	--	--
SVOCs (PAHs)	Acenaphthene	NA	NA	420
	Anthracene	NA	NA	2100
	Benz(a)anthracene	NA	NA	0.24
	Benzo(a)pyrene	0.2	--	--
	Benzo(b)fluoranthene	NA	NA	0.24
	Benzo(k)fluoranthene	NA	NA	2.4
	Chrysene	NA	NA	24
	Dibenz(a,h)anthracene	NA	NA	0.024
	Fluoranthene	NA	NA	280
	Fluorene	NA	NA	280
	Indeno(1,2,3-cd)pyrene	NA	NA	0.24
	Naphthalene	NA	100	--
	Pyrene	NA	NA	210
	SVOCs	Di-n-butyl phthalate	NA	NA
Phenol		NA	2000	--

Parameter Group	Compound	EPA MCL ¹ (ug/L)	EPA HAL (Lifetime) ² (ug/L)	Iowa Statewide Groundwater Standards ³ (ug/L)
PCBs	Aroclor 1242	0.5	--	--
	Aroclor 1248	0.5	--	--
	Aroclor 1254	0.5	--	--

¹ MCL=Maximum Contaminant Levels. Source: EPA Office of Water, "Drinking Water Standards and Health Advisories", EPA Document 822-R-04-005, Summer 2006 Edition.

² HAL= Health Advisory Level (Lifetime). Source: EPA Office of Water, "Drinking Water Standards and Health Advisories", EPA Document 822-R-04-005, Summer 2006 Edition.

³ Iowa Statewide Groundwater Standards = statewide standards for groundwater in a protected groundwater source. Source: Subrule 567 Iowa Administrative Code (IAC) 137.5(4)(a).

* MCL for total trihalomethanes.

NA= None Available.

-- = HAL not used for groundwater performance standard if MCL available. Iowa Statewide Groundwater Standard not used for performance standard if MCL or HAL available.

All units are micrograms per liter (ug/L).

Bold values = chemical-specific ARAR concentration values to be used as performance standards for compounds in groundwater monitoring program. Detection limits and/or reporting limits may alter the performance standards for certain compounds due to limitations associated with currently available analytical laboratory procedures.

Table 1 - Attachment
Summary of Revisions to Table 3-3 of the Groundwater FS Report

- The title of Table 1 (i.e., revised Table 3-3), "Groundwater Performance Standards – Chemical-specific ARAR Concentration Values", more accurately reflects the purpose of this table which is to present groundwater performance standards as derived from chemical-specific ARARs.
- Table 1 does not include the area-specific tables on page 2 of Table 3-3 (i.e., Groundwater @ Northwestern Facility Boundary and Groundwater @ Eastern Facility Boundary). These two area-specific tables are not necessary since the compounds on these two tables are also listed on page 1 of Table 3-3. Also, the Iowa DNR has identified the Iowa statewide groundwater standards per 567 IAC 137 as a promulgated State ARAR. The Iowa statewide groundwater standards for acetone, carbon disulfide, and 1,1-dichloroethane (calculated in accordance with subrule 567 Iowa Administrative Code (IAC) 137.5(4)(a)) will be used as performance standards instead of the BLRA RBCs listed on page 2 of Table 3-3 for these compounds. Footnote 4 and footnote 5 on Table 3-3 no longer apply and are not included on Table 1.
- The column heading "EPA MCL(G)" has been replaced with "EPA MCL" because MCLs are ARARs but MCLGs are not ARARs. Therefore, the MCLs established under the Safe Drinking Water Act (SDWA) will be used as performance standards for 1,1,2-trichloroethane (5 ug/L), chloroform (80 ug/L), and dibromochloromethane (80 ug/L) instead of the MCLGs for these compounds.
- The column heading "EPA HAL" has been replaced with "EPA HAL (lifetime)" to clarify the type of Health Advisory concentrations that are being referenced in the "Drinking Water Regulations and Health Advisories".
- The "Drinking Water Regulations and Health Advisories" was cited as the source for values listed under the column headings of "EPA HAL" and "EPA 10⁻⁴ NRL" in Table 3-3. The EPA does not use the term NRL in the "Drinking Water Standards and Health Advisories". In addition, a 10⁻⁴ cancer risk level is at the low end of the EPA's acceptable risk range and does not allow for the potential cumulative effect caused by exposure to more than one chemical. Therefore, Table 1 does not include the "EPA 10⁻⁴ NRL" column.
- The "PRG" column heading has been replaced with "Iowa Statewide Groundwater Standards". In accordance with the Iowa statewide standards for groundwater in a protected groundwater source, as specified in subrule 567 Iowa Administrative Code (IAC) 137.5(4)(a), risk-based concentrations were calculated for compounds that do not have an MCL or HAL. Instead of PRGs, the Iowa statewide groundwater standards will be used as performance standards for compounds that do not have an MCL or HAL.
- The lifetime HAL for 1,1,2,2-tetrachloroethane (0.3 ug/L) is the appropriate value to list in Table 1. The lifetime HAL for a compound represents an estimate of an acceptable drinking water level based on a lifetime exposure of a 70-kg adult consuming 2 liters of water per day.
- The Iowa statewide groundwater standard for 1,1-dichloroethane (140 ug/L) was calculated in accordance with subrule 567 Iowa Administrative Code (IAC) 137.5(4)(a) and is the appropriate value to list in Table 1. The Iowa statewide groundwater standard for this Group C compound is based on the groundwater ingestion pathway using a non-cancer target hazard quotient of 0.02.
- There is not an MCL for 1,2-dichloroethylene (total). Therefore, the compound name "1,2-dichloroethylene" has been replaced with cis-1,2-dichloroethylene. The footnote "*MCL for cis-1,2-dichloroethylene" on Table 3-3 no longer applies and is not included on Table 1.

- Methyl isobutyl ketone is another name for 4-methyl-2-pentanone. The name methyl isobutyl ketone has been included on Table 1. The synonym 4-methyl-2-pentanone will also be listed. In addition, another synonym is hexone.
- The Iowa statewide groundwater standards for methyl isobutyl ketone (560 ug/L), acetone (6300 ug/L), acrolein (3.5 ug/L), carbon disulfide (700 ug/L), and acenaphthene (420 ug/L) were calculated in accordance with subrule 567 Iowa Administrative Code (IAC) 137.5(4)(a) and are the appropriate values to list in Table 1. These compounds have not been classified based on the weight-of-evidence carcinogenic classification system utilized by EPA. The Iowa statewide groundwater standards for these compounds are based on the groundwater ingestion pathway using a non-cancer target hazard quotient of 0.2.
- The Iowa statewide groundwater standard for chloroethane (60 ug/L) was calculated in accordance with subrule 567 Iowa Administrative Code (IAC) 137.5(4)(a) and is the appropriate values to list in Table 1. This compound has not been classified based on the weight-of-evidence carcinogenic classification system utilized by EPA. The Iowa statewide groundwater standard for this compound is based on the groundwater ingestion pathway using a target cancer risk of 5×10^{-6} .
- A review of available data indicates that n-propylbenzene and sec-butylbenzene have not been analyzed for in groundwater and should not be included as compounds detected on Table 3-3. Therefore, these two compounds are not listed on Table 1.
- Toxicity values are not available for benzo(g,h,i)perylene and phenanthrene. Therefore, performance standards based on chemical-specific ARAR concentration values are not available and these two compounds are not listed on Table 1.
- The Iowa statewide groundwater standards for anthracene (2,100 ug/L), fluoranthene (280 ug/L), fluorine (280 ug/L), pyrene (210 ug/L), and di-n-butyl phthalate (700 ug/L) were calculated in accordance with subrule 567 Iowa Administrative Code (IAC) 137.5(4)(a) and are the appropriate values to list in Table 1. The Iowa statewide groundwater standards for these Group D compounds are based on the groundwater ingestion pathway using a non-cancer target hazard quotient of 0.2.
- The Iowa statewide groundwater standards for trans-1,3-dichloropropene (1.8 ug/L), benzo(a)anthracene (0.24 ug/L), benzo(b)fluoranthene (0.24 ug/L), benzo(k)fluoranthene (2.4 ug/L), chrysene (24 ug/L), dibenz(a,h)anthracene (0.024 ug/L), and indeno(1,2,3-cd)pyrene (0.24 ug/L) were calculated in accordance with subrule 567 Iowa Administrative Code (IAC) 137.5(4)(a) and are the appropriate values to list in Table 1. The Iowa statewide groundwater standards for these Group B compounds are based on the groundwater ingestion pathway using a target cancer risk of 5×10^{-6} .
- Instead of the MCL value of 0.2 ug/L for benzo(a)pyrene, the respective Iowa statewide groundwater standards will be listed for benzo(a)anthracene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene. Footnote 1 on Table 3-3 no longer applies and is not included on Table 1.
- Footnote 2 on Table 3-3 has been included as footnote 1 on Table 1. For clarification regarding the source of MCL values, footnote 1 reads: "Source: EPA Office of Water, "Drinking Water Standards and Health Advisories", EPA Document 822-R--06-013, Summer 2006 Edition."
- Footnote 3 on Table 3-3 has been included as footnote 2 on Table 1. The reference to NRL has been deleted and the term HAL will be defined as "EPA HAL (lifetime)" to reflect the column heading. Footnote 2 on Table 1 reads: "HAL= Health Advisory Level (Lifetime). Source: EPA Office of Water, "Drinking Water Standards and Health Advisories", EPA Document 822-R-04-005, Summer 2006 Edition."

- Footnote 3 on Table 1 reflects the Iowa Water Quality Standards column heading. Footnote 3 reads: "Iowa Statewide Groundwater Standards = statewide standards for groundwater in a protected groundwater source. Source: Subrule 567 Iowa Administrative Code (IAC) 137.5(4)(a)."

Table 2
Groundwater Monitoring Levels
Chemical-specific ARAR Concentration Values for Inorganic Compounds

Parameter Group	Compound	EPA MCL ¹	EPA HAL (Lifetime) ²	Iowa Statewide Groundwater Standards ³ (ug/L)
INORGANIC COMPOUNDS	aluminum	NA	NA	7,000
	arsenic	10	--	--
	barium	2000	--	--
	beryllium	4	--	--
	cadmium	5	--	--
	chromium	100	--	--
	cobalt	NA	NA	140
	copper	1300	--	--
	cyanide	200	--	--
	iron	NA	NA	4,900
	lead	15	--	--
	manganese	NA	300	--
	mercury	2	--	--
	nickel	NA	100	--
	selenium	50	--	--
	silver	NA	100	--
	thallium	0.5	--	--
vanadium	NA	NA	7	
zinc	NA	2000	--	

¹ MCL=Maximum Contaminant Levels. Source: EPA Office of Water, "Drinking Water Standards and Health Advisories", EPA Document 822-R-04-005, Summer 2006 Edition.

² HAL= Health Advisory Level (Lifetime). Source: EPA Office of Water, "Drinking Water Standards and Health Advisories", EPA Document 822-R-04-005, Summer 2006 Edition.

³ Iowa Statewide Groundwater Standards = statewide standards for groundwater in a protected groundwater source. Source: Subrule 567 Iowa Administrative Code (IAC) 137.5(4)(a).

NA= None Available.

-- = HAL not used for groundwater monitoring level if MCL available. Iowa Statewide Groundwater Standard not used for monitoring level if MCL or HAL available.

All units are micrograms per liter (ug/L).

Bold values = chemical-specific ARAR concentration values to be used as monitoring levels for inorganic compounds in groundwater monitoring program. Detection limits and/or reporting limits may alter the monitoring levels for certain compounds due to limitations associated with currently available analytical laboratory procedures.

Table 3
Chemical-specific Performance Standards for Groundwater Treatment System Effluent

Compound	Effluent Performance Standard ¹
cis-1,2-dichloroethene	78 ug/L
trichloroethene	10 ug/L
tetrachloroethene	33 ug/L

¹ All values in micrograms per liter (ug/L).

Table 4
Chemical-specific Monitoring Parameters for Effluent Monitoring Program

Volatile Organic Compounds (VOCs)	
1,1,1-trichloroethane	acetone
1,1,2,2-tetrachloroethane	carbon disulfide
1,1,2-trichloroethane	chloroethane
1,1-dichloroethane	chloroform
1,1-dichloroethene	vinyl chloride
1,2-dichloroethane	methylene chloride (dichloromethane)
trans-1,2-dichloroethene	benzene
1,2-dichlorobenzene	ethylbenzene
1,3-dichlorobenzene	toluene
1,4-dichlorobenzene	xylenes
Polychlorinated Biphenyls (PCBs)	
PCB – Aroclor 1242	PCB – Aroclor 1254
PCB – Aroclor 1248	
Polynuclear Aromatic Hydrocarbons (PAHs)	
acenaphthene	chrysene
anthracene	dibenz(a,h)anthracene
benzo(a)anthracene	fluoranthene
benzo(a)pyrene	fluorene
benzo(b)fluoranthene	indeno(1,2,3-cd)pyrene
benzo(g,h,i)perylene	naphthalene
benzo(k)fluoranthene	pyrene
Inorganic Compounds	
aluminum	cyanide
arsenic	iron
barium	lead
beryllium	manganese
cadmium	mercury
chromium	nickel
cobalt	vanadium
copper	zinc