

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action Environmental Indicator (EI) RCRAInfo Code (CA725) Current Human Exposures Under Control

Facility Name: Arsynco, Inc.
Facility Address: P.O. Box 8, Foot of 13th Street, Carlstadt, New Jersey 07072
Facility EPA ID#: NJD044688935

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EIs) are measures being used by the Resource Conservation and Recovery Act (RCRA) Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved) to track changes in the quality of the environment. The two EIs developed to date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of “Current Human Exposures Under Control” EI

A positive “Current Human Exposures Under Control” EI determination (“YE” status code) indicates that there are no unacceptable human exposures to “contamination” (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all contamination subject to RCRA corrective action at or from the identified facility [i.e., site-wide]).

Relationship of EI to Final Remedies

While final remedies remain the long-term objectives of the RCRA Corrective Action program, the EIs are near-term objectives, which are currently being used as program measures for the Government Performance and Results Act of 1993 (GPRA). The “Current Human Exposures Under Control” EI is for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and does not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program’s overall mission to protect human health and the environment requires that final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI determination status codes should remain in the Resource Conservation and Recovery Information System (RCRAInfo) national database ONLY as long as they remain true (i.e., RCRAInfo status codes must be changed when the regulatory authorities become aware of contrary information).

Facility Information

The Arsynco facility is located in a heavy industrial and commercial area at the western boundary of the Hackensack Meadowlands tidal marsh area in Carlstadt, Bergen County, New Jersey. The facility consisted of several manufacturing/storage buildings and two ponds situated on approximately 12.3 acres of industrial zoned land. From the early 1900's to 1969, the site was used for a variety of chemical and

pharmaceutical manufacturing operations. Arsynco manufactured specialty organic chemicals and pharmaceutical intermediates, propylene imine and derivatives, hair dyes, silicone intermediates, a quaternary ammonium salt, propiophenone, and isobutyrophenone at this property from 1969 to September 1993, when all operations at the site ceased. This site is currently undergoing remediation.

The Arsynco facility consists of two tracts of land, collectively known as Block 91, Lot 1. The eastern portion of the property (Tract 2), is approximately 2.8 acres of saline marsh and contains manmade ditches, which are part of the Berry's Creek system. This portion of the site has never been developed and remains vacant. The main portion of the property (Tract 1) is comprised of 9.46 acres of land and has historically been the location of all manufacturing operations. Fill materials placed at Tract 1 for site development included process wastes and other fill materials that contained hazardous constituents. At the time Arsynco ceased operations, a total of 17 buildings were located on Tract 1. All buildings (except Building 16) and units at the facility were removed during site decommissioning activities in 1993 and 1994. The ponds used to store process wastewater and non-contact cooling water were also removed from the site. Building 16 is the only structure still in place at the site.

The property is bounded to the north by a newly constructed Anheuser Busch warehouse/distribution facility (Northern Eagle Beverage [NEB]) and the Cognis Corporation property (formerly Henkel Chemical and Diamond Shamrock plant). Cosan Chemical Company and Aluminum Anodizing Corporation are located adjacent to the southern property boundary. The west side of the property is bounded by New Jersey Transit railroad tracks and commercial and industrial facilities. Route 17 is located immediately beyond the properties that border the west side of the site. The nearest residential area is located approximately one-fourth of a mile to the west of the Arsynco site, on the opposite side of Route 17. Industrial and commercial facilities are also located immediately east of the site, on the opposite side of 16th Street.

Arsynco submitted Industrial Site Recovery Act (ISRA) Initial Notice applications for the site in early 1993 and subsequently began a comprehensive Site Investigation/Remedial Investigation (SI/RI) sampling program. A Remedial Investigation Report (RIR) was submitted to the New Jersey Department of Environmental Protection (NJDEP) in June 1997, and a Remedial Action Selection Report (RASR) and proposed Remedial Action Work Plan (RAW) were submitted in February 1999. NJDEP responded to the RIR and RAW in a comment letter dated March 28, 2000. Arsynco addressed these comments in a May 11, 2000, submittal, which included additional proposals. In turn, NJDEP issued additional comments on the RIR and RAW in a May 1, 2001, comment letter, and Arsynco submitted a RIR Addendum in June 2002 to address these comments. The RIR Addendum included additional soil and groundwater sampling data. NJDEP issued two separate responses to the RIR Addendum: a November 7, 2002, comment letter addressing soil issues; and a February 4, 2003, comment letter addressing groundwater issues. Arsynco submitted a required Baseline Ecological Evaluation (BEE) in July 2003. Finally, Arsynco submitted a RIR Addendum and Revised RAW (RIR Addendum & RAW) in December 2003, which describes the results of all additional soil and groundwater investigation activities that have been completed at the site since the June 2002 RIR Addendum. Arsynco has also been working with EPA to gain approval of a proposed capping program for certain polychlorinated biphenyl (PCB)-contaminated soils, and will submit the required cap and berm specification plans to EPA and NJDEP in the near future.

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from solid waste management units (SWMUs), regulated units (RUs), and areas of concern (AOCs)), been **considered** in this EI determination?

If yes - check here and continue with #2 below.

If no - re-evaluate existing data, or

If data are not available skip to #6 and enter IN (more information needed) status code

Areas of Environmental Concern (AOCs)

The June 1997 RIR and February 1999 RAW outlined each area of environmental concern (AOC) investigated at the site. A description of these AOCs and the contaminants detected above the NJDEP relevant standards¹ is outlined below.

AOC I, Parking Lot, Office Buildings and Pond: AOC I encompasses the majority of the gravel parking lot located adjacent to 13th Street, the 13th Street entrance to the site, Building 16, former Building 20, and the production pond that was used to store non-contact cooling water, as shown in Figure 1 of the RIR Addendum & RAW (Ref. 8). AOC I was not directly involved in any production activities during Arsynco's operation of the site. Metals and benzo(a)pyrene (BaP) are present above the NJ NRDCSCC in surface soil, and lead is present above the NJ NRDCSCC in subsurface soil. According to the RAW, the contaminants are related to the presence of historic fill on the site. It should be noted that the extent of historic fill materials in AOC I does not include the former production pond in this area. The production pond was closed and backfilled with clean fill material during the SI/RI activities conducted in 1994 (Ref. 2). Proposed remedial actions for this AOC include institutional (i.e., Deed Notice) and engineering (i.e., capping) controls (Ref. 8).

AOC II, Northwest Portion of Site: AOC II extends along the west side of the property, north of AOC I and former Building 20, as shown in Figure 1 of the RIR Addendum & RAW (Ref. 8). New Jersey Transit railroad tracks are located immediately adjacent to the western property line. A shallow, narrow, concrete-lined drainage ditch is located between a portion of the property boundary and the railroad tracks, and is usually dry. This ditch flows from north to south and accepts surficial runoff from the Arsynco property, the adjacent rail area, and sites further north. A larger, unlined drainage ditch that consistently contains water is located directly west of the train tracks. This larger ditch flows from north to south and accepts discharges and drainage from the rail lines, Route 17 to the west, and properties located along the train racks more than 2,000 feet to the north. AOC II encompasses the following points of concern:

¹ Because Arsynco has agreed to restrict the future use of the site to non-residential use through the implementation of a Deed Notice, all soil contaminants were delineated to the New Jersey Non-Residential Direct Contact Soil Cleanup Criteria (NJ NRDCSCC).

- Former Container Storage Area
- Former Septic System
- Former Drum Storage Area
- Former Aboveground Tank Farm Location
- RCRA Storage Area
- PP-12 Sample Location.

The RCRA storage area was closed under NJDEP supervision in June 1992, and final NJDEP closure approval was received in February 1994. Semi-volatile organic compounds (SVOCs) (i.e., base-neutral (BN) compounds) and volatile organic compounds (VOCs) are present above NJ NRDCSCC in surface soil in AOC II. According to the RAW, elevated concentrations of BN compounds are due to the presence of historic fill material. VOC contamination is present in the PP-12 sample location and was believed to be related to the presence of a gasoline fueling pump associated with underground storage tank (UST) 00P2. UST 00P2 was a 17,000-gallon gasoline tank located below the loading platform of Building 1, and was addressed as part of the remediation of AOC IV. Proposed remedial actions for this AOC include institutional (i.e., Deed Notice) and engineering (i.e., capping) controls (Ref. 8). The VOC exceedences in this AOC will be addressed by the proposed VOC air sparging treatment system (Ref. 8).

AOC III, Northeast Portion of Site: AOC III extends from the former Building 1 and Building 5 locations to the northern property line, as shown on Figure 1 of the RIR Addendum & RAW (Ref. 8). The following individual points of concern were addressed within AOC III:

- Former Trash Compacter
- Former Material Staging Area
- Former Acidic Wastewater Treatment Basin
- Former Drum Cleaning Station
- Former Aboveground Tanker Trailer, and
- Former Building 5 Septic Tank.

The Acidic Wastewater Treatment Basin was backfilled with clean fill in 1993. SVOCs, benzene, arsenic, and total petroleum hydrocarbon (TPH) are present in surface soil above NJ NRDCSCC in AOC III. Additionally, benzene is present in subsurface soil above NJ NRDCSCC. According to the RAW, the elevated concentrations of BN compounds are related to the presence of historic fill material. Proposed remedial actions for this AOC include institutional (i.e., Deed Notice) and engineering (i.e., capping) controls (Ref. 8). The VOC exceedences in this AOC will be addressed by the proposed VOC air sparging treatment system (Ref. 8).

AOC IV, Plant Production Area: AOC IV is the central portion of the site and included all of the facility manufacturing buildings (excluding the location of former Building 19). Buildings 1, 3 through 9, 12, and 14, as well as the effluent treatment basin (ETB) and nearly all of the facility's subsurface process draining lines, storage areas, and a transformer bank were all located within AOC IV. Previous SI/RI activities conducted

in AOC IV included the cleaning and removal of the entire subsurface drainage system (lines and catch basins), cleaning and removal of the ETB, and the removal of two USTs (tanks 00P1 and 00P2). In addition, with the exception of former Buildings 3 and 9, all of the building floor slabs were crushed in place to allow sampling of soil beneath the slabs, as well as sampling of the concrete slab material. UST closure approval for tanks 00P1 and 00P2 was provided by NJDEP via a letter dated February 28, 1994 (Ref. 1). Polycyclic aromatic hydrocarbons (PAHs) and metals are present above NJ NRDCSCC in surface soil; however, the RAW indicates that these contaminants are related to the presence of historic fill material. VOCs were also present in this AOC above NJ NRDCSCC and are part of a VOC soil plume that extends through AOCs IV, V, VI, and VII. Proposed remedial actions for this AOC include institutional (i.e., Deed Notice) and engineering (i.e., capping) controls (Ref. 8). The VOC exceedences in this AOC will be addressed by the proposed VOC air sparging treatment system (Ref. 8).

AOC V, Building 19 and Northeast Tank Farm: AOC V is located in the northeast portion of Tract 1, as shown in Figure 1 of the RIR Addendum & RAW (Ref. 8). This AOC contained Building 19, a diked aboveground tank farm, and a cleared area to the east of the tank farm, which had historically been used for material and drum staging. Soil sampling activities conducted in this area of the site date back to the early 1990's (Ref. 2). The contaminants present in AOC V consist primarily of aromatic VOCs, including benzene, toluene, ethylbenzene, and xylene (BTEX), which are present above NJ NRDCSCC in surface soil. Benzene is present above NJ NRDCSCC in subsurface soil. VOCs were also present in surface soil in two off-site sampling locations to the north of AOC V, ARSD-33 and DJS-009; see Figure 1 of RIR Addendum & RAW (Ref. 8). Proposed remedial actions for this AOC include institutional (i.e., Deed Notice) and engineering (i.e., capping) controls (Ref. 8). The VOC exceedences in this AOC, including the off-site area, will be addressed by the proposed VOC air sparging treatment system (Ref. 8).

AOC VI, Former Pond Area: A pond that measured approximately 150 feet long and 75 feet wide was formerly present on the eastern side of Tract 1 (see Figure 1 of the RIR Addendum & RAW) (Ref. 8). The pond had two concrete drainage channels that extended from the plant production area and a concrete headwall that controlled pond overflow onto Tract 2 of the property. The entire pond area was filled in around 1971, and the top four to five feet of material located within the majority of the pond limits consists of historic fill (Ref. 8). A distinguishable layer of contaminated material, approximately three feet thick, lies below this fill material. The entire pond was lined with a dense, thick layer of bentonite clay that has largely prevented the migration of contaminants outside the boundaries of the pond structure (the only exception is in the pond outflow location at the southeast corner of the pond). Contaminants present above NJ NRDCSCC include: VOCs, BaP, and metals in surface soil; VOCs, BaP, metals, and TPH in subsurface soil; and VOCs and metals in sediment. Proposed remedial actions for this AOC include leaving the contaminated material layer in place and sealing the area of the pond outflow and both pond inflow locations with a cement/bentonite slurry. The entire surficial area of the pond would then be capped with the bituminous asphalt cap system and a Deed Notice implemented (Ref. 8).

AOC VII, Primary Tank Farm Area: The former primary tank farm area is located in the approximate center of the site, south of the former plant production area. AOC VII extends from the former southern sides of Buildings 6 and 14 to the rail spur that had intersected the site. This AOC encompassed the main tank farm area, the old tank farm area, the #6 fuel oil tank (tank 58) and six aboveground storage tanks (ASTs) that were located along the south wall of Building 6. The primary contaminants present above NJ NRDCSCC in surface soil include VOCs, BaP, metals, and petroleum hydrocarbons (PHC). PHC is also present in subsurface soil above NJ NRDCSCC. Separate phase product floating on the water table was identified in the area beneath tank 58 during the RI and was removed with absorbent materials during the SI/RI. Proposed remedial actions for this AOC include institutional (i.e., Deed Notice) and engineering (i.e., capping) controls (Ref. 8). The VOC exceedences will be addressed by the proposed VOC air sparging treatment system (Ref. 8).

AOC VIII, Southern Portion of the Site: The southern portion of the Arsynco property has remained essentially undeveloped, as shown in Figure 1 of the RIR Addendum & RAW (Ref. 8). A drainage ditch extends across the southern boundary of AOC VIII and marks the southern extent of the Arsynco property, although portions of the drainage ditch are off site. The only buildings that were located in this AOC were Buildings 17 and 18, and a small shed located in the northeast part of AOC VIII, just south of the former pond (AOC VI). In addition, a diked 12,000-gallon toluene AST (tank 73) was located in the west portion of this AOC, adjacent to Building 2. The former RCRA storage area was also located in this AOC, to the south of Building 18 and adjacent to the gravel parking lot (AOC I). AOC VIII was originally undeveloped, marshy land that was significantly altered and completely filled in the 1950's and 1960's. The fill material consisted not only of historic fill material, but also contained industrial and process-type waste materials (e.g., still bottoms). VOCs, benzo(a)anthracene, and metals are present above NJ NRDCSCC in surface soil, while VOCs, SVOCs, and TPH are present above NJ NRDCSCC in subsurface soil. Proposed remedial actions for this AOC include excavation and off-site disposal of soil containing elevated levels of BNs, metals, VOCs, phenols, and TPH (Ref. 8). Proposed remedial actions also include institutional (i.e., Deed Notice) and engineering (i.e., capping) controls for this AOC in association with the historic fill remediation on Tract 1 (Ref. 8).

AOC IX, PCB and Site Fill Material Investigation: The development of the site included the placement of fill material over the native meadow mat layer, which is a common swamp bed material high in organic content in the Hackensack Meadowlands. The thickness of the fill material is generally five to six feet across the site, with as much as eight feet of fill present in the southeast part of the property. In addition to the typical fill material, the southeast part of Tract 1 (AOC VIII) was also found to contain process and industrial waste materials characterized by high PCB levels in surface and subsurface soil. PCBs are present above NJ NRDCSCC in surface soil over the majority of the site, including Tract 2. PCBs are also present above NJ NRDCSCC in subsurface soil, although the extent of these exceedences is limited by comparison. Based on the documented use of historic fill at the site and in the vicinity of the site, active treatment and removal of BN and metals contamination across the site is not proposed (Ref. 6); rather, contamination will be addressed with the implementation of institutional (i.e., Deed Notice) and engineering (i.e., capping) controls. Arsynco has

proposed a three-tiered approach to address PCB-contaminated soils at the site using different remedial actions for soils contaminated with PCBs between 0.49 mg/kg and 50 mg/kg, 50 mg/kg and 500 mg/kg, and above 500 mg/kg. For PCB soils within the range of 0.49 to 50 mg/kg, proposed remedial actions include institutional (i.e., Deed Notice) and engineering (i.e., capping) controls. For PCB soils within the range of 50 to 500 mg/kg, Arsynco has proposed to excavate and consolidate these soils into a designated area at the site (AOC VIII), install a cap and berm over the area, and secure with fencing and signs as appropriate. Per 40 CFR 761.61(c), Arsynco was required to perform a baseline risk assessment to determine the risks associated with leaving PCB-contaminated soils within the range of 50 to 500 mg/kg in place at the site. The risk assessment concluded that there is no unacceptable risk associated with leaving PCB-contaminated soils between 50 to 500 mg/kg in place (i.e., either in their existing location with no engineering controls or in a consolidated location with no engineering controls). Arsynco has proposed excavation and off-site disposal for all soil impacted with PCBs above 500 mg/kg (Refs. 3, 5). The proposed remedial alternatives have been tentatively approved by NJDEP (Ref. 6). Arsynco is currently working with EPA to gain approval of the proposed PCB remedial program (Ref. 8).

AOC X, Tract 2 (Eastern Side of Site): Tract 2 is a 2.8-acre, undeveloped portion of land located at the far eastern part of the Arsynco property. Tract 2 is a saline marsh and contains a series of tidal ditches that are tidally influenced by Never Touch Creek and Berry's Creek, as well as drainage from off-site sources on all sides of the Arsynco site. A large drainage ditch passes by the west side of the Arsynco site, along the west side of the adjacent rail lines, and then turns east and becomes the open ditch that flows along the southern boundary of the Arsynco property and up into Tract 2 (see Figure 1 of the RIR Addendum & RAW) (Ref. 8). This ditch consistently carries water and accepts discharges and drainage from the rail lines, Route 17, and properties located along the train tracks more than 2,000 feet to the north (Ref. 8). Tract 2 also received outflow drainage from the former pond (AOC VI) prior to the early 1970's. All samples from Tract 2 were classified as sediment because this area is primarily wetlands. Benzene, metals, and PCBs are present in sediment above NJ NRDCSCC. Surface water was sampled from the drainage ditch in this AOC and at two off-site locations, and metals are present above New Jersey Surface Water Quality Criteria (NJ SWQC) in each sample. A BEE was prepared for this AOC in July 2003. The BEE identified the potential for impacts to ecological receptors from exposure to soil, sediment, and surface water in Tract 2, and concluded that further evaluation of Tract 2 soil is required (Ref. 7). Proposed remedial actions include excavation and off-site disposal of approximately 100 cubic yards of sediments containing over 1,000 mg/kg total VOCs and restoration/mitigation of disturbed wetlands (Ref. 8). The area to be remediated surrounds sample VI-16 and can be excavated from the Tract 1 border. No active remediation is proposed for the widespread area of metals and low-level PCB-impacted sediments on Tract 2, due to the nature of the contaminants and the nature of the regional drainage and depositions that occur throughout the AOC. Instead, a Deed Notice is proposed for the majority of sediments on Tract 2, and the Arsynco property is surrounded by a perimeter fence. (Refs. 8,9).

AOC XI, Groundwater: The groundwater monitoring network at the Arsynco facility is comprised of 47 wells that monitor groundwater levels and quality in both the shallow and

deep groundwater units at on- and off-site locations. The results of six rounds of groundwater sampling (1995, 1996, 1997, 1998, 2001, and 2002) indicate that groundwater has been impacted by former facility operations, the disposal of process waste, the placement of historic fill, and by off-site sources. Groundwater contamination consists primarily of VOCs in both shallow and deep wells, and metals, primarily in shallow wells. Recent groundwater data collected in May 2003 along the western facility boundary indicate an off-site, upgradient, chlorinated VOC source (Ref. 8). According to the December 2003 RIR Addendum & RAW, no off-site migration of groundwater contamination has occurred, nor is any off-site migration projected. The proposed remedial alternative for VOC-impacted shallow groundwater includes the installation of a phased air sparging system to promote bioremediation in the area where total soil VOC concentrations are greater than 1,000 mg/kg (primarily in AOCs IV, V, and VII), followed by monitored natural attenuation (MNA) until appropriate groundwater standards are reached. Arsynco has proposed natural attenuation to remediate VOCs in deep groundwater (Ref. 8).

In summary, 11 AOCs have been identified at the site and contamination has been delineated at all AOCs. Soil/sediment contamination remains at AOCs I through X, while groundwater contamination is also present beneath the site (AOC XI). Remedial actions have been proposed for all AOCs and are still pending. As presented in the December 2003 RAW, the remedial approach addresses the broader contamination issues that were identified in the SI/RI, rather than providing remedial proposals on an AOC-by-AOC basis (Ref. 8).

References:

1. Letter from Douglas Stuart, NJDEP, to Peter Herzber, Pitney, Hardin, Kipp & Szuh, re: SI/RI and UST Closure Approval. Dated February 28, 1994.
2. Remedial Investigation Report, Arsynco, Inc. Prepared by J M Sorge, Inc. Dated June 1997.
3. Letter from James Clabby, Atlantic Environmental Solutions, Inc. , to Jeanne Fox, NJDEP, re: Application for Risk-Based Cleanup Approval. Dated October 10, 1998.
4. Remedial Action Workplan and Remedial Action Selection Report, Arsynco, Inc. Prepared by Atlantic Environmental Solutions, Inc. Dated February 25, 1999.
5. Letter from James Clabby, JMC Environmental Consultants, Inc., to Dorothy Zoledziowska, NJDEP, re: TSCA PCB Coordinated Approval. Dated October 10, 2000.
6. Letter from Bryan Moore, NJDEP to David B. Hird, Weil, Gotshal & Manges, re: Response Letter Dated May 11, 2000. Dated May 1, 2001.
7. Baseline Ecological Evaluation, Former Arsynco Facility Site. Prepared by AMEC Earth & Environmental, Inc. Dated July 2003.
8. Remedial Investigation Report Addendum & Remedial Action Workplan, Arsynco, Inc. Prepared by JMC Environmental Consultants, Inc. Dated December 2003.
9. Letter from James Clabby, JMC Environmental Consultants, Inc., to Alan Straus, USEPA, re: Arsynco, Inc. Dated April 26, 2004.

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be “**contaminated**”² above appropriately protective risk-based levels (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

Media	Yes	No	?	Rationale/Key Contaminants
Groundwater	x			VOCs, SVOCs, Metals
Air (indoors) ³		x		
Surface Soil (e.g., <2 ft)	x			VOCs, SVOCs, Metals, PCBs, TPH
Surface Water		x		
Sediment	x			VOCs, Metals, PCBs
Subsurface Soil (e.g., >2 ft)	x			VOCs, SVOCs, Metals, PCBs, TPH
Air (Outdoor)		x		

_____ If no (for all media) - skip to #6, and enter YE, status code after providing or citing appropriate levels, and referencing sufficient supporting documentation demonstrating that these levels are not exceeded.

 X If yes (for any media) - continue after identifying key contaminants in each contaminated medium, citing appropriate levels (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter IN status code.

Rationale:

Groundwater

The site geology is characterized by artificial fill material (up to approximately eight feet thick), underlain by meadow mat, salt marsh deposits, and glacial lake bottom and deltaic deposits. Groundwater occurs under unconfined conditions in the fill material and confined conditions in the underlying sediments. Drilling results indicate that depth to the top of the confined unit ranges from 12 to 21 feet below ground surface (bgs). According to the RIR Addendum & RAW, the meadow mat is continuous across the site

² “Contamination” and “contaminated” describe media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based “levels” (for the media, that identify risks within the acceptable risk range).

³ Recent evidence (from the Colorado Department of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

and acts as a confining layer that separates the water-bearing fill above the meadow mat and the underlying water-bearing sediments (Ref. 3).

According to data collected in May 2003, depth to shallow unconfined groundwater in monitoring wells completed within the fill overburden (above the meadow mat) varied between 0.5 and 5.7 feet bgs (Ref. 3). Depth to groundwater in monitoring wells completed in the underlying confined unit varied from 0.62 feet to 6.7 feet bgs in May 2003. A review of May 2003 groundwater elevations indicates that both upward and downward hydraulic gradients are recorded across the site (Ref. 3). Groundwater flow direction is generally to the east and/or south. The May 2003 water level data indicate a northeastern component of flow in a very localized area at the northern portion of the site; however, this small component of flow appears to be impacted by tidal fluctuations and likely resumes a southeasterly flow direction over a relatively short distance (Ref. 4). Groundwater flow directions in the unconfined and confined saturated units, determined from May 2003 water level data, are depicted in the RIR Addendum & RAW in Figure 20, titled Water Table Map for Shallow Groundwater Zone, May 19, 2003, and Figure 21, titled Water Table Map for Deep Groundwater Zone, May 19, 2003 (Ref. 3).

The 47 groundwater monitoring wells that comprise the monitoring network include 20 on-site shallow wells (MW-4, MW-5S, MW-7S through MW-15S, MW-17S, and MW-19S through MW-26S), 5 off-site shallow wells (MW-27S and MW-29S through MW-32S), 17 on-site deep wells (MW-5D, MW-5DD, MW-6D, MW-8D through MW-18D, MW-11DD, MW-22D, and MW-25D), and 5 off-site deep wells (MW-27D through MW-30D, and MW-32D). The shallow wells ("S" series) were completed to maximum depths of 9.5 feet bgs and screened within the fill material. The deep wells, "D" and "DD" series, were completed to depths of 38 feet and 60 feet, respectively, and were screened in the sediments below the meadow mat (Ref. 3).

As identified in Table 1, various contaminants are reported in on-site groundwater monitoring wells at concentrations above the NJ Groundwater Quality Criteria (GWQC) in May 2003. Metals are primarily present in shallow wells, with arsenic detected in a few deeper wells. In most areas of the site the presence of metals in groundwater is believed to be related to the historic fill material at the site, as well as regional groundwater quality. VOCs (primarily BTEX and chlorinated VOCs) are present in several areas throughout the site in both shallow and deep groundwater. The highest levels of VOC contamination are present in AOC IV, the Former Plant Production Area. Deep wells MW-5DD and MW-11DD report methylene chloride and vinyl chloride concentrations at or slightly above the NJ GWQC, which indicates that the vertical extent of contaminant migration has been delineated at the site. Refer to the RIR Addendum & RAW for graphical depictions of BTEX concentrations in the shallow (Figure 22) and deep units (Figure 23) and chlorinated VOC concentrations in the shallow (Figure 24) and deep (Figure 25) units.

Water quality data provided by a network of off-site monitoring wells indicate that off-site sources exist for metals and both chlorinated and non-chlorinated VOCs reported in shallow and deep wells in northern, western, and southern portions of the site (AOCs I, II, III, and VIII). The off-site network consists of a series of nested shallow/deep well pairs positioned at upgradient, crossgradient and downgradient (MW-27S/D through MW-30S/D, and MW-32S/D) locations. On-site monitoring wells impacted by off-site sources include MW-7S, MW-29S, MW-5D, MW-6D, MW-8D, MW-12D, MW-15D, MW-16D, MW-17D, and MW-18D.

The only site-related impact observed in off-site areas is a slightly elevated concentration of benzene (10.1 µg/L) in well MW-31S, which is located along the northern property boundary adjacent to former

building 19 (AOC V) (Ref. 3). However, the most recent groundwater data indicate that the groundwater flowpath from MW-31S moves back onto site where benzene concentrations decline below the NJ GWQC as indicated by on-site downgradient wells MW-4 (0.46 µg/L) and MW-26S (non-detect) (Ref. 3).

Table 1 - Maximum Contaminant Concentrations Detected Above NJ GWQC in On-Site Groundwater Monitoring Wells (µg/L)

Aquifer	Constituent	Well I.D. ¹	Concentration ²	NJ GWQC
Shallow	VOCs			
	Benzene	MW-13S(R)	312	1
	Chloroethane	MW-11S	553	100
	Cis-1,2-dichloroethylene	MW-7S	374	70
	Ethylbenzene	MW-24S	17,800	700
	Methylene Chloride	MW-12S	93.3	3
	Toluene	MW-11S	36,200	1,000
	Trichloroethylene	MW-7S	1.6J	1
	Xylenes	MW-24S	107,000	1,000
	Metals			
	Antimony	MW-13S(R)	178	20
	Arsenic	MW-7S	1,850	8
	Cadmium	MW-4S	34.3	4
	Lead	MW-17S	186	10
	Mercury	MW-17S	2.6	2
Nickel	MW-12S	2,760	100	
Deep	VOCs			
	Benzene	MW-8D	1,380	1
	Chlorobenzene	MW-8D	643	50
	Chloroform	MW-8D	39.7J	6
	Cis-1,2-dichloroethylene	MW-22D	47,000	70
	1,1-Dichloroethane	MW-11D	1,480	70
	Methylene Chloride	MW-11D	404	3
	Toluene	MW-11D	12,400	1,000
	Tetrachloroethylene	MW-12D	171B	1
	1,1,1-Trichloroethane	MW-11D	1,300	30
	Trichloroethylene	MW-22D	736	1
	Vinyl Chloride	MW-11D	8,930	5
	Xylenes	MW-11D	1,190	1,000
	SVOCs			
bis(2-chloroethyl)ether	MW-6D	36.8	10	
Metals				
Arsenic	MW-14D	178	8	
Deep (total depth = 56 to 60 feet)	VOCs			
	Methylene Chloride	MW-11DD	3	3
	Vinyl Chloride	MW-5DD	6.3	5

1. Elevated contaminant (VOC/SVOC) concentrations in shallow monitoring well MW-7S and deep monitoring wells MW-8D and MW-12D have been attributed to off-site sources.
2. Samples collected in May 2003 (Ref. 3). "J" indicates the concentration is an estimated value. "B" indicates the constituent was detected in the method blank.

Air (Indoors)

To evaluate the potential for VOCs to migrate into indoor air at the Arsynco site and to off-site areas, recently detected VOC concentrations were compared to the State of Connecticut Proposed Revisions to

the Groundwater Volatilization Criteria for the Industrial/Commercial Scenario (CT I/C GWVC) (March 2003). The Proposed revisional values were used because they have been revised to be more consistent with EPA's 2002 Draft Guidance "Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soil." Thus, these updated values are based on the most up-to-date Johnson-Ettinger Model, toxicity information, and exposure assumptions. Benzene and xylenes exceeded CT I/C GWVC for indoor air in the most recent groundwater sampling event (May 2003) in on-site shallow wells MW-13S(R) and MW-24S, respectively. MW-13S(R) contained 312 µg/L benzene, which slightly exceeds the CT I/C GWVC level of 310 µg/L. This well is located along the eastern border of AOC VIII, directly upgradient of the Tract 2 wetlands, and is not within 100 feet of Building 16 (the only remaining building on site). MW-24S contained 107,000 µg/L xylenes, which exceeds the CT I/C GWVC level of 48,000 µg/L. This well is located in AOC VII, within site boundaries, and is cross-gradient to the only remaining building (Building 16). Thus, volatilization of significant levels of benzene or xylenes into indoor air from these two sample locations does not pose a threat to indoor air quality at Building 16. Off-site detections of VOCs in shallow groundwater were also compared to the CT I/C GWVC levels, and were not found to exceed these criteria. Thus, the migration of significant levels of VOCs into indoor air is not a concern under current conditions.

Surface/Subsurface Soil

Surface soil (< 2 feet bgs) and subsurface soil (> 2 feet bgs) have both been impacted at the site by VOCs, SVOCs, metals, PCBs, and TPH above NJ NRDCSCC. In general, the presence of BN compounds, metals, and PCBs is believed to be due to the presence of historic fill on the site. VOCs were detected in various areas at the site and were generally related to past industrial activities. Only those contaminants exceeding the NJ NRDCSCC are of concern for current site conditions because the facility is an industrial site. Maximum detections for each contaminant are listed in Attachment 1, Maximum Detected Concentrations in Soil by AOC.

Additionally, VOCs were detected in surface soil above NJ NRDCSCC at off-site sampling locations DJS-009 and V-27A, located to the north of AOC V on NEB property. Ethylbenzene is present at 2,800 mg/kg (NJ NRDCSCC = 1,000 mg/kg) and total xylene is present at 18,000 mg/kg (NJ NRDCSCC = 1,000 mg/kg).

Surface Water/Sediment

The site is located west of Berry's Creek in the reclaimed portion of the grass marsh area of the Hackensack River flood plain. Natural drainage at the site is primarily to the southeast, toward the marshes and Berry's Creek. Tidal flood water is received by and drained from the site via a series of interconnecting, manmade tidal ditches that run along the southern property boundary and in Tract 2. These ditches are located both on and off the Arsynco property and drain the entire surrounding area, including adjacent industrial properties (including open pipe discharges). These ditches drain to and receive drainage from the Never Touch Creek and Berry's Creek. The surface waters and sediments of this area, including the drainage ditches, are known to be contaminated from a variety of sources (Ref. 3).

In September 2002, four surface water samples were obtained from the ditches in and around the site. Samples DW-1 and DW-3 were taken from the ditch in Tract 2, off-site sample DW-4 was taken from the ditch to the south of AOC I, and off-site sample DW-2 was taken from the ditch to the north of Tract 2 (see Figure 1 of the RIR Addendum & RAW for sample locations) (Ref. 3). Analytical results were compared to both the FW2-NT and SE-2 classifications of the NJ SWQC because Berry's Creek is

classified as both along its entire length. Metals were detected above NJ SWQC in all four samples, and the highest concentrations are noted as follows: arsenic (8.5 µg/L; FW2-NT = 0.017 µg/L, SE2 = 0.136 µg/L), lead (8.4 µg/L; FW2-NT/SE2 = 5 µg/L), and mercury (1.3 µg/L; FW2-NT = 0.144 µg/L, SE2 = 0.146 µg/L). This surface water contamination is not attributed to Arsynco activities, as none of these contaminants are known to have been used on the site. At the time of sampling, surface water was flowing into the ditches at two of the sampling locations and the water was observed to be at near slack high tide at the other two sampling locations (Ref. 3). The July 2003 BEE proposed no further action (NFA) for surface water, based on the fact that the lead concentrations in surface water almost certainly originate from off-site sources, and the Hazard Quotient (HQ) values obtained were exceptionally low (Ref. 2). Thus, the metal contamination is attributed to off-site sources and is indicative of surface water quality entering the ditches and Tract 2 twice a day with the tides.

During the SI/RI activities, sediment samples were collected from AOC VI (Former Pond Area) and AOC X (Tract 2). For the purposes of this EI determination, sediment data were compared to the NJ NRDCSCC. The following VOCs and metals were detected above NJ NRDCSCC in each AOC, as indicated below with the highest detected concentration and corresponding NJ NRDCSCC level in parentheses.

AOC VI: Chlorobenzene (1,000 mg/kg; NJ NRDCSCC = 680 mg/kg), toluene (3,700 mg/kg; NJ NRDCSCC = 1,000 mg/kg), trichloroethene (1,200 mg/kg; NJ NRDCSCC = 54 mg/kg), copper (2,940 mg/kg, NJ NRDCSCC = 600 mg/kg), lead (3,160 mg/kg; NJ NRDCSCC = 600 mg/kg), and nickel (3,080 mg/kg; NJ NRDCSCC = 2,400 mg/kg).

AOC X: Benzene (330 mg/kg; NJ NRDCSCC = 13 mg/kg), arsenic (99 mg/kg; NJ NRDCSCC = 20 mg/kg), copper (24,000 mg/kg; NJ NRDCSCC = 600 mg/kg), lead (2,600 mg/kg; NJ NRDCSCC = 600 mg/kg), nickel (3,800 mg/kg; NJ NRDCSCC = 2,400 mg/kg), and thallium (5 mg/kg; NJ NRDCSCC = 2 mg/kg).

Air (Outdoors)

No assessment of impacts to outdoor air has been conducted at this property. However, limited migration of contaminants bound to airborne particulate matter is expected at this site because the surface of Tract 1 is covered in moderate vegetation, demolition debris, crushed or intact concrete building slabs, asphalt, and soil with aggregate, all materials which limit wind erosion (Ref. 1). Tract 2 is comprised mostly of wetlands with heavy vegetation, so the high moisture content and ground cover would be expected to inhibit migration of particulates from sediment or soil. Migration of VOCs from groundwater into outdoor air is not expected to be of concern due to the limited extent of VOCs present in shallow groundwater (as described in the indoor air assessment above) and due to the natural dispersion of contaminants once they reach the surface. Thus, the migration of particulates entrained on dust and/or volatile emissions are not expected to be significant exposure pathways of concern at the Arsynco site.

References:

1. Letter from James Clabby, JMC Environmental Consultants, Inc., to Dorothy Zoledziowska, NJDEP, re: TSCA PCB Coordinated Approval. Dated October 10, 2000.
2. Baseline Ecological Evaluation, Former Arsynco Facility Site. Prepared by AMEC Earth & Environmental, Inc. Dated July 2003.

3. Remedial Investigation Report Addendum & Remedial Action Workplan, Arsynco, Inc. Prepared by JMC Environmental Consultants, Inc. Dated December 2003.
4. Letter from James Clabby, JMC Environmental Consultants, Inc., to Alan Straus, USEPA, re: Arsynco, Inc, Foot of 13th Street, Carlstadt, Bergen County, NJ. Dated June 16, 2004.

3. Are there complete pathways between “contamination” and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential Human Receptors (Under Current Conditions)

“Contaminated” Media	Residents	Workers	Day-Care	Construction	Trespasser	Recreation	Food ⁴
Groundwater	No	No	–	Yes	–	–	–
Air (indoor)							
Surface Soil (e.g. < 2 ft)	No	No	–	Yes	No	No	–
Surface Water							
Sediment	No	No	–	Yes	No	No	–
Subsurface Soil (e.g., > 2 ft)	–	–	–	Yes	–	–	–
Air (outdoors)							

Instruction for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors’ spaces for Media which are not “contaminated” as identified in #2 above.
2. Enter “yes” or “no” for potential “completeness” under each “Contaminated”Media — Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential “Contaminated” Media - Human Receptor combinations (Pathways) do not have check spaces. These spaces instead have dashes (“--”). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

⁴ Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish)

- ___ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).
- X If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.
- ___ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale:

Groundwater

As presented in response to Question 2, groundwater has been contaminated with VOCs, SVOCs, and metals as a result of site-related activities in several areas. The site is currently inactive, and the only personnel present at the site are workers associated with remedial activities. The only activities occurring on site are remedial activities performed by skilled remedial workers, who are classified as construction workers for the purposes of this EI determination. Exposure to contaminated groundwater associated with the site due to ingestion is not a concern at this time because groundwater at the site is not used for potable purposes. Although a recent well search identified domestic and public wells within one mile of the site, none of these potable wells were located downgradient of the site (i.e., to the east) (Ref. 2). Contaminated groundwater is not currently migrating off site, with the exception of shallow groundwater in MW-31S, as discussed below. Thus, exposure to impacted groundwater associated with Arsynco via ingestion is not a concern for off-site receptors at this time.

Given that shallow groundwater is found at depths of less than six feet bgs on site, the potential exists for remedial workers to come into contact with contaminated shallow groundwater during excavation/remedial activities. Thus, direct contact with impacted shallow groundwater is being considered a potentially complete exposure pathway for on-site remedial workers.

Concentrations of benzene and arsenic were detected above NJ GWQC in shallow groundwater in the off-property area located to the north of the Arsynco property (MW-31S). Arsenic was detected at 39.3 µg/L (NJ GWQC = 8 µg/L) and benzene was detected at 10.1 µg/L (NJ GWQC = 1 µg/L) in MW-31S. The off-site benzene-contaminated shallow groundwater is potentially related to historic operations at the Arsynco site; however, the elevated arsenic concentration is indicative of regional groundwater quality conditions and is not associated with the Arsynco site (Ref. 4). The area surrounding MW-31S is owned by NEB and is currently covered with asphalt pavement in excellent condition, with no evidence of cracking, sinking, or deterioration (Ref. 4). MW-31S is located in a remote area of the NEB parking lot, away from all site buildings and immediately adjacent to the Arsynco property line (Ref. 4). Per a March 22, 2004, letter from NEB to Arsynco's consultant, NEB does not have any intention to disturb the blacktop around MW-31S at the present time, unless it is under emergency circumstances (Ref. 3). NEB

also stated that it will give Arsynco advance notice, if feasible, before disturbing the area immediately surrounding these wells (Ref. 3). Therefore, direct contact with impacted shallow groundwater is not being considered a potentially complete exposure pathway for off-site workers on the NEB property in the vicinity of MW-31S.

Surface/Subsurface Soil

As presented in response to Question 2, there are several areas on Tract 1 with VOCs, SVOCs, metals, PCBs, and TPH in surface and subsurface soil above NJ NRDCSCC. The surface of Tract 1 is covered with moderate vegetation, demolition debris, concrete building slabs, asphalt, and soil with aggregate (Ref. 1). Proposed remedial activities include a mixture of active treatments (i.e., excavation, consolidation, and air sparging) and engineering and institutional controls (i.e., capping and a Deed Notice). However, because ongoing remedial activities are occurring on site, direct contact with on-site contaminated surface and subsurface soil is being considered a potentially complete exposure pathway for on-site remedial workers at this time.

The Arsynco site is sufficiently secured to protect other receptors (e.g., trespassers) from exposure to on-site surface soil contamination. Trespassing is not likely on the site due to its location in a highly industrialized section of Carlstadt. The Arsynco site is bordered by industrial/commercial properties to the north and south. Industrial/commercial properties are also located to the east and west of the Arsynco site, beyond 16th Street and the New Jersey Transit railroad tracks, respectively. Additionally, the Arsynco property is surrounded by a perimeter fence that adequately prevents trespasser access onto the property. A large regional tidal drainage ditch that always contains water is located along the southern property line, further restricting unauthorized access to the Arsynco property from the south (Ref. 4). Thus, direct contact with on-site contaminated surface soil is not being considered a potentially complete exposure pathway for trespassers.

As presented in response to Question 2, VOCs were detected above NJ NRDCSCC in surface soil in the off-property area located to the north of the Arsynco property (soil samples DJS-009 and ARSD-33). The off-site VOC-contaminated soil is potentially related to historic operations at the Arsynco site; however, these were isolated detections, as elevated VOC concentrations were not identified in surrounding off-site soil samples (Ref. 4). The area around soil samples DJS-009 and ARSD-33 is owned by NEB and is currently covered with asphalt pavement in excellent condition, with no evidence of cracking, sinking, or deterioration (Ref. 4). These soil samples are located in a remote area of the NEB parking lot, away from all site buildings and immediately adjacent to the Arsynco property line (Ref. 4). Per a March 22, 2004, letter from NEB to Arsynco's consultant, NEB does not have any intention to disturb the blacktop around soil samples DJS-009 and ARSD-33 at the present time, unless it is under emergency circumstances (Ref. 3). NEB also stated that they will give Arsynco advance notice, if feasible, before disturbing the area immediately surrounding these sample locations (Ref. 3). Therefore, direct contact with impacted surface soil is not being considered a potentially complete exposure pathway for off-site receptors at this time.

Sediment

As presented in response to Question 2, VOCs, metals, and PCBs were detected in sediment above NJ NRDCSCC in AOC VI (Former Pond Area) and AOC X (Tract 2). Proposed remedial action for Tract 2 includes excavation and off-site disposal of a limited area of VOC-contaminated sediments. No active remediation is proposed for the remainder of Tract 2, with the exception of a narrow section along 16th

Street that Arsynco has proposed capping. Engineering controls (i.e., sealing and capping) and institutional controls (i.e., Deed Notice) are the proposed remedial actions for the former pond area. Due to ongoing remedial activities occurring on site, direct contact with on-site contaminated sediment is being considered a potentially complete exposure pathway for remedial workers at this time.

As mentioned above for surface soil, the Arsynco property is surrounded by a perimeter fence that adequately prevents trespasser access onto the property. Thus, direct contact with on-site contaminated sediment is not being considered a potentially complete exposure pathway for trespassers.

References:

1. Letter from James Clabby, JMC Environmental Consultants, Inc., to Dorothy Zoledziowska, NJDEP, re: TSCA PCB Coordinated Approval. Dated October 10, 2000.
2. Remedial Investigation Report Addendum & Remedial Action Workplan, Arsynco, Inc. Prepared by JMC Environmental Consultants, Inc. Dated December 2003.
3. Letter from Christopher Quinn, Northern Eagle Beverage Company, to James Clabby, JMC Environmental Consultants, Inc., re: Arsynco Monitoring Wells #DJS009 and #ARSD-33. Dated March 22, 2004.
4. Letter from James Clabby, JMC Environmental Consultants, Inc., to Alan Straus, USEPA, re: Arsynco, Inc. Dated April 26, 2004.

4. Can the exposures from any of the complete pathways identified in #3 be reasonably expected to be significant⁵ (i.e., potentially “unacceptable”) because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable “levels” (used to identify the “contamination”); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable “levels”) could result in greater than acceptable risks?

If no (exposures cannot be reasonably expected to be significant (i.e., potentially “unacceptable”) for any complete exposure pathway) - skip to #6 and enter “YE” status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

If yes (exposures could be reasonably expected to be “significant” (i.e., potentially “unacceptable”) for any complete exposure pathway) - continue after providing a description (of each potentially “unacceptable” exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

If unknown (for any complete pathway) - skip to #6 and enter “IN” status code.

Rationale:

Groundwater

As discussed in response to Question 3, the potential for on-site remedial workers to come in direct contact with contaminated shallow groundwater is being considered a potentially complete exposure pathway. However, exposures are not expected to be significant because remedial workers are assumed to wear personal protective equipment (PPE) and adhere to strict Occupational Safety and Health Administration (OSHA) guidelines to minimize exposure to contamination. Arsynco stated in the RIR Addendum & RAW that all site activities will be conducted in accordance with all pertinent OSHA standards for general industry (29 CFR 1910) and construction (29 CFR 1926) (Ref. 1). Additionally, any future construction activities below the water table would likely be conducted under dewatered conditions. Thus, exposure to contaminated groundwater for remedial workers conducting remedial activities is not expected to pose a significant risk.

Surface/Subsurface Soil

As discussed in the response to Question 3, the potential for on-site remedial workers to come in direct contact with contaminated surface and subsurface soil is being considered a potentially complete exposure pathway. However, exposures are not expected to be significant because remedial workers are assumed to wear PPE and adhere to strict OSHA guidelines to minimize exposure to contamination. Additionally, Arsynco stated in the RIR Addendum & RAW that all site activities will be conducted in accordance with

⁵ If there is any question on whether the identified exposures are “significant” (i.e., potentially “unacceptable”) consult a Human Health Risk Assessment specialist with appropriate education, training, and experience.

all pertinent OSHA standards for general industry (29 CFR 1910) and construction (29 CFR 1926) (Ref. 1). Thus, exposure to contaminated soil for remedial workers conducting remedial activities is not expected to pose a significant risk.

Sediment

As discussed in the response to Question 3, the potential for on-site remedial workers to come in direct contact with contaminated sediment is being considered a potentially complete exposure pathway. However, exposures are not expected to be significant because remedial workers are assumed to wear PPE and adhere to strict OSHA guidelines to minimize exposure to contamination. Additionally, Arsynco stated in the RIR Addendum & RAW that all site activities will be conducted in accordance with all pertinent OSHA standards for general industry (29 CFR 1910) and construction (29 CFR 1926) (Ref. 1). Thus, exposure to contaminated sediment for remedial workers conducting remedial activities is not expected to pose a significant risk.

References:

1. Remedial Investigation Report Addendum & Remedial Action Workplan, Arsynco, Inc. Prepared by JMC Environmental Consultants, Inc. Dated December 2003.

5. Can the “significant” exposures (identified in #4) be shown to be within acceptable limits?

- _____ If yes (all “significant” exposures have been shown to be within acceptable limits) - continue and enter “YE” after summarizing and referencing documentation justifying why all “significant” exposures to “contamination” are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

- _____ If no (there are current exposures that can be reasonably expected to be “unacceptable”) - continue and enter “NO” status code after providing a description of each potentially “unacceptable” exposure.

- _____ If unknown (for any potentially “unacceptable” exposure) - continue and enter “IN” status code.

This question is not applicable. See the response to Question 4.

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at Arsynco, Inc., EPA ID# NJD044688935, located at Foot of 13th Street, P.O. Box 8, Carlstadt, New Jersey 07072, under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

NO - "Current Human Exposures" are NOT "Under Control."

IN - More information is needed to make a determination.

Completed by: _____ Date: _____
Amy Brezin
Environmental Consultant
Booz Allen Hamilton

Reviewed by: _____ Date: _____
Kristin McKenney
Risk Assessor
Booz Allen Hamilton

Also Reviewed by: _____ Date: _____
Alan Straus, RPM
RCRA Programs Branch
EPA Region 2

_____ Date: _____
Barry Tornick, Section Chief
RCRA Programs Branch
EPA Region 2

Approved by: _____ Date: _____
Adolph Everett, Chief
RCRA Programs Branch
EPA Region 2

Locations where references may be found:

References reviewed to prepare this EI determination are identified after each response. Reference materials are available at the EPA Region 2, RCRA Records Center, located at 290 Broadway, 15th Floor, New York, New York, and the New Jersey Department of Environmental Protection Office located at 401 East State Street, Records Center, 6th Floor, Trenton, New Jersey.

Contact telephone and e-mail numbers: Alan Straus, EPA RPM
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straus.alan@epa.gov

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

Attachments

The following attachments have been provided to support this EI determination.

- ▶ Attachment 1 – Maximum Detected Concentrations in Soil by AOC (in mg/kg)
- ▶ Attachment 2 – Summary of Media Impacts Table

**Attachment 1 – Maximum Detected Concentrations in Soil by AOC (in mg/kg)
Arsynco, Inc.**

Contaminant	NJ NRDCSCC	AOCs Where Contaminant Was Detected (Surface Soil)	AOCs Where Contaminant Was Detected (Subsurface Soil)
Antimony	340	–	VIII (364)
Arsenic	20	I (155), III (25.7), VI (68.6), VII (26.4), VIII (25.3)	I (39.8), VI (80.3)
Benzene	13	II (24), V (110), VI (330)	III (19), V (25), VI (21), VIII (67)
Benzo(a)anthracene	4	III (4.9), IV (22), VIII (4.6)	–
Benzo(a)pyrene	0.66	I (2.1), II (2.5), III (4.5), IV (14), VI (2.5), VII (1.2)	VI (0.88)
Benzo(b)fluoranthene	4	II (6.5), IV (17)	–
Benzo(k)fluoranthene	4	IV (6.6)	–
Beryllium	2	VI (20.2)	–
Bis(2-ethylhexyl)phthalate	210	–	VIII (660)
Cadmium	100	VIII (136)	VIII (237)
Chloroform	28	VII (50)	–
Copper	600	VI (24,000), VIII (688)	VI (4,860)
Dibenz(a,h)anthracene	0.66	IV (3.1)	–
Di-n-butylphthalate	10,000	–	VIII (12,000)
2,4-dinitrotoluene	4	III (11)	–
Ethylbenzene	1,000	IV (1,300), V (2,800), VII (2,400)	–
Indeno(1,2,3-cd)pyrene	4	IV (9)	–
Lead	600	I (661), IV (27,000), VI (2,600), VII (2,140), VIII (19,600)	VI (1,000), VIII (6,530)
Mercury	270	VIII (300)	VI (987)
Methylene chloride	210	VII (570)	–
Nickel	2,400	VI (3,500)	–

Contaminant	NJ NRDCSCC	AOCs Where Contaminant Was Detected (Surface Soil)	AOCs Where Contaminant Was Detected (Subsurface Soil)
PCBs (Total)	2	IX (1,500)	IX (6,200)
Tetrachloroethene	6	VIII (14)	–
Thallium	2	IV (8.2) , VI (4.4)	–
Toluene	1,000	II (1,300), IV (5,600), V (2,700), VI (3,400), VII (8,700)	VI (4,800) , VIII (4,400)
Total petroleum hydrocarbons (TPH)	10,000	III (14,000) , VII (11,800)	VI (42,500), VII (15,000), VIII (99,000)
Trichloroethene	54	–	VI (100)
Vinyl chloride	7	VI (26)	–
Xylenes (Total)	1,000	IV (7,100), V (18,000), VII (24,000) , VIII (3,600)	VI (2,850), VIII (8,000)
Zinc	1,500	VI (3,680) , VIII (2,030)	VI (3,200), VIII (4,420)

The maximum detection for each contaminant and the AOC where it was detected are bolded.

Attachment 2 – Summary of Media Impacts Table ⁶
Arsynco, Inc.

Description of Area	Affected AOCs	Affected Media	Key Contaminants	Proposed Remedial Action
Historic Fill Material and Tract 1 Fill/ Soils with PCB Levels < 50 mg/kg	Tract 1 (except proposed PCB containment area and Building 16), narrow section of Tract 2 along 16 th Street.	Surface/ Subsurface Soil	Metals, SVOCs, PCBs	(1) Place a bituminous asphalt cap over the approximately 7.4 acres covered by the affected AOCs; (2) place/maintain 6-foot chain-link fencing around the perimeter of Tract 1; (3) implement a Deed Notice restricting future use of these areas to non-residential use only. Note: Site access is restricted by facility fencing.
Tract 1 Fill/ Soils with PCB Levels > 50 mg/kg	IX	Surface/ Subsurface Soil	PCBs	Excavation and proper disposal of materials containing PCBs at concentrations ≥ 500 mg/kg and post-excavation sampling. Consolidation of approximately 15,650 cubic yards of material with PCB concentrations > 50 mg/kg and < 500 mg/kg into the eastern part of Tract 1. Installation of a uniform cap, berms, and appropriate fencing and signs. Performance of necessary inspection, maintenance, and monitoring. Installation of groundwater monitoring wells around the perimeter of the contained area, and groundwater monitoring as required. Note: Site access is restricted by facility fencing.
Contamination in Area of Process-Type Fill Materials in Southeast Part of Tract 1	VIII	Surface/ Subsurface Soil	VOCs, SVOCs, Metals, TPH	Excavation and off-site disposal of soil containing elevated levels of BNs, metals, VOCs, phenols, and TPH, in conjunction with proposed PCB remedial program. Confirmatory sampling. Note: Site access is restricted by facility fencing.
VOC Contamination in Shallow Soil/ Fill Material and Shallow Groundwater	I, II, and III (limited); IV, V, and VII (extensive)	Surface/ Subsurface Soil, Groundwater	VOCs	Installation and operation of an air sparging system in an expanding fashion to remediate approximately 78,000 pounds of VOCs in this area. Monitored natural attenuation to address residual VOC contaminants. Note: Site access is restricted by facility fencing.
Contaminated Material Within Former Pond	VI	Surface/ Subsurface Soil, Sediment	VOCs, SVOCs, Metals, TPH	Leave the contaminated material layer in place, and seal the area of the pond outflow and inflow locations with a cement/bentonite slurry. Potential long-term groundwater monitoring. Note: Site access is restricted by facility fencing.
VOCs in Deep Groundwater	XI	Groundwater	VOCs	Institute a monitoring program that will specifically evaluate actual natural attenuation rates of chlorinated VOCs in deep groundwater, and continue to pursue reclassification of groundwater from II-A. Note: Site access is restricted by facility fencing.

⁶ As outlined in the December 2003 RIR Addendum & RAW, the current remedial approach addresses the broader contamination issues that were identified in the SI/RI, rather than providing remedial proposals on an AOC-by-AOC basis. Thus, the Summary of Media Impacts Table has been organized to reflect this approach.

Description of Area	Affected AOCs	Affected Media	Key Contaminants	Proposed Remedial Action
Sediments on Tract 2	X	Sediment	VOCs, Metals, PCBs	Excavation and off-site disposal of approximately 100 cubic yards of sediments containing > 1,000 mg/kg total VOCs; confirmatory sampling; and restoration/mitigation of disturbed wetlands. The proposed Deed Notice will include the sediments contaminated with PCB and metals above NJ Residential Direct Contact Soil Cleanup Criteria (RDCSCC). Note: Site access is restricted by facility fencing.