RCRA Corrective Action
Environmental Indicator (EI) RCRA Info code (CA725)
Current Human Exposures Under Control

Facility Name: **Heartland Cement Company**
Facility Address: **P.O. Box 428, Independence, Kansas 67301**
Facility EPA ID #: **KSD980739999**

DETERMINATION RESULT: __YE__

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 (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   __YE__ 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.

BACKGROUND

The Heartland Cement Company (Heartland) is located on 1,184 acres of land approximately one mile southeast of Independence, Kansas in Montgomery County (See Attachment 1, Figure 1). The Verdigris River flows past the Heartland facility on the eastern and northeastern borders and serves as the drinking water source for the City of Independence, with the intake being located upstream of the Heartland facility. Rock Creek flows through the northern end of the plant and feeds into the Verdigris River. Some scattered residences are located approximately one-half mile southwest of the plant property. Overall land use surrounding the Heartland facility consists of high and low density residential, light industrial/commercial, and agricultural communities (Refs. 1, 2, 3, 4, 5).

The cement plant was constructed on the site in the late 1890s and was purchased by Heartland in 1986. It is currently Heartland Cement, a division of R.C. Cement Company, Inc. [a holding company] The facility manufactures cement in four 175-foot long rotary kilns. The kilns employ the dry process in which feed material enters the kiln as a dry powder. The dry powder is chemically reacted at temperatures in excess of 2,600°F to produce cement clinker. The clinker is stored and later ground together with gypsum to produce cement. The Heartland facility produces approximately 1,200 tons of clinker daily and 340,000 tons of cement annually (Refs. 1, 2, 3, 4, 5).

Coal, petroleum coke, natural gas are used to fire the kilns. Hazardous waste fuel was used in the cement kilns during the 1990's but ceased in November 1998. The HWDF consist of both solid and liquid waste streams. The facilities used for receiving, storing and firing hazardous waste fuel have been closed pursuant to the RCRA permit issued to the facility. (Refs. 4, 5, 12).

Based on a preliminary review and visual site inspection completed in 1989, EPA identified eight solid waste management units (SWMUs) that required additional investigation. A Phase I RCRA Facility Investigation (RFI) was completed in 1991. Releases were detected at six of the eight SWMUs previously identified by EPA, and were recommended for further investigation. No releases were determined to have occurred at the other two SWMUs previously identified for release investigation, the Electric Shop Parts Cleaner (SWMU 9) and the Water Treatment System (SWMU 15). As a result, Phase II RFI activities were performed in 1993 to further characterize the nature and extent of releases at the remaining six SWMUs and to gather additional information to verify the conclusions of the Phase I RFI (See Attachment 2, Figure 2). Based on the results of the Phase II RFI, EPA requested that a Phase III RFI be conducted at SWMUs 3 and 4 (Refs. 1, 2,3, 7).

In addition to the RFI activities, remedial activities have been implemented at several units and closure activities have occurred at one unit. The following descriptions summarize corrective action activities that have occurred at the six units identified by the Phase I RFI as having releases.

SUMMARY OF SOLID WASTE MANAGEMENT UNIT AND AREAS OF CONCERN

Three Settling Ponds (SWMU 3) and Frog Pond: This unit is located north of the Former Waste Fuel System (SWMU 4) in the northeast portion of the facility area. The unit is active and receives plant water run-off from the Ditch Sewer System (SWMU 5), in addition to settled solids from backwashing of the Water Treatment System (SWMU 15). The ponds are connected in series with the first pond located approximately 100 feet from the Power House Building. The influent flows into Pond A, then to Pond B, and ultimately to Pond C. Water from Pond C is subsequently recycled into the cement process or discharged to Rock Creek under a NPDES permit. During the Phase I RFI, in order to characterized releases from this unit, one surface water sample was collected from the discharge point downgradient from Pond C to Rock Creek. Low concentrations of chromium and mercury were the only constituents detected in the TCLP analysis of the surface water sample. Release of these constituents was below the regulatory TCLP limit and is managed under a NPDES permit (Refs. 1, 2, 3, 6, 10).

During Phase I RFI field activities to investigate SWMU 3, a small body of standing water was identified in the vicinity of SWMU 3. This area is referred to as the Frog Pond. It is located on a plateau approximately 60 feet north (downgradient) of the settling ponds and approximately 20 feet south (upgradient) of Rock Creek. The Frog Pond measures approximately 200 square feet and has a average depth of one foot. The Frog Pond is believed to be recharged primarily by perched groundwater. Phase I RFI samples detected elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) in sediment samples from the Frog Pond. As a result, this area was recommended for Phase II RFI activities. During Phase II RFI activities, soil and sediment composite samples from the Frog Pond identified significantly elevated concentrations of numerous PAHs (Refs. 1, 2, 3, 10).

To address contamination associated with the Frog Pond, 2,427 cubic yards of soil were excavated and 320,000 gallons of water were removed in June, 2000. The excavation extended to a maximum depth of 15 feet bgs. Following excavation, confirmatory samples were collected in the sidewalls and floor of the excavated area and were analyzed for volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). Confirmation sampling did not indicate levels of the target PAHs remaining in the Frog Pond area above the cleanup criteria. No other VOCs, or SVOCs were detected above practical quantitation limits (PQLs) (Ref. 10).

Three groundwater monitoring wells (SPGW-1, SPGW-2, and SPGW-3) were installed around the Settling Ponds during Phase II RFI activities. The concentrations of phenanthrene, pyrene, and benzo(a)anthracene in SPGW-3 exceeded screening criteria during Phase II RFI activities. However, additional sampling of monitoring wells SPGW-2 and SPGW-3 in August, 1999 indicated no detectable concentrations of PAHs (Refs 3, 7).

Former Waste Fuel System (SWMU 4): SWMU 4 is located on the south side of the facility road and settling ponds, approximately 35 feet north of the power hours building. The unit is currently inactive. Between 1975 and 1982, this unit stored No. 6 fuel oil. Between 1982 and 1985, the system was used to store waste fuels and blended solvent fuels for the kiln burner system. This system includes a 15,000-gallon, steel storage tank with a concrete dike area and a gravel bottom. The waste fuel pump house adjacent to the storage tank, directly westward. When the system was operational, waste fuel was off-loaded from tanker trucks and pumped to the storage tank. The stored waste fuel was then pumped to the cement kiln burners by supply line piping. These lines have been removed. The type of hazardous constituents that may have been managed in this unit included aromatic and aliphatic hydrocarbons, alcohols, ketones, glycols, resins, and pigments (Refs. 1, 2, 3, 6, 10).

During Phase I RFI activities, five composite samples were collected from various locations around SWMU 4. The result of the analysis of these samples indicated the presence of several VOCs, SVOCs, and total metals at concentrations exceeding relevant screening levels. Low levels of chlorinated and/or non-chlorinated VOCs were detected in all five samples. In addition, low to moderate levels of SVOCs (primarily PAHs) were detected. Several metals were also detected. The most notable of these metals was lead, which was detected above 100 mg/kg in all five samples. As a result, Phase II RFI activities were required (Refs 1, 2, 10).

During the Phase II RFI, thirty-six soil samples were collected from the vicinity of SWMU 4. The results of the analysis of these soil samples confirmed the presence of several VOCs, SVOCs, and total metals. No VOCs exceeded screening criteria; however, four samples contained concentrations of SVOCs that exceeded screening criteria. In addition, cadmium, mercury, and lead were detected at concentrations exceeding screening levels. It should also be noted that free product was visible in one sampling location (WFS-1) (Ref 3).

As a result of the contaminant concentrations identified during the RFI, Heartland excavated contaminated soil with approval and oversight from Kansas Department of Health and Environment (KDHE) personnel. The final excavation limits were determined to be clean based on visual observations by Heartland and KDHE personnel and screening with an organic vapor analyzer. A letter, dated January 18, 1996 from KDHE to Heartland, states that the excavation activities associated with this unit were completed properly and that the unit "no longer poses any significant health or environmental risk." (Ref. 7)

<u>Ditch Sewer System (SWMU 5)</u>: The ditch sewer system is an active network of earthen or concrete-lined drainage ditches, which collect surface water runoff throughout the plant. The average dimensions of the ditches are 2 to 3 feet wide by 1 to 2 feet deep. The total length of the system is approximately 3,400 linear feet. These ditches all gradually slope northward, in general, to direct accumulated surface water runoff to the Three Settling Ponds (SWMU 3). The system accommodates a facility drainage area of approximately 70 acres (Refs. 1, 2, 3, 6, 10).

During Phase I RFI activities, surface water, sediment, and soil samples were collected from SWMU 5. In surface water samples, no VOCs were detected and phenol was the only SVOC detected. All soil samples contained hazardous constituents, including elevated concentrations of xylene, PAHs, arsenic, cadmium, mercury, lead, and selenium. These were primarily detected in the area surrounding sample location DSS2A. As a result, Phase II RFI activities were required (Refs 1, 2, 10).

During Phase II RFI activities, eight soil samples were collected from three test pits excavated in the vicinity of Phase I RFI soil sample DSS2A. All samples contained either VOCs and/or PAHs; however, all concentrations were less than the relevant KDHE Tier 2 screening criteria. No additional investigation of this release as part of the RFI was recommended because the release resulted from spills of greases and lubricants from manufacturing operations. As a result, no other actions were recommended for this SWMU (Ref 3).

<u>Industrial Landfill (SWMU 10)</u>: This unit is an irregularly shaped landfill with a land area of approximately 1.25 acres. It is located on the western portion of the Heartland property, approximately 2,650 feet west of the KG&E substation and 100 feet south of the MOPAC railroad line. Rock Creek flows along the western and southern sides of this SWMU. The land fill dimensions are approximately 150 feet by 400 feet and the total capacity is unknown. The area is accessed by an unimproved road entering the area from the north-northeast. The landfill is surrounded by woods and vegetation. The Industrial Landfill (SWMU 10) was originally excavated and mined for clay. The facility began using the quarry to dump bulk and industrial wastes from the cement plant prior to 1974. The landfill is active today and approximately 10 cubic yards of industrial waste is dumped weekly. The waste generated from facility operations and contained in the landfill is primarily kiln dust. Some additional waste materials include scrap metal, truck parts, and off-specification clinker material (Refs. 1, 2, 3, 6, 10).

To characterize potential releases from this unit to the surrounding area and to determine if releases have occurred to Rock Creek, a total of three surface water and two sediment samples were collected from the two bodies of standing water located west and south of SWMU 10 during the Phase I RFI. TCLP chromium was the only constituent detected in surface water samples. No VOCs, SVOCs, or total metals were detected in surface water samples. Carbon disulfide was the only VOC detected (14 ug/kg) in the sediment sample from the pond east of the landfill. Additionally, arsenic, barium, cadmium, chromium, mercury, lead and selenium were detected in low concentrations in both sediment samples (Refs 1, 2, 10).

The waste deposited in the Industrial Landfill was also sampled during the Phase I RFI activities. Waste analytical data indicated the presence of SVOCs (primarily PAHs) and total metals (primarily lead). Because of the elevated concentrations of lead in the Industrial Landfill (SWMU 10), Phase II RFI characterization of groundwater was required (Ref. 3).

During Phase II RFI activities, three groundwater monitoring wells were installed in the vicinity of the Industrial Landfill (SWMU 10). Monitoring well ILGW-1 is an upgradient well located north of the landfill. Monitoring wells ILGW-2 and ILGW-3 are downgradient wells located west and southeast of the landfill, respectively. Groundwater samples from these wells were analyzed for PAHs and total metals based on the results of waste analytical data from the Phase I RFI activities. No metals were detected; however, benzo(b)fluoranthene and benzo(k)fluoranthene were both detected at 0.02 ug/l in downgradient well ILGW-2 (Refs. 3, 13).

<u>Kiln Dust Landfills (SWMU 11)</u>: Two kiln dust landfills are located north and northwest of the plant area. The larger landfill, the Old Kiln Dust Landfill, is located approximately 500 feet north of the plant adjacent to an abandoned railroad line. The smaller landfill, the New Kiln Dust Landfill, is located approximately 700 feet west of the plant adjacent to the plant driveway. Both landfills are irregular shaped areas consisting of generally homogeneous kiln dust deposits. Kiln dust has been deposited in successive layers/piles over time. Kiln dust is deposited with dump trucks and spread/compacted with a front end loader. The Old Kiln Dust Landfill has an area of approximately 26 acres and a capacity of approximately 22,651,200 cubic feet. This unit is active and is covered in places by natural vegetation. Disposal of kiln dust at this landfill reportedly started prior to 1960 and ceased in 1986 and resumed in January 2000. Prior to landfill activities, this area was mined for clay. The New Kiln Dust Landfill has an area of approximately eight acres and has an average depth of 20 feet for a capacity of approximately 6,969,600 cubic feet. This unit is closed and covered with an eighteen inch compacted layer, a six inch soil layer and vegetated (Refs. 1, 2, 3, 6, 10).

To characterize potential releases from this unit to the surrounding area and to determine if releases have occurred to Rock Creek, a total of three surface water and five sediment samples were collected from the two bodies of standing water located west and south of SWMU 11 during the Phase I RFI activities. Low concentrations of benzoic acid and phenol were the only VOCs detected in surface water samples. Phenol was detected in one sediment sample. No other VOCs or SVOCs were detected in sediment samples. Additionally, arsenic, barium, cadmium, chromium, mercury, lead and selenium were detected in concentrations in sediment samples (Refs 1, 2, 10).

The waste deposited in the Industrial Landfill was also sampled during the Phase I RFI activities. Waste analytical data indicated the presence of low levels of VOCs (primarily benzene, xylene, and toluene), and SVOCs (primarily PAHs). Several metals were also detected including high levels of lead in all samples. The pH of the waste was also characterized and pH values exceeded 12.5 in all waste samples except one. Because of the elevated concentrations of lead (maximum concentration 2,000 mg/kg) and the alkaline nature of the waste in the Kiln Dust Landfills (SWMU 11), Phase II RFI characterization of groundwater was required (Refs 1, 2, 10).

During Phase II RFI activities, three groundwater monitoring wells were installed in the vicinity of the New Kiln Dust Landfill (SWMU 11). Groundwater samples from these wells were analyzed for PAHs and total metals based on the results of waste analytical data from the Phase I RFI activities. Benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, and barium were detected in downgradient well NLGW1 (Ref. 3).

Also during Phase II RFI activities, ten surface soil samples (0-2 feet) were collected from the New Kiln Dust Landfill (SWMU 11) and were analyzed for lead. Lead was detected in all ten samples and the maximum concentration was 600 mg/kg (Ref. 3).

Three groundwater monitoring wells were installed outside of the Old Kiln Dust Landfill (SWMU 11). Groundwater samples from these wells were analyzed for PAHs and total metals based on the results of waste analytical data from the Phase I RFI activities. Arsenic and selenium were detected in downgradient well OLGW3, both at concentrations exceeding relevant screening levels (Refs. 3, 13).

Also during Phase II RFI activities, twenty surface soil samples (0-2 feet) were collected from the New Kiln Dust Landfill (SWMU 11) and were analyzed for lead. Lead was detected in all twenty samples and the maximum concentration was 1,800 mg/kg (Ref. 3).

Crude Oil Tank (SWMU 13): This unit is located approximately 800 feet east of the cement plant crusher building. Historically, fuel oil used to fire the cement kilns was stored in the tank. The tank is a 2.31 million-gallon steel tank constructed in 1923 and operated until 1980. Currently, the tank is empty and is no longer used by Heartland. An earthen dike approximately 10 feet high and 10 feet wide surrounds the tank (Refs. 1, 2, 3, 9).

The Phase I RFI identified areas of soil staining around this unit. These isolated areas of potential release were investigated during the Phase II RFI in 1993. Grab samples were collected from three areas of release as determined by soil gas survey or visual observation. The samples were analyzed for VOCs and SVOCs. No VOCs were detected above screening criteria in these samples. Several elevated concentrations of SVOCs were detected including benzo(a)anthracene (33 mg/kg), which exceeded the relevant screening criterion (2.24 mg/kg) (Refs. 2, 3, 9).

To address soil contamination at SWMU 13, approximately 532 cubic yards of soil were excavated within the vicinity of SWMU 13. Since the bedrock is shallow, the soil was generally excavated to the top of bedrock. Following excavation activities, confirmatory sampling was performed in the sidewalls of the excavated areas to determine if contamination remained. Four confirmatory samples were collected from each sidewall in two different excavation areas for a total of eight confirmatory samples. VOCs and benzo(a)anthracene were not detected above the laboratory PQL in the confirmatory samples. Three SVOCs (anthracene, phenanthrene, and benzo(g,h,i)perylene) were detected; however, concentrations only slightly exceeded the laboratory PQLs. No contaminant concentrations were detected above relevant risk-based screening levels (Ref. 9).

Hazardous Waste Derived Fuel Facility: The Hazardous Waste Derived Fuel (HWDF) facility includes the HWDF unloading, processing, and storage areas; four cement kiln pyroprocessing systems and associated air pollution control systems (APCS), and the HWDF feed system piping. The HWDF unloading, processing, and storage areas include one tank farm, two truck unloading areas, one tank truck unloading area, one railcar unloading area, and two container storage areas. In 2002, closure activities were performed at the following RCRA units (Refs. 5, 11, 12):

- Six approximately 20,000-gallon aboveground storage tanks (Area 5);
- Four container storage areas with secondary containment (Areas 1, 4, 9, and 10);
- Two truck unloading stations with secondary containment (Areas 6 and 8);
- One rail car unloading station with secondary containment (Area 2);
- Four rotary cement kilns and associated APCS; and
- Piping and ancillary equipment.

It should be noted that the above mentioned RCRA units at Heartland HWDF facility were completely enclosed in a building. Additionally, the facility has secondary containment consisting of concrete floors, berms, and a high-density polyethylene (HDPE) liner. Some secondary containment areas (i.e., Areas 1 and 6) were equipped with dual containment, consisting of metal plating (floors and berms) overlying the concrete containment (Refs. 5, 11, 12).

Closure activities at the HWDF facility were initiated and performed in accordance with the KDHE-approved Closure Plan. Soil sampling was not performed in Areas 1 or 6, which are protected with dual containment. Soil sampling was also not performed in Area 9 since it only managed solid waste. Following closure activities, a total of eight soil borings were installed in Areas 2, 4, 5, 8, and 10, which all managed liquid waste. Confirmatory samples were then analyzed for VOC and SVOCs. Only toluene, tetrachloroethene, ethylbenzene, and acetone were detected and, in each case, concentrations were several orders of magnitude less than relevant risk-based screening levels. As a result, closure of the HWDF facility was certified by Heartland and submitted to KDHE for approval (Refs. 5, 11, 12).

References

1. RCRA Facility Investigation Work Plan, Heartland Cement Company. December 18, 1989
2. Phase I RCRA Facility Investigation for the Heartland Cement Company. Prepared by Atlantic Environmental Services, Inc. November 22, 1991.
3. Draft Phase II RCRA Facility Investigation for the Heartland Cement Company. Prepared by Atlantic

Environmental Services, Inc. June, 1993.
4. Expanded Screening-Level Risk Assessment for the Heartland Cement Facility. Prepared by Environmental Resources Management. May 1, 1997
5. Heartland Cement Company Part B Permit Application, Class 1 Permit Modification. May 29, 1997
6. Letter from Martin McClelland, Heartland, to Kenneth Herstowski, EPA Region 7 re: Phase II RCRA Facility Investigation Report. October 13, 1999.
7. Draft Phase III RCRA Facility Investigation Workplan. March 24, 2000.
8. Letter from Martin McClelland, Heartland, to Shawn Corbin, KDHE, re: Revised Draft RCR Final Closure Work Plan. October 12, 2000.
9. Draft Crude Oil Tank - SWMU 13, Soil Excavation Report. May 22, 2001.
10. Draft Frog Pond, Soil Excavation Report. May 22, 2001.
11. Draft Closure of Hazardous Waste-Derived Fuel Facility report. August 10, 2001.
12. Final Closure of Hazardous Waste-Derived Fuel Facility report. April 2, 2002.
13. Letter from Belinda Holmes, EPA Region 7, to Mary Ellen Ternes, McAfee & Taft, and Brad Hiles, Blackwell, Sanders, Peper, Martin, LLP, re: Proposed consent decree, U.S. v. Heartland Cement Company, Inc. and Rineco, Inc. December 17, 2003.
14. Draft Groundwater Assessment Report for SWMU 10 and SWMU 11. December 17, 2003.
15. Letter from Martin McClelland, Heartland, to Kenneth Herstowski, EPA Region 7 re: Bi-Annual Corrective Action Report, July 18, 2003.
16. Telephone communication: Ken Herstowski, EPA Region 7 and Bill Bertie, Heartland Cement Company, June 17, 2004.

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI 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 objective of the RCRA Corrective Action program the EI 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 are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do 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 Determinations status codes should remain in RCRA Info national database ONLY as long as they remain true (i.e., RCRA Info status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria [e.g., Maximum Contaminant Levels (MCLs), the maximum permissible level of a contaminant in water delivered to any user of a public water system under the Safe Drinking Water Act] from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

Media	Yes	No	?	Rationale/Key Contaminants
Groundwater	X			See discussion below.
Air (indoors) [2]		X		See discussion below.
Surface Soil (e.g., <2 ft)	X			See discussion below.
Surface Water		X		See discussion below.
Sediment	X			See discussion below.
Subsurface. Soil (e.g., >2 ft)		X		See discussion below.
Air (outdoors)		X		See discussion below.

_____ 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 and Reference(s):

Groundwater

A total of 10 groundwater monitoring wells have been installed at the Three Settling Ponds (SWMU 3), the

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[1] "Contamination" and "contaminated" describes 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).

[2] Recent evidence (from the Colorado Dept. 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.

Industrial Landfill (SWMU 10), and the Kiln Dust Landfills (SWMU 11).

Three groundwater monitoring wells (SPGW-1, SPGW-2, and SPGW-3) were installed around the Three Settling Ponds (SWMU 3) during Phase II RFI activities (Attachment 2, Figure 2). As cited in the Phase III RFI Work Plan, sampling was completed in August, 1999, which indicated no detectable concentrations of PAHs. This sampling also indicated that all other contaminant concentrations were non-detect. It should be noted that additional groundwater sampling for existing wells was outlined in the Phase III RFI work plan; however, Phase III RFI activities have not been implemented as of July, 2003 (Refs. 3, 7).

During Phase II RFI activities, three groundwater monitoring wells (ILGW-1, ILGW-2, and ILGW-3) were installed in the vicinity of the Industrial Landfill (SWMU 10). All contaminant concentrations were less than relevant screening criteria (Ref. 3).

During Phase II RFI activities, three groundwater monitoring wells (NLGW-1, NLGW-2, NLGW-3) were installed in the vicinity of the New Kiln Dust Landfill (SWMU 11). A fourth groundwater monitoring well (NLGW-4) was installed in October 2003. The maximum concentration detected at the New Kiln Dust Landfill exceeded the MCL for benzo(a)pyrene. In addition, three groundwater monitoring wells (OLGW-1, OLGW-2, OLGW-3) were installed outside of the Old Kiln Dust Landfill (SWMU 11). The maximum concentrations of arsenic and selenium exceeded their respective MCLs. Tables 1 and 2 summarize the groundwater sampling that has been conducted at the New Kiln Dust Landfill and Old Kiln Dust Landfill, respectively (Ref. 3).

Table 1: Phase II RFI Groundwater Sampling Results for the New Kiln Dust Landfill (SWMU 11)		
Compound	Phase II RFI Maximum Detected Concentration	Screening Criteria
PAHs (ug/l)		
Benzo(a)anthracene	0.03	0.092 (PRG)
Benzo(b)fluroanthene	0.03	0.092 (PRG)
Benzo(a)pyrene	**0.02J**	0.0002 (MCL)
Benzo(k)fluoranthene	0.01J	0.092 (PRG)
Total Metals (ug/l)		
Barium	210	2,000 (MCL)

Bolded concentrations exceeded their respective screening criteria

Table 2: Phase II RFI Groundwater Sampling Results for the Old Kiln Dust Landfill (SWMU 11)		
Compound	Phase II RFI Maximum Detected Concentration	Screening Criteria
Total Metals (ug/l)		
Arsenic	**4200**	50 (MCL)*
Chromium	11	100 (MCL)
Selenium	**440J**	50 (MCL)

Bolded concentrations exceeded their respective screening criteria
* - Currently, the MCL for arsenic is 50 ug/l; however, it should be noted that a new MCL of 10 ug/l will be promulgated in 2006.

Surface and Subsurface Soils

Surface (0 to 2 feet bgs) and subsurface (greater than 2 feet bgs) at the Heartland facility are contaminated with metals (primarily lead) and SVOCs (primarily PAHs). Soil investigations were conducted at the previously identified SWMUs during the Phase I and Phase II RFI. It should be noted that no soil contamination was identified associated with the Three Settling Ponds (SWMU 3) and the Industrial Landfill (SWMU 10). In addition, remedial actions, such as excavation and disposal of contaminated soils, have been implemented at several SWMUs to address soil contamination (Refs. 2, 3).

To address contamination associated with the Frog Pond, 2,427 cubic yards of soil were excavated and 320,000 gallons of water were removed in June, 2000. No other VOCs, or SVOCs were detected above PQLs in confirmatory samples. As a result, no contaminant concentrations were detected in soils above the relevant KDHE/BER Tier 2 screening criteria for Residential Soil (Ref. 10).

To address soil contamination associated with the Former Waste Fuel System (SWMU 5), Heartland excavated contaminated soil with KDHE approval and oversight. The final excavation limits were determined to be clean based on visual observations by Heartland and KDHE personnel and screening with an organic vapor analyzer. A letter dated January 18, 1996 from KDHE to Heartland states that the excavation activities associated with this unit were completed properly and that the unit "no longer poses any significant health or environmental risk" (Ref. 7).

To address soil contamination at the Crude Oil Tank (SWMU 13), approximately 532 cubic yards of soil were excavated within the vicinity of SWMU 13. Two SVOCs were detected in confirmatory samples at concentrations that were less than the KDHE screening criteria for Residential Soil: anthracene (0.362 mg/kg vs. 13 mg/kg) and phenanthrene (0.362 mg/kg vs. 13 mg/kg). As a result, no contaminant concentrations were detected in soils above the relevant KDHE Tier 2 Non-residential Soil Screening Criteria (Ref. 9).

Following completion of closure activities at the HWDF facility, confirmatory samples were collected from 0 to 6 inches below the concrete floor and were analyzed for VOC and SVOCs. Four VOCs were detected at concentrations that were less than the KDHE screening criteria for Residential Soil: toluene (6.74 ug/kg vs. 930,000 ug/kg), tetrachloroethene (3.72 ug/kg vs.79,000 ug/kg), ethylbenzene (1.78 ug/kg vs. 650,000 ug/kg), and acetone (35.1 ug/kg vs. 1,700,000 ug/kg). As a result, closure of the HWDF facility was certified by Heartland and submitted to KDHE for approval (Refs. 11, 12).

Following completion of the excavation and closure activities discussed above, soil contamination identified at the Heartland facility during the Phase I and Phase II RFI was limited to the Ditch Sewer System (SWMU 5) and the Kiln Dust Landfills (SWMU 11).

During Phase I and Phase II RFI activities, numerous surface and subsurface soil samples were collected from the Ditch Sewer System (SWMU 5). Table 3 summarizes the remaining soil contamination in the Ditch Sewer System (SWMU 5). No contaminant concentrations exceeded their respective KDHE Tier 2 Screening Criteria for Non-Residential Soil (Refs. 2, 3).

Table 3: Site-wide Soil Sampling Results				
Compound	**Maximum Detected Concentration**	**Sample ID**	**Sampling Date**	**KDHE/BER Tier 2 Non-Residential Soil Screening Criteria**
Surface (0-2 ft)				
Organics (ug/kg)				
Acetone	110	DSS8	1993	6,200,000
Toluene	23	DSS5	1993	1,000,000
Naphthalene	2,500	DSS8	1993	320,000
Acenaphthene	3,400	DSS8	1993	300,000
Anthracene	240	DSS8	1993	13,000
Fluorene	1,600	DSS8	1993	270,000
Phenanthrene	470	DSS12	1993	N/A
Fluoranthene	55	DSS8	1993	220,000
Pyrene	5,500	DSS8	1993	140,000
Benzo(a)anthracene	1,400	DSS8	1993	26,000
Chrysene	2,000	DSS8	1993	6,400
Benzo(b)fluoranthene	1,500	DSS8	1993	19,000
Benzo(k)fluoranthene	74	DSS8	1993	10,000
Benzo(a)pyrene	1,900	DSS8	1993	2,600
Dibenzo(a,h)anthracene	1,100	DSS8	1993	2,600
Benzo(g,h,i)perylene	3,400	DSS8	1993	N/A
Total Xylenes	14	DSS5	1993	700,000
2-Methylnaphthalene	9,700	DSS2A	1993	320,000
Pyrene	150	DSS4	1993	140,000
Diethylphthalate	200	DSS4	1993	3,200,000
Indeno(1,2,3-cd)pyrene	79	DSS8	1993	760
Total Metals (mg/kg)				
Arsenic	8.4	DSS10	1993	38
Barium	96	DSS8	1993	140,000
Chromium	21	DSS5	1993	4,000
Lead	43	DSS5	1993	1,000
Subsurface (> 2 ft bgs)				
Organics (ug/kg)				
Acetone	270	DSS9	1993	6,200,000
Ethylbenzene	5.3	DSS6	1993	650,000
Toluene	44	DSS9	1993	1,000,000

Table 3: Site-wide Soil Sampling Results				
Compound	**Maximum Detected Concentration**	**Sample ID**	**Sampling Date**	**KDHE/BER Tier 2 Non-Residential Soil Screening Criteria**
Naphthalene	270	DSS11	1993	320,000
Acenaphthene	1,000	DSS6	1993	300,000
Fluorene	24	DSS11	1993	270,000
Phenanthrene	140	DSS11	1993	N/A
Fluoranthene	15	DSS1	1993	220,000
Pyrene	800	DSS9	1993	140,000
Benzo(a)anthracene	220	DSS9	1993	26,000
Chrysene	450	DSS9	1993	6,400
Benzo(b)fluoranthene	78	DSS9	1993	19,000
Benzo(k)fluoranthene	18	DSS9	1993	10,000
Benzo(a)pyrene	350	DSS9	1993	2,600
Dibenzo(a,h)anthracene	260	DSS9	1993	2,600
Benzo(g,h,i)perylene	9.2	DSS11	1993	N/A
Total Xylenes	76	DSS2A	1993	700,000
2-Methylnaphthalene	9,700	DSS2A	1993	320,000*
Pyrene	11,000	DSS2A	1993	140,000
Total Metals (mg/kg)				
Arsenic	8.5	DSS2A	1993	38
Barium	110	DSS9	1993	140,000
Cadmium	0.62	DSS2A	1993	1,000
Chromium	18	DSS6	1993	4,000
Lead	45	DSS2A	1993	1,000
Selenium	2.6	DSS2A	1993	10,000

* - Screening criterion is from the US EPA Region 9 Preliminary remediation goals because a KDHE Tier 2 value was unavailable.

N/A - Screening criterion no available

Surface soil samples were collected from the Kiln Dust Landfills (SWMU 11) and were analyzed for lead. Lead was detected in all ten samples collected from the New Kiln Dust Landfill and the maximum concentration was 600 mg/kg. This landfill is now covered with its final landfill cap. Lead was detected in all twenty samples collected from the Old Kiln Dust Landfill (SWMU 11) and the maximum concentration was 1,800 mg/kg at sampling location OLS-20. This concentration exceeds the KDHE Tier 2 screening criteria for Non-Residential Soil of 1,000 mg/kg. However, it should be noted that the all of the other surface soil samples collected from the Old Kiln Dust Landfill (SWMU 11) were less than the KDHE Tier 2 screening criteria for Non-Residential Soil (Refs. 2, 3). Since January 2000 when disposal at the Old Kiln Dust Landfill resumed, the surface has been covered with new fill including the area of OLS-20 (Ref. 16).

Surface Water and Sediment

Rock Creek originates upgradient of the Heartland site and flows past the Industrial landfill (SWMU 10), the Kiln Dust Landfills (SWMU 11), and the Three Settling Ponds (SWMU 3) before it discharges into the Verdigris River. It is, therefore, potentially a major contaminant migration pathway for releases from SWMUs at Heartland. As such, surface water and sediment samples were collected to determine if any releases have impacted Rock Creek or the Verdigris River. The following discussion summarizes the results of sediment and surface water sampling completed during the Phase I RFI in 1991 (Refs. 1, 2, 3).

Six surface water samples were collected, four from Rock Creek (RCH1 through RCH4) and two from the Verdigris River (VRH1 and VRH 2). Sample RCH1 from Rock Creek and VRH 1 from the Verdigris River were collected from background locations. Analysis of the surface water samples identified no VOCs or SVOCs with the exception of RCH4, which contained low levels of toluene and bis(2-ethylhexyl)phthalate. All detected concentrations are below the relevant risk-based screening levels. The screening levels used for the comparison were the US EPA Region 9 Preliminary Remediation Goals (PRG) for Tap Water because Verdigris River serves as the drinking water source for the City of Independence, Kansas (Ref. 2).

During Phase I RFI activities, three surface water samples (DSH1, DSH2, and DSH3) were collected from the Ditch Sewer System (SWMU 5). Samples were analyzed for VOCs and SVOCs. No VOCs were detected and phenol (60 ug/l) was the only SVOC detected in sample DSH1. The concentration of phenol detected did not exceed the National Ambient Water Quality Criteria (AWQC) value of 21,000 ug/l (Ref. 2).

During Phase I RFI activities, two surface water samples (SPCH1 and SPRCH1) were collected from the Three Settling Ponds (SWMU 3). Samples were analyzed for VOC and SVOCs. No VOCs or SVOCs were detected above detection limits (Ref. 2).

During Phase I RFI activities, a total of three surface water were collected from the two bodies of standing water located west and south of SWMU 10. No VOCs, SVOCs, or total metals were detected (Ref. 2).

During Phase I RFI activities, a total of three surface water samples were collected from the two bodies of standing water located west and south of SWMU 11. Surface water sample NLH2 was collected from the pond located north of the New Kiln Dust Landfill and surface water samples OLH1 and OLH2 were collected from the marshy areas and ponds located east and west of the Old Kiln Dust Landfill, respectively. Samples were analyzed for VOCs, SVOCs, total metals, and TCLP metals. No VOCs or SVOCs were detected in the surface water sample collected from the pond near the New Kiln Dust Landfill. Low concentrations of phenol (29 ug/l) and benzoic acid (600 ug/l) were detected in the surface water sample from the pond east of the Old Kiln Dust Landfill. No other VOCs or SVOCs were detected. The concentration of phenol detected did not exceed the National AWQC value of 21,000 ug/l. No National AWQC value is available for benzoic acid. However, the concentration of benzoic acid is less than the US EPA Region 9 PRG for Tap Water of 150,000 ug/l (Ref. 2).

Six sediment samples were collected, four from Rock Creek (RCS1 through RCS4) and two from the Verdigris River (VRS1 and VRS2). Sample RCS1 from Rock Creek and VRS1 from the Verdigris River were collected from background locations upgradient from the Heartland site. Samples RCS2, RCS3, and RCS 4 are all located downgradient of the SWMUs and VRS2 is downgradient of the entire site. Analysis of these sediment samples identified no VOCs or SVOCs in any of the samples. Several metals were detected in sediment samples from Rock

Creek and the Verdigris River; however, all concentrations were less than their respective KDHE Tier 2 screening criteria for Non-Residential Soil (Ref. 2).

During Phase I RFI activities, two sediment samples were collected from the two bodies of standing water located west and south of SWMU 10. Sediment sample ILS1 was collected in the center of the pond south of the Industrial Landfill (SWMU 10) and sediment sample ILS2 was collected from the pond west of the landfill. Samples were analyzed for VOCs, SVOCs, total metals, and TCLP metals. No contaminant concentrations were detected that exceeded the KDHE Tier 2 screening criteria for Non-Residential Soil (Ref. 2).

During Phase I RFI activities five sediment samples were collected from the two bodies of standing water located adjacent to the Kiln Dust Landfills (SWMU 11). Sediment samples NLS1 and NLS2 were collected from the pond located north of the New Kiln Dust Landfill and sediment samples OLS1A, OLS2, and OLS3 were collected from the marshy areas and ponds located east and west of the Old Kiln Dust Landfill. Samples were analyzed for VOCs, SVOCs, and total metals. Table 3 summarizes the sediment sampling results associated with the Kiln Dust Landfills (SWMU 11). One concentration of arsenic in a sediment sample collected from the pond located east of the Old Kiln Dust Landfill slightly exceeded the KDHE Tier 2 screening criteria for Non-Residential Soil (Ref. 2).

Table 3: Metals Concentrations Detected in Phase I RFI Sediment Samples

Compound	Screening Criteria (ug/l)*	New Kiln Dust Landfill		Old Kiln Dust Landfill		
		NLS1	NLS2	OLS1	OLS2	OLS3
Organics (ug/kg)						
Phenol	950,000	280	ND	ND	ND	ND
Total Metals (mg/kg)						
Arsenic	38	21	33	5.6	**39**	35
Barium	140,000	110	200	180	210	180
Cadmium	1,000	4.3	1.4	2	1.3	2.8
Chromium	4,000	14	16	33	19	24
Mercury	20	0.1	ND	ND	0.09	0.1
Lead	1,000	140	48	120	29	190
Selenium	10,000	2.8	1.7	ND	ND	1.7

* - Values used are the KDHE/DER Tier 2 screening criteria for Non-Residential Soil.

ND - Not detected

Bolded concentrations exceed their respective screening criterion

Air

Indoor

In some cases, volatile contaminants in soil and groundwater can adversely impact indoor air quality. According to EPA's *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils* (EPA, 2002), benzo(b)fluoranthene, which was detected at the Industrial Landfill (SWMU 10) and the Kiln Dust Landfills (SWMU 11), is the only groundwater contaminant with sufficient volatility and toxicity to impact indoor air quality. However, it should be noted that these units are located in a remote, wooded part of the property and no inhabited buildings are located in the vicinity. As a result, indoor air quality cannot be adversely impacted.

Surface and subsurface soil contamination associated with the Ditch Sewer System (SWMU 5) is located within 100 feet of inhabited buildings; however, all concentrations of soil contamination were less than their respective screening criterion. As a result, soil contamination is not likely to adversely impact indoor air quality (Ref. 1, 2, 3, 4, 5).

Outdoor

VOCs have been detected in surface and subsurface soil at Heartland, which could generate emissions that adversely impact outdoor air quality. However, concentrations of VOCs remaining in soils are minimal and in all cases were several orders of magnitude less than their respective KDHE Tier 2 screening criteria for Non-Residential Soil. In addition, vapors from contaminated soil are not likely to accumulate in outdoor air in significant concentrations in the absence of a confining structure. Therefore, concentrations of VOCs that remain in on-site soils are such that the natural mixing that occurs during normal air flow would likely disperse any contaminants to the point where they would no longer exceed levels of concern (Refs. 1, 2, 3, 4, 5).

Outdoor air is also impacted by emissions of contaminants from the Heartland cement kilns. However, results of a human health risk assessment performed in 1997 indicated that emissions from the Heartland cement kilns did not pose an unacceptable risk. Carcinogenic risk levels for all receptors were less than 1×10^{-5} and noncarcinogenic hazard indices were all less than 1.0 (Ref. 4).

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	Trespassers	~~Recreation~~	~~Food~~[3]
Groundwater	---------------	No	---------------	No	---------------	---------------	-------
~~Air (indoors)~~	---------------	---------------	---------------	---------------	---------------	---------------	----------
Soil (surface, e.g., <2 ft)	---------------	No	---------------	No	No	---------------	----------
~~Surface Water~~	---------------	---------------	---------------	---------------	---------------	---------------	-------
Sediment	---------------	No	---------------	No	No	---------------	----------
~~Soil (subsurface e.g., >2 ft)~~	---------------	---------------	---------------	---------------	---------------	---------------	----------
~~Air (outdoors)~~	---------------	---------------	---------------	---------------	---------------	---------------	----------

Instructions 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 ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

__X__ 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).

______ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

[3]Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

_____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

For this evaluation, potential exposure to contaminated media will be evaluated for both on and off-site receptors. As discussed in Question 2, indoor air, surface water and subsurface soils were not determined to contain concentrations of contaminants above appropriately protective risk-based screening levels. In addition, several potential receptors can be excluded from further consideration.

As discussed in Question 2, groundwater surface soil, and sediment are impacted above relevant screening levels at the Kiln Dust Landfills (SWMU 11). Given that contamination is currently maintained with active facility boundaries, on-site workers, construction workers, and trespassers are the only receptors of concern for the Heartland site.

According to the available file material, the Heartland facility operates 24-hours a day, seven days a week. As a result, Heartland workers and construction workers must be considered as potentially exposed receptors to soil, sediment, and groundwater. However, exposure to contaminated media by Heartland workers and construction workers is not reasonably expected to occur under current land use scenarios. Heartland workers and construction workers are unlikely to be exposed to contaminated groundwater. Although groundwater concentrations exceeded MCLs, the MCLs establish maximum permissible levels of contaminants in potable water supplies, therefore, it is implied that the threat of exposure is primarily from oral ingestion. Potable water for the Heartland facility is supplied by the City of Independence, Kansas. In addition, contaminated groundwater was detected in groundwater monitoring well OLGW-3, which was completed at a depth of 34.5 feet. This depth is deeper than the depth at which a construction worker might come into contact with groundwater during construction activities. Therefore, exposure to contaminated groundwater by a Heartland worker or a construction worker is not likely to occur (Res. 2., 3, 4, 5).

The SWMU where the surface soil concentrations exceeded the screening levels was the Old Kiln Dust Landfill, which is currently inactive and is located in a wooded/vegetated area that is not likely to be accessed by Heartland workers. In addition, according to information provided by facility representative, physical barriers are in place to prevent access to the Old Kiln Dust Landfill (SWMU 11). In addition, the resumption in disposal has covered the surface of the Old Kiln Dust Landfill with new fill. Therefore, exposure to contaminated soil by a Heartland worker or a construction worker is an incomplete exposure pathway. (refs. 2, 3, 5, 16).

Finally, the only exceedance of sediment screening criteria occurred in a marshy area adjacent to the Old Kiln Dust Landfill, which is inactive and is located in a wooded/vegetated area. Because the Old Kiln Dust Landfill is inactive, Heartland workers or a construction worker are not likely to be in the area where sediment contamination is located. It should also be noted that only one sediment sample exceeded the risk-based screening criteria for arsenic. This unit is also located a significant distance (700 feet) from the portion of the property where process operations occur. Therefore, exposure to contaminated sediment by a Heartland worker or a construction worker is an incomplete exposure pathway. In addition, it should be noted that the screening criteria for arsenic is 38 mg/kg and the sediment sample contained 39 mg/kg. Thus, sediment contamination is located in only one area and exceeded the screening criteria by only a small amount (Refs. 2, 3).

A trespasser receptor will not be exposed to groundwater at the Heartland site because it is located approximately 34.5 feet bgs. In addition, security for the Heartland facility is provided by a combination of 24-hour personnel surveillance, access gates, and waste facility fencing. Vehicular and foot traffic in and out of the facility is monitored and proper paperwork is required to access the site. As a result, it is highly unlikely that a trespasser would gain access the site. In the unlikely event that a trespasser did access the site, the size of the Heartland property (more than 1,100 acres) and the distance from the property boundary to contaminated areas make it highly unlikely that a trespasser would be exposed to contaminated soil or sediment. Finally, because the Old Kiln Dust Landfill area, where surface soil and sediment contamination was detected, is inactive, wooded/vegetated, and away from the main process area, it is unlikely to be an attractive area for a trespasser receptor. Therefore, exposure to contaminated soil or sediment by a trespasser receptor is an incomplete exposure pathway (Refs. 2, 3, 4, 5).

For the reasons stated above, all exposure pathways for relevant receptors under reasonably expected current land use are incomplete.

4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (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 can not 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 and Reference(s):____
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[4] 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.

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 <u>and</u> 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

Rationale and Reference(s):____
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6. Check the appropriate RCRA Info 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_ 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 the **Heartland Cement Company** facility, EPA ID #**KSD980739999**, located in **Independence, Kansas** 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 (signature)________________________ Date ____6/17/04_________
Ken Herstowski
Project Manager

Supervisor (signature)________________________ Date ____6/17/04_______
Jody Hudson
Chief, RCRA Branch
EPA Region 7

Locations where References may be found:

All references may be found in the EPA Region 7 RCRA files.

Contact telephone and e-mail numbers

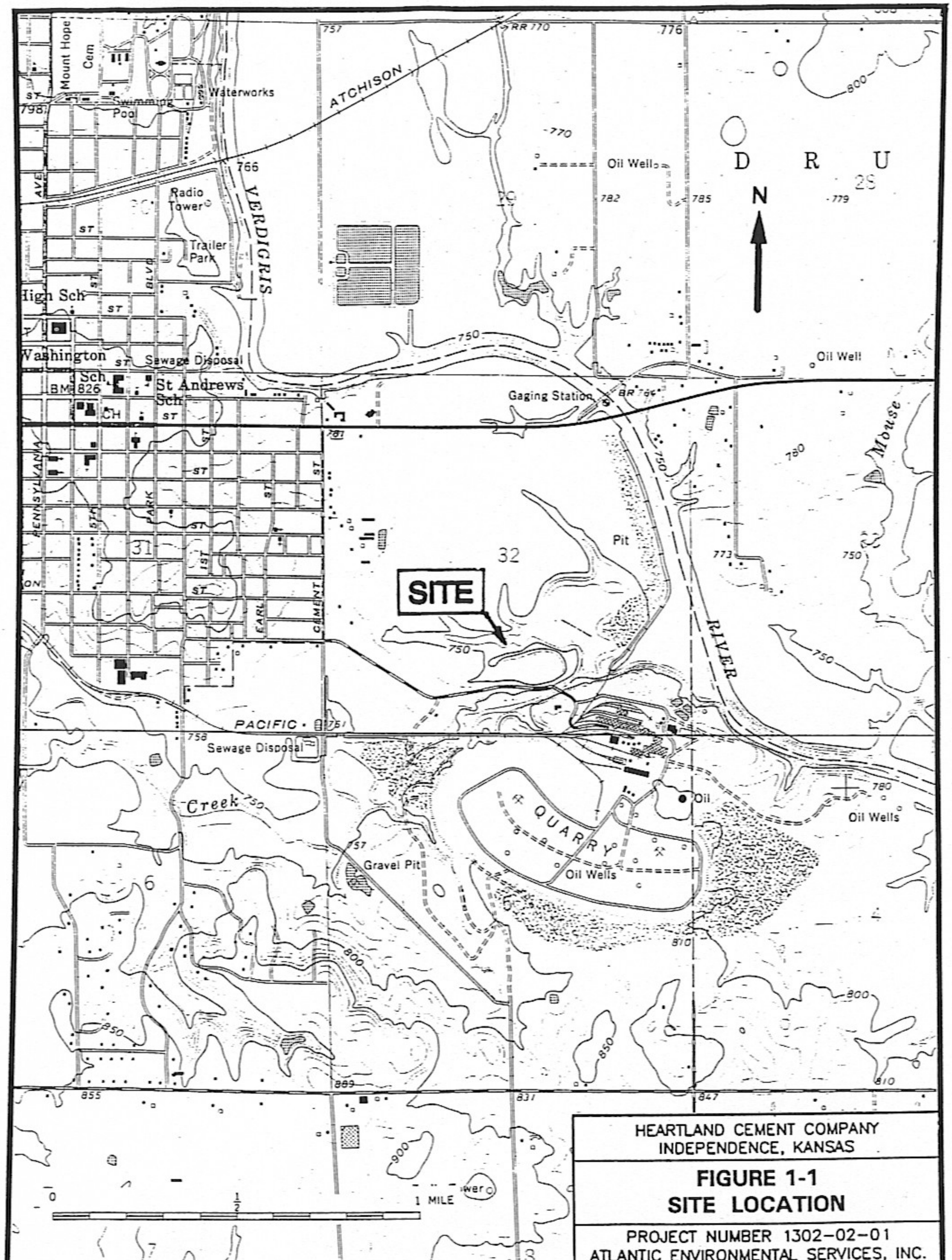
(name) Ken Herstowski
(phone #) 913-551-7631
(e-mail) herstowski.ken@epa.gov

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.

Attachment 1

Figure 1: Site Location Map

Resource: Draft Phase II RCRA Facility Investigation for the Heartland Cement Company. Prepared by Atlantic Environmental Services, Inc. June, 1993.



HEARTLAND CEMENT COMPANY
INDEPENDENCE, KANSAS

FIGURE 1-1
SITE LOCATION

PROJECT NUMBER 1302-02-01
ATLANTIC ENVIRONMENTAL SERVICES, INC.

Attachment 2

Figure 2: Site Layout Map

Resource: Draft Phase II RCRA Facility Investigation for the Heartland Cement Company. Prepared by Atlantic Environmental Services, Inc. June, 1993.