DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99
Revised 9/20/02

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

Facility Name: __Burlington Northern/Santa Fe Railroad - Hobson Yard_____
Facility Address: __West O Street, Lincoln, NE_____
Facility EPA ID #: __NED000822767_____

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?

__X__ 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

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			The groundwater monitoring results show perchloroethylene (PCE) and its degradation products in groundwater underlying the site. Sources include: 1) spills/leaks from a historic PCE tank, used to supply degreasing operations in the locomotive shop, and 2) sludges in a filled wastewater lagoon.
Air (indoors)[2]			X	
Surface Soil (e.g., <2 ft)		X		
Surface Water		X		
Sediment		X		
Subsurf. Soil (e.g., >2 ft)		X		
Air (outdoors)		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 and Reference(s):

A removal action conducted in 1993 addressed the surficial soil and water contamination at the site, which was the result of diesel fuel-contaminated stormwater runoff into the saline wetland. BNSF installed a high-capacity API oil/water separator in its stormwater system to remove any free-phase hydrocarbons prior to stormwater discharge to the wetland. Contaminated soils were repeatedly tilled to facilitate degradation of

[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.

the petroleum constituents [*Removal Action Work Report, BNSF Hobson Yard, 3/1/95*].

Facility investigations performed by BNSF in recent years show that groundwater underlying the area northeast of the Diesel Shop, including a saline wetland, is contaminated by hydrocarbons (diesel fuel), perchloroethylene (TCE), and the TCE degradation products trichloroethylene (TCE), cis-1,2-dichloroethylene (DCE), and vinyl chloride (VC). Maximum contaminant levels found in recent sampling events are PCE at 11,400 ug/l (MW-137), TCE at 2080 ug/l (MW-137), DCE at 24,900 ug/l (MW-175), and VC at 8,300 ug/l (MW-121) . This contaminated groundwater is believed to extend off-site onto a neighboring property, the former site of Lincoln Steel, a closed facility. Ongoing investigations will characterize the full extent of the migration of contaminated groundwater [*Site Conceptual Model, BNSF Hobson Yard, Lincoln, Nebraska, January 14, 2003*].

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	no	no	no	no	no
Air (indoors)	no	no	no	no	no	no	no
~~Soil (surface, e.g., <2 ft)~~							
~~Surface Water~~							
~~Sediment~~							
~~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.

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

Rationale and Reference(s): No pathway is complete for human receptors at this facility. No groundwater wells are used downgradient of the contaminant sources, which lie north of the Diesel

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

Shop. The groundwater flow direction is away from the building. The contaminated groundwater plume is believed to extend off-site onto the Lincoln Steel property; the full extent of this off-site migration onto the former Lincoln Steel property has yet to be determined (the investigation is ongoing at this time), but: 1) no water wells exist on this property, and 2) the lack of any human receptors at the closed Lincoln Steel facility precludes the possibility of worker exposure to contaminated indoor air, even if the current investigation finds that the contaminated groundwater plume could affect the indoor air in the Lincoln Steel building.

The chlorinated solvent-contaminated groundwater plume originates at the location of the old PCE aboveground storage tank north of the Diesel Shop, and trends east-northeast, underlying a saline wetland which is bordered to the east by Salt Creek (Figure 5-1 and Figure 5-2, *Site Conceptual Model, BNSF Hobson Yard, Lincoln, Nebraska, January 14, 2003*). Construction is prohibited in this protected wetland, thus eliminating the possibility of a construction worker exposure to contaminated groundwater while excavating during construction of a building foundation. Exposure during trenching operations is not anticipated, because; 1) the necessity of routing utilities through the wetland is negligible, and 2) the lowest extent of any anticipated utility trench would lie above the water table (the water table at this site is approximately 6'-10' below ground surface [Figure 3-1, *Site Conceptual Model, BNSF Hobson Yard, Lincoln, Nebraska, January 14, 2003*]).

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):_____

[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 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

Rationale and Reference(s):_____

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):

__X__ 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 Burlington Northern Hobson Yard facility, EPA ID # NED000822767, located on West O Street in Lincoln, Nebraska, 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) original signed by Date __6/17/04____
(print) John DeLashmit
(title) Project Manager

Supervisor (signature) original signed by Date __6/17/04____
(print) Jody Hudson
(title) Associate Director, Office of RCRA
(EPA Region or State) EPA Region 7

Locations where References may be found:

_____EPA Region 7 Records Center___-_____
_____901 North 5th Street_____
_____Kansas City, KS 66101_____
_____
_____

Contact telephone and e-mail numbers

(name)____John DeLashmit_____
(phone #)__913-551-7821_____
(e-mail)___delashmit.john@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.