Documentation of Environmental Indicator Determination
Interim Final 2/5/99
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)
Current Human Exposures Under Control

Facility Name: VDOT Culpeper Headquarters
Facility Address: 1601 Orange Road, Culpeper, VA 22701
Facility EPA ID #: VAD980715064

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?

✓ 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 RCRIS national database ONLY as long as they remain true (i.e., RCRIS 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) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	✓			chlorinated organics
Air (indoors)[2]		✓		
Surface Soil (<2 ft)			✓	possible metals
Surface Water		✓		
Sediment				
Subsurf. Soil (>2 ft)			✓	possible metals
Air (outdoors)		✓		

____ 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.

✓ 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):
Tetrachloroethene and 1,2-dichloropropane have historically been the constituents of interest at the site with respect to groundwater, the former associated with the Paint Pit and the latter associated with the Sign Shop Vat. Groundwater is not a drinking water source and there is no exposure.
The former salvage metal and debris storage site is proposed for sampling in the RFI workplan and may potentially contain soils contaminated with elevated metals. There is currently no access to the areas that may be contaminated.

Footnotes:

[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.

1. **Groundwater** – YES

REFERENCE: *Virginia Department of Transportation Culpeper District Headquarters: Groundwater Quality Assessment Monitoring Report, April 2005 Sampling Event (July 12, 2005, Marshall Miller & Associates, Inc).*

Virginia Department of Transportation Culpeper District Headquarters: Groundwater Quality Assessment Monitoring Report, April 2006 Sampling Event (June 10, 2006, Marshall Miller & Associates, Inc).

RATIONALE: Two closed HWMUs were a source of groundwater contamination. With the latest sampling event (2006), tetrachloroethene, 1,2-dichloropropane, lead and trichloroethene exceeded MCLs. The following constituents exceed or have exceeded MCLs (a number of wells are not regularly sampled): lead (MW16 – 127 parts per billion (ppb), MW15 – 59 ppb; MCL=15 ppb); tetrachloroethene (MW16 – 10 ppb and MW30 – 15.7 ppb; MCL=5 ppb); 1,1-dichloroethene (MW25 – 14.5 ppb and MW27 – 7.5 ppb; MCL=7 ppb); 1,2-dichloropropane (MW11, MW23, MW25, MW26, MW27 and MW28 range from 55 to 1150 ppb; MCL=5ppb), trichloroethene (MW17 – 5 to 15 ppb and MW21 – 5 ppb; MCL=5 ppb).

2. **Air (indoors)** – NO

REFERENCE: *Virginia Department of Transportation Culpeper District Headquarters: Groundwater Quality Assessment Monitoring Report, April 2006 Sampling Event (June 10, 2006, Marshall Miller & Associates, Inc).*

RATIONALE: Data from the latest annual groundwater monitoring report show elevated levels of volatile organic consituents. However, of the two separate plumes the shallower plume (marginally exceeding MCL for PCE) is constrained to the area around the Former Paint Pit and deeper groundwater is at a depth that would not affect indoor air in the slab structures, which are well ventilated. Therefore, it can be reasonably assumed that the elevated VOC concentrations in groundwater would not result in concentrations in indoor air that are above acceptable risk levels.

3. **Surface Soil** – ?

REFERENCE: *Phase I RCRA Facility Investigation Work Plan, Virginia Department of Transportation Culpeper District Headquarters*; July 7, 2006

RATIONALE: A sampling plan was proposed for the Former Salvage Metal and Debris Storage Site (FSMDB) located to the east of the former paint pit. The quantity and volume of waste is unknown.

4. **Surface Water** – NO

REFERENCE: *Phase I RCRA Facility Investigation Work Plan, Virginia Department of Transportation Culpeper District Headquarters*; July 7, 2006

RATIONALE: Only the quarry pond may receive run-off from an identified SWMU. The quarry pond lies to the east of the FSMDB; however, the HCOCs likely associated with the FSMDB preclude run-ff. Since run-off cannot contact any potentially contaminated soils it is reasonable to assume that the facility is not currently contributing contamination to surface waters above appropriately protective risk-based levels.

5. **Subsurface Soil** – ?

REFERENCE: *Phase I RCRA Facility Investigation Work Plan, Virginia Department of Transportation Culpeper District Headquarters*; July 7, 2006

RATIONALE: A sampling plan was proposed for the Former Salvage Metal and Debris Storage Site (FSMDB) located to the east of the former paint pit. The quantity and volume of waste is unknown.

6. Air (outdoors) – NO

REFERENCE: *Virginia Department of Transportation Culpeper District Headquarters: Groundwater Quality Assessment Monitoring Report, April 2006 Sampling Event (June 10, 2006, Marshall Miller & Associates, Inc).*

RATIONALE: Data from the latest annual groundwater monitoring report show elevated levels of volatile organic consituents. However, of the two separate plumes the shallower plume (marginally exceeding MCL for PCE) is constrained to the area around the Former Paint Pit and deeper groundwater is at a depth that would not affect outdoor air. Therefore, it can be reasonably assumed that the elevated VOC concentrations in groundwater would not result in concentrations in outdoor air that are above acceptable risk levels.

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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
~~Air (indoors)~~		___	___				___
Soil (surface, e.g., <2 ft)		NO		NO	NO		NO
~~Surface Water~~		___			___		___
~~Sediment~~		___			___		___
Soil (subsurface e.g., >2 ft)		NO		NO	NO		NO
~~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.

✓ 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):
Groundwater - see attached page, Item #1
Soil (surface & subsurface) - see attached page, Item #2

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

1. Groundwater

REFERENCE: All previous references.

RATIONALE:

Residents

NO – The facility is located in a fenced enclosure. There are no residents on the facility. There is a residential community under construction which will be serviced with city water.

Workers

NO – Groundwater is not a drinking water source. Only trained environmental professionals can potentially come in contact with groundwater while sampling.

Day-Care

NO – There is no information indicating the presence of a day-care on the facility or in the immediate vicinity.

Construction

NO – There are no ongoing or planned construction activities that may come into contact with groundwater.

Food

NO – There is no information indicating that food is grown in or comes into contact with groundwater at the facility.

2.. Soil (surface & subsurface)

REFERENCE: All previous references.

RATIONALE:

Workers

NO – The Virginia Department of Transportation has erected a fence (350 l.f., 3 ft. high) at SWMU No. 8 Former Salvage Metal and Debris Storage Site preventing access. Three 8.5 x 11 inch laminated warning signs were posted around the perimeter of the area.

Construction

NO – The Virginia Department of Transportation has erected a fence (350 l.f., 3 ft. high) at SWMU No. 8 Former Salvage Metal and Debris Storage Site preventing access. Three 8.5 x 11 inch laminated warning signs were posted around the perimeter of the area.

Trespassers

NO – The Virginia Department of Transportation has erected a fence (350 l.f., 3 ft. high) at SWMU No. 8 Former Salvage Metal and Debris Storage Site preventing access. Three 8.5 x 11 inch laminated warning signs were posted around the perimeter of the area.

Food

NO – There is no information indicating that food is grown in at the facility.

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.

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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):

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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 the VDOT Culpeper District Headquarters facility, EPA ID # VAD980715064, located at 1601 Orange Road, Culpeper, VA 22701 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) Erich Weissbart Date 9/27/06
(print) Erich Weissbart
(title) Env. Engr. Sr.

Supervisor (signature) Leslie A Romanchik Date 9/28/06
(print) Leslie A. Romanchik
(title) Director, Office of Waste Permitting
(EPA Region or State) VA DEQ

Locations where References may be found:

VA Department of Environmental Quality, Office of Waste Permitting files

Contact telephone and e-mail numbers:

(name) Erich Weissbart
(phone #) (804) 698-4393
(fax #) (804) 698-4327
(e-mail) ejweissbart@deq.state.va.us

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.

FAX

Department Of Environmental Quality
629 East Main Street
Richmond, VA 23219

Financial Assurance

Groundwater Corrective Action

Technical Support

Waste Permitting

FAX #: 804-698-4327

TO: HARRIET MORRELL

FAX #: (215) 814-3114

FROM: SONAL IYER **@ 698-** 4259

DATE: 09/28/06

TOTAL PAGES INCLUDING COVER SHEET: 3 (THREE)

COMMENTS:

As Sanjay and you discussed this morning, Enclosed please find Human Health EI information to be entered in RCRAInfo. Thanks for your help. -Sonal.

** Transmit Conf. Report **

Sep 28 2006 11:31

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