Submittal Date: 04/19/2013
Revised 07/31/2013

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:	Former General Motors Corporation Romulus Engineering Center Site
Facility Address:	37350 Ecorse Road, Romulus, Wayne County, Michigan
Facility EPA ID #:	MID000809905

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 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).

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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	X			See Rationale and Reference Section Below.
Air (indoors) [2]		X		See Rationale and Reference Section Below.
Surface Soil (e.g., <2 ft.)		X		See Rationale and Reference Section Below.
Surface water		X		Not applicable – no surface water at or near Site
Sediment		X		Not applicable – no surface water at or near Site
Subsurf. Soil e.g., >2 ft)	X			See Rationale and Reference Section Below.
Air (outdoors)		X		See Rationale and Reference Section 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):

The presence of "contamination" is identified based on the assessment of regional and local background conditions, as appropriate, relative to Site characterization data for soil and groundwater samples, and the comparison of Site characterization data for soil and groundwater samples with screening criteria developed by the Michigan Department of Environmental Quality (MDEQ) to facilitate implementation of Part 201 of the Natural Resources and Environmental Protection Act, 1994 Public Act 451, as amended (MDEQ, 28 September 2012). The assessment of regional and local background conditions, and the results of the comparison of Site characterization data with the Part 201 screening criteria are discussed in Section 4 of the RCRA Facility Investigation Report (Haley & Aldrich, 19 April 2013) (RFI Report). The following Part 201 screening criteria were used to evaluate the Site characterization data:

Soil

- Part 201 Nonresidential Drinking Water Protection Criteria;
- Part 201 Nonresidential Indoor and Ambient Air Criteria;
- Part 201 Nonresidential Direct Contact Criteria; and
- Part 201 Groundwater to Surface Water Interface Protection (GSIP) Criteria.

Groundwater

- *Part 201 Nonresidential Drinking Water Criteria;*

[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) suggests that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is 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.

- *Part 201 Nonresidential Volatilization to Indoor Air Inhalation Criteria;*
- *Groundwater Contact Criteria;*
- *Water Solubility Levels;*
- *Flammability and Explosivity Levels;*
- *Acute Inhalation Levels ; and*
- *Part 201 Groundwater to Surface Water Interface (GSI) Criteria.*

Of the soil screening criteria listed above, only one soil sample exceeded the Part 201 Nonresidential Drinking Water Protection Criterion for arsenic of 4.6 mg/kg at a concentration of 5.69 mg/kg, but this concentration did not exceed the Part 201 State Default Background Level for arsenic of 5.8 mg/kg.

The Part 201 Nonresidential Drinking Water Criterion for arsenic of 0.010 mg/L was exceeded in groundwater at only two locations, at concentrations just above the criterion (0.011 – 0.013 mg/L). This limited presence of arsenic in groundwater at the Site is believed to be present as a result of natural conditions (i.e., types of soil deposits), and is not believed to be attributed to Site operations, because arsenic is not known to be have been used at the Site, nor is it likely to have been a component of Site-related activities. Additionally, these exceedances of Nonresidential Drinking Water Criterion for arsenic are within the collective range of concentrations typical of well water of Wayne County (greater than 0.010 mg/L*), as described in MDEQ public outreach information*[3].

Although select Part 201 GSIP and GSI Criteria are noted to have been exceeded, the exposure pathways associated with these criteria are not considered to be complete, collectively based on the following points:

- *All Part 201 GSIP and GSI Criteria exceedances are associated with only AOIs-01, -3, and -07;*
- *All groundwater associated with Part 201 GSIP and GSI Criteria exceedances involving AOI-01 and AOI-03 is controlled by the groundwater sink shown on Figure 6 proximate to AOI-01, and does not discharge to the McClaughrey Drain adjacent to the Site;*
- *Part 201 GSI Criteria exceedances associated with AOI-07 involve only arsenic, and as noted above, arsenic is believed to be present in Site media due to natural conditions, and is not believed to be attributed to Site operations; and*
- *Part 201 GSI Criteria exceedances involving arsenic at AOI-07 (if assumed to be linked to Site operations) are only very slightly above the associated criteria, and are measured to be present at a distance of over 500 feet from the McClaughrey Drain adjacent to the Site.*

[3] http://www.michigan.gov/documents/deq/deq-wd-gws-wcu-arsenicwellwater_270592_7.pdf.

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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)						
	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[4]
Groundwater	no	no	no	no	no	no	no
~~Air (indoors)~~[2]	—	—	—	—	—	—	—
~~Surface Soil (e.g., <2 ft.)~~	—	—	—	—	—	—	—
~~Surface water~~	—	—	—	—	—	—	—
~~Sediment~~	—	—	—	—	—	—	—
Subsurf. Soil e.g., >2 ft)	no	no---	no	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 -- HumanReceptor 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.

__no_ 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 #6and enter "IN" status code

Rationale and Reference(s):

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

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4. Can the exposures from any of the complete pathways identified in #3 be reasonably expected to be "significant"[5] (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 and Reference(s):

[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.

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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):

   __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 *Former General Motors Corporation Romulus Engineering Center* facility, EPA ID # *MID000809905*, located at *37350 Ecorse Road, Romulus, Wayne County, Michigan* 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) Ronda L. Blayer Date 8-5-13
(print) Ronda L. Blayer
(title) Environmental Engineering Specialist

Supervisor (signature) Jack Schinderle Date 8/6/13
(print) JACK SCHINDERLE
(title) Unit Chief
(EPA Region or State) MICHIGAN

Locations where References may be found:

Romulus Public Library
11121 Wayne Road
Romulus, Michigan 48174
Attention: Ms. Patty Braden
(734) 942-7589

Michigan Department of Environmental Quality
Resource Management Division
525 West Allegan Street
Lansing, Michigan 48933
Attention: Ms. Ronda L. Blayer
517-373-9548
BLAYERR@michigan.gov

Contact telephone and e-mail numbers

(name)
(phone #)
(e-mail)

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.