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July 2, 2018 2011-2678-13

Mr. Peter Ramanauskas
United States Environmental Protection Agency- Region 5
Waste, Pesticides, Toxics Division
77 West Jackson Boulevard (DW-8J)
Chicago, IL 60604-3590

RE: Environmental Indicators Report Memorandum
Exide Technologies, 555 Hoke Avenue, Frankfort, Indiana

Dear Peter:

On behalf of Exide Technologies, Advanced GeoServices presents the Environmental Indicators Report (EIR) in memorandum format for the Exide Technologies (Exide) site located at 555 Hoke Avenue in Frankfort, Indiana, EPA ID No. IND001647460. The purpose of this memo is to formalize an evaluation of the Exide Technologies facility located in Frankfort, Indiana and the facility status in relation to the following corrective action event codes defined in the Resource Conservation and Recovery Act Information System (RCRA Info):

1. Current Human Exposures Under Control (CA725); and,

2. Migration of Contaminated Groundwater Under Control (CA750).

This is the first Environmental Indicators (EI) evaluation performed for the Exide Frankfort facility. The evaluation, and associated interpretation and conclusions on contamination, exposures and contaminant migration at the facility, are based on information obtained from the following documents:

1. Decontamination and Demolition Completion Report (March 10, 2014)
2. Initial Site Characterization Report Underground Storage Tank LUST#201404505 (Diesel) (July 29, 2014)
3. Limited Subsurface Investigation Underground Storage Tank LUST#201404509 (Heating Oil) (August 21, 2014)
4. Current Conditions Report (CCR) (July 6, 2017)
5. Preliminary data from RCRA Facility Investigation (RFI)

Background

The Exide property is located at 555 Hoke Avenue, Frankfort, Indiana. The site is located in the northwest within the city limits of Frankfort and east of Prairie Creek. Exide is a nationwide manufacturer of automotive and marine batteries with headquarters in Milton, Georgia with

additional facilities throughout the country. The property covers approximately 13.7 acres comprised mainly of remaining asphalt and concrete that were part of the former buildings. The operations onsite formerly consisted of lead-acid battery manufacturing. No lead recycling or smelting was performed onsite. The Site is surrounded by mixed commercial/industrial and residential properties. The closest residents are located directly beyond the parcel fence line. Limited information is available regarding the exact nature of historic manufacturing operations at the Site. Based on information obtained in the Consent Order the facility previously existed as a manufacturing facility for carriages, equipment, electronics and lead acid batteries under several different companies. An aerial photograph taken in 1969 shows the facility in similar level of development to conditions at the time of building demolition in 2012.

Exide, and its predecessor General Battery Corporation (General Battery), has occupied the facility since 1963. The Exide Frankfort facility was in operation until 1997 when battery manufacturing operations were ceased. The Site was used by Exide for equipment storage until 2012, when the facility was demolished. In 2014, two remaining USTs were removed and closed and a limited soil investigation was undertaken by Exide. The facility is currently inactive; an Exide employee periodically visits the site for maintenance purposes.

Summary of SWMUs and AOCs

This section summarizes the SWMUs and AOCs that are identified in the CCR and RFI Work Plan. Investigation has focused on the entire property with limited focused investigation on specific SWMUs or AOCs.

- **SWMU-1 Former Waste Pile #1 (Sludge Storage Area) -** The former waste pile, also referred to as the Sludge Storage Area, was located in the sludge storage building on a concrete floor (Figure 1). The waste pile was used for accumulation (less than 90 days) of dewatered calcium sulfate sludge (D008 hazardous waste) from wastewater treatment operations at the facility. No history of any releases from this waste pile has been identified because the waste pile was located indoors in an enclosed area on a concrete floor. Leachate generated during the temporary accumulation period was collected and transferred to the wastewater treatment system for processing. According to the approved closure plan, sludge remaining in the waste pile at the time of closure was placed in a roll-off container and transported to the Adams Center Landfill in Fort Wayne, Indiana. Exide submitted closure certifications to ISBH in June and July 1986. ISBH issued a completion of closure letter to the facility in November 1986.

- **SWMU-2 Sludge Storage Tank** - The sludge storage tank was located inside the wastewater treatment building on concrete slab and was used in conjunction with wastewater treatment operations at the facility (Figure 1). The sludge storage tank was used for temporary accumulation of liquid calcium sulfate sludge prior to

dewatering. Sludge was withdrawn from the wastewater treatment system's clarification tank and pumped to this sludge storage tank for holding prior to dewatering. The sludge was classified as D008 hazardous waste for its lead content. No history of any releases has been identified with the sludge storage tank. The WWTP facility including the sludge storage tank was decontaminated and demolished/removed as part of the 2012 decommissioning activities. No sludge remained in the sludge storage tank and no evidence of a release was observed at that time.

- **SWMU-3 Baghouses** - The baghouses were located outside behind the plant building (Figure 1). When the facility was used to manufacture batteries, emissions were vented to the baghouses. Dust that accumulated in the baghouses was classified as D008 hazardous waste due to its lead content. A Compliance Evaluation Inspection (CEI) conducted by IDEM in June 2001 indicated that cleanup of the baghouses had been completed, and that Heritage Environmental Services had removed and disposed of the waste generated from the cleanup activities. The remaining baghouse structures were removed from the Facility as part of the 2012 decommissioning.

- **SWMU-4 Hazardous Waste Accumulation Area** - The hazardous waste accumulation area was located inside the south-central end of the plant building (Figure 1). When the facility was manufacturing batteries, this hazardous waste accumulation area was used for accumulation (less than 90 days) of drums containing lead-contaminated dust (D008 waste) from the baghouses, prior to off-site transport to a secondary lead smelter for recycling. There are no documented releases from this unit. Spilled materials would have been contained by the building. No violations associated with this unit were noted during the June 2001 and June 2010 CEIs. No hazardous waste was being accumulated in the hazardous waste accumulation area at the time of the June 2010 CEI.

- **SWMU-5 Wastewater Treatment Unit and Sump** - The wastewater treatment facility was installed in 1970 and was located in the northwestern corner of the property (Figure 1). Battery manufacturing operations generated approximately 35,000 gallons of wastewater containing dilute sulfuric acid and lead (D002 and/or D008 waste) per day. The aboveground wastewater treatment holding tanks were located outside on a concrete pad. The system's sump and reactor tanks were located inside the facility. There are no documented releases from either the sump or the wastewater treatment system itself. It is expected that a significant release of hazardous sludge or wastewater from this unit would have been noted in the historical file material, as it likely would have interrupted process operations at the facility.

- **SWMU-6 Filter Building** - This unit functioned like a baghouse during the plant's manufacturing operations. Air from inside the plant building was sucked into the filter building where dust was caught in a system of filters. The clean air was then recycled back into the plant. The filters were cleaned or replaced as necessary. Old filters were treated as hazardous waste (D008), accumulated in the hazardous waste accumulation area for less than 90 days, and sent to a secondary lead smelter for recycling. It is understood that this unit was regulated by the IDEM operating permit (#16313) which governed air emissions and was closed when facility operations ceased. The Filter Building was decontaminated and demolished during the 2012 decommissioning project. Masonry block from the building was crushed, tested and reused onsite as fill material.

- **SWMU-7 Roll-off Container** - This unit was a roll-off container located indoors beneath the filter press (Figure 1). This unit was used for less than 90-day accumulation of dewatered wastewater treatment sludge carrying the D008 hazardous waste code until that waste was transported off site for disposal. This unit was located inside the plant building on a concrete floor. The Preliminary Review/Visual Site Inspection (PR/VSI) indicated that the facility was practicing good housekeeping and no concerns with this unit were identified in compliance inspections conducted at the facility. The roll-off container was removed from the Facility prior to the 2012 decommissioning project.

- **SWMU-8 Former Waste Pile #2** - This unit was a 30-foot by 30-foot waste pile formerly located in the northeast potion of the facility (Figure 1). The waste pile contained lead-contaminated soil that was reportedly excavated during the course of a remodeling project conducted at the facility in 1996. Reportedly, there were no indications of spillage or run-off outside the defined 30-foot by 30-foot pile footprint. Sampling, characterization, and removal of wastes and soil were conducted by Clean Harbors of Chicago, Illinois in February of 1996.

- **SWMU-9 Parts Cleaners** - This unit consisted of two parts cleaners located in the maintenance area in the basement of the plant building (Figure 1). The parts cleaners generated waste naphtha, which was disposed off-site by Safety-Kleen. The parts cleaners were located inside the plant building on concrete slab. Spilled material would have been contained by the building. There are no documented releases from this unit.

- **AOC-1 Loading Dock Area** - The loading dock was used for loading spent batteries. The area of concern was a 35-foot by 45-foot area located east of the loading dock (Figure 1).

- **AOC-2 Castings/Grid Building Area** - On July 18, 1986, IDEM issued General Battery a NOV (V-137) for depositing oil-contaminated boiler blow-down waste on the ground next to the castings/grid building. There were no release controls for this AOC.

- **AOC-3 Underground Petroleum Storage Tanks** - In 1987, the facility had three active USTs (Figure 1): a 20,000-gallon #2 fuel oil tank located on the eastern side of the facility, a 10,000-gallon diesel tank located in the central (southeast side) of the facility, and a 10,000-gallon #2 fuel oil tank located in the central (southwest side) of the facility. Although the detections of the chlorinated solvents were observed during the removal of the UST located on the Exide property, interviews with a former plant manager have not provided any indication that any of those compounds were used, stored, or disposed of onsite. Additional investigation of soil and groundwater in the vicinity of UST-2 is needed to determine the extent of contamination as well to identify the source. Investigation to confirm the location of UST-3 and any potential impacts is also recommended.

Potential Contamination

RCRA metals - primarily lead is commonly associated with battery manufacturing facilities. The following Table summarizes the RFI results- above background levels, but below IDEM RISC non-residential standards.

Exide Frankfort- 2018 RFI Soil Sampling Summary Table.

Parameter	Samples Analyzed	Detections above MDL	Highest Concentration (mg/kg)	Median Concentration (mg/kg)	2018 RCG Soil Direct Contact Non-Residential Limit (mg/kg)
Arsenic	322	322	171	7.8	30
Barium	322	322	2,580	91.0	100,000
Cadmium	322	148	18	0.495	980
Chromium	322	322	244	13.7	--
Lead	322	322	24,500	13.7	800
Mercury	322	186	1.4	0.036	3.1
Selenium	322	41	3.4	0.8	5,800
Silver	322	41	139	1.5	5,800

Video inspection of the facility stormwater piping system determined that most of the system contains little or no sediment. Where samples could be collected total lead concentrations as high as 6,990 mg/kg were identified. Surface sediment samples identified lead concentrations as high as 5,850 mg/kg in an area near the railroad bank south of the property, however this is generally a low point without an obvious migration path.

VOC detections associated with gasoline or diesel fuel have been observed onsite in the vicinity of the former USTs. During the UST removal, chlorinated solvents were detected in soil and groundwater samples. RFI groundwater sampling has continued to detect chlorinated solvents and gasoline related compounds in the vicinity of the UST as well as elsewhere onsite.

Eight groundwater monitoring wells were installed as part of the RFI process and were sampled for eight RCRA metals as well as TCL VOCs and TCL SVOCs. The wells were screened to depths between 13-18 feet bgs into the shallow perched aquifer. Groundwater levels were also monitored which will help, to the extent that shallow groundwater is contiguous, to determine groundwater flow direction. During the first round of RFI groundwater sampling in June 2018, VOCs (most notably TCE) were detected above screening levels in MW-4 which is located along the eastern fence line at the northern end of the Site. Lower VOC levels were detected in other wells on the Site. The source of the VOC contamination onsite is not known at this time.

ENVIRONMENTAL INDICATORS REPORT

The USEPA form/document "Documentation of Environmental Indicator Determination (Interim Final 2/5/99)" was used to assess the extent to which current human exposures are under control and to which the migration of contaminated groundwater is under control. These forms utilize a flow chart to assist the users with reaching a determination of "Yes", "No", or "In" (i.e., more information needed). The forms are attached and are summarized in the following sections. Historical data as well as preliminary data obtained during the ongoing RFI were used to reach the determinations that are presented.

Form CA725 Evaluation

Form CA 725, reached a determination of "Yes" for "Current Human Exposures Under Control" has been verified and a sufficient body of evidence exists in support of this decision. The site is currently inactive and unoccupied. A majority of the site surface is currently overlaid by concrete and asphalt encapsulating the subsurface soils and groundwater. The site is bounded by a chain-link security fence preventing unauthorized personnel access to surface sediment. These measures will continue to control human exposures, and the anticipated future use will remain industrial.

The extent to which impacted surface sediment or sediment located in stormwater piping with elevated lead detections is able to travel offsite is unknown at this time. On an area wide basis, onsite lead concentrations are below the IDEM RISC industrial screening limit. We believe that based on currently available information the exposure pathway for contaminated media to a human receptor is limited and the risk from contact with impacted media is low. As a result, current human exposures are currently under control with respect to soil, sediment, and groundwater onsite.

Form CA750 Evaluation

Form CA 750, reached a determination of "IN" for "Migration of Contaminated Groundwater Under Control" which is based primarily on analysis documented in the Underground Storage Tank reports for the site. The groundwater beneath the former USTs has been impacted more than any other area of the site. Groundwater samples collected during the UST closures and during the first round of RFI groundwater sampling revealed high concentrations of TCE and VC in MW-4 near the Kelley Street property line (to the east). However, based on available hydraulic gradient/measurements the groundwater flow is to the north-northeast (i.e., into the Site). Neighboring homes and businesses are supplied with municipal potable water. There are no private water wells in the immediate vicinity and the risk of human exposure to contaminated groundwater is negligible within the site property line. Groundwater samples from MW-3 (between MW-4 and Prairie Creek tributary) did not detect these contaminants. As a result we do not believe that there is a direct pathway to a human receptor onsite or offsite. Although the concentrations of these contaminants detected in MW-4 are "significant" the potential impacts to Prairie Creek surface water, if any, appear to be "insignificant". The extent to which impacted sediment observed in onsite surface samples and stormwater piping is able to migrate offsite and create an unacceptable surface water discharge is unknown at this time. Additional, monitoring is recommended to better assess these impacts.

Follow-Up Actions

Soil sample results show that contaminated soils exist within insolated locations in the shallow fill zone beneath the paved surfaces of the site. Two USTs were removed in 2014 and some residual contamination appears to present in the groundwater in that area (although the contaminants for the most part are not fuel related).

The RFI process will determine if corrective actions need to be performed to address additional areas of contamination. During the RFI soil sampling conducted in May 2018, elevated levels of lead were observed in the upper two feet of fill soils overlaid by concrete and asphalt. The average lead concentration in the 0-4 foot soil interval across the site is 534.5 mg/kg which is below the 2018 RCG Soil Direct Contact Non-Residential Limit; the median lead concentration is 13.7 mg/kg.

Elevated VOC concentrations observed at MW-4 and other wells onsite will need to be further investigated and to determine the source of the VOC release as well as potential impacts to surface water or offsite receptors. A second round of groundwater sampling is scheduled in early-July 2018 and this data will be evaluated and compared to the May 2018 data to determine if there are significant changes. Under current conditions the only potential human receptor exposed to significant contamination would be construction workers onsite exposed to potentially contaminated surface soils during remedial activities. We believe that onsite workers and/or trespassers would not have potential for significant exposure.

If you have any questions or require additional information, please call Jan Dobinsky at 610-840-9136 or Paul Stratman at 610-840-9122.

Sincerely,

ADVANCED GEOSERVICES CORP.

Jan S. Dobinsky
Associate Project Consultant

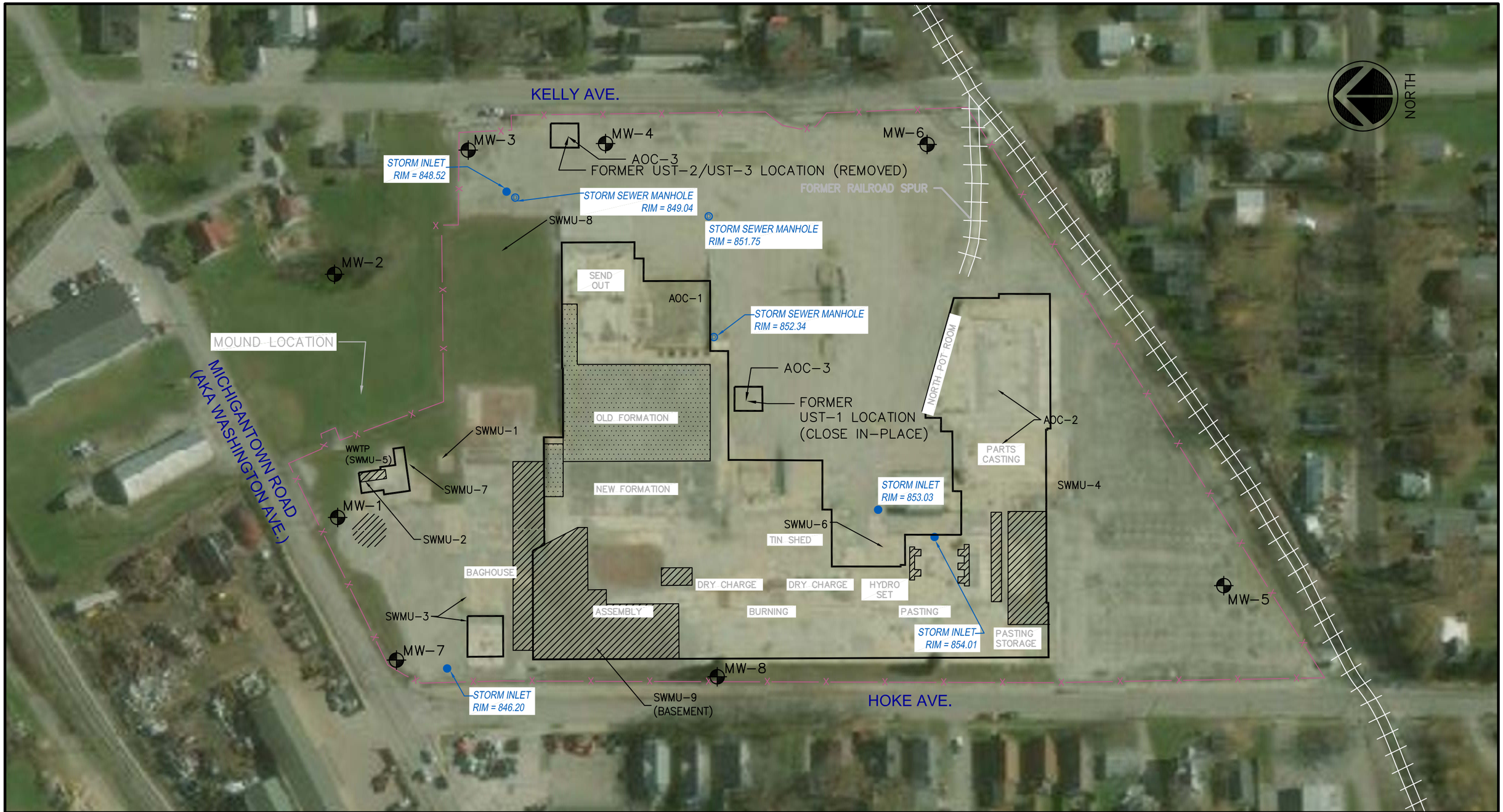
Paul G. Stratman, P.E.
Vice President

JSD:PGS:vm

Enclosures

cc: Brad Weaver, Exide Technologies

FIGURE



LEGEND:

- REMAINING CONCRETE SLAB PERIMETER
- CRUSHED RUBBLE/MASONRY FILL
- GEOMEMBRANE/STONE CAP
- EXISTING FENCE (LOCATION APPROXIMATE)
- STORM INLET
- STORM SEWER MANHOLE
- MW-1 RFI MONITORING WELL LOCATION (INSTALLED MAY 2018)
- RAILROAD TRACKS

0 50 100 200

1 INCH = 100 FT

EXIDE TECHNOLOGIES
555 HOKE AVENUE
FRANKFORT, INDIANA

SITE PLAN

ADVANCED GeoServices
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Scale:	1" = 100'
Drawn By:	S.D.W.
Checked By:	J.S.D.
Project Mgr.:	P.G.S.
Originated By:	S.D.W.
Project No.:	2011-2678
Drawing Date:	6/13/2018
Sheet No.:	1 OF 1
Revision Number:	0

FIGURE 1

F:\Projects\2011\2011678-Exide Frankfort Decon DemO\Cad\RFI soil boring locations.dwg

EIR FORMS

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: Exide Technologies
Facility Address: 555 Hoke Avenue, Frankfort, Indinana
Facility EPA ID #: IND001647460

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).

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			Current quality not known. VOC detections in MW-4.
Air (indoors)[2]		X		Buildings demolished in 2012.
Surface Soil (e.g., <2 ft)	X			Elevated lead concentrations in shallow fill.
Surface Water		X		Surface water drains to SE corner of the site.
Sediment	X			Sediment in sub-suface pipes contained elevated Pb.
Subsurf. Soil (e.g., >2 ft)	X			Historic UST releases potentially contaminated soils.
Air (outdoors)		X		No activities take place 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.

__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 Preliminary Review Visual Site Assessment (PR/VSI) was conducted at the site by IDEM in 1988. The PRI/VSI identified five SWMU's and three AOC's. Four additional SWMU units were added in the 2011 USEPA letter report. The identified areas have been further investigated and potential soil and groundwater contamination from these units will be evaluated in the RFI Report.

During the RFI some elevated detections of lead and/or arsenic were observed in shallow site soils, surface sediment, and in sediment accumulations within stormwater piping. Although these isolated detections exceed IDEM RISC industrial screening criteria for direct contact, the balance of the other areas investigated are below this standard. Subsurface soils in the vicinity of the former UST/AOC-3 also have low level VOC detections in soils. A groundwater monitoring well near this location is also observed to have high concentrations of chlorinated solvents (TCE, DCE, VC).

There is no indication of current air emissions that would negatively impact outdoor air quality. No recorded or documented releases of contaminants to the environment or odors at the Exide facility were identified in the documents reviewed.

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.

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

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

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

Rationale and Reference(s):

The majority of the Site is paved which prevents access to impacted media. A complete pathway for exposure by residents, day care, recreation and food does not exist. Groundwater contamination has found to be localized in the vicinity of the former UST's. Drinking water in the area is obtained from a municipal water supply. Construction workers could only be exposed to subsurface soil and groundwater contamination under controlled conditions. Site workers or trespassers could potentially come in contact with surface sediments.

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

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)?

__X__ 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):

The most likely complete exposure pathway at the Facility is that of an excavation worker during construction activities. Human exposures are controlled during excavation and construction activities by restricting access within the Facility, requiring work permits, implementing procedures that require conformance with Exide corporate health and safety requirements and by monitoring work activities at the Facility.

The exposure pathway for trespassers or workers contacting surface sediments would likely not create a significant risk due to the isolated nature of these locations, relative to average exposure over the entire Site.

[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.

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

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):

Not applicable.

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

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 Exide Technologies facility, EPA ID # IND001647460, located at 555 Hoke Ave, Frankfort, IN 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 _____
(print)_____
(title)_____

Supervisor (signature)_____ Date _____
(print)_____
(title)_____
(EPA Region or State)_____

Locations where References may be found:

USEPA Region V
Waste, Pesticides, Toxics Division
77 West Jackson Boulevard (DW-8J)
Chicago, IL 60604-3590

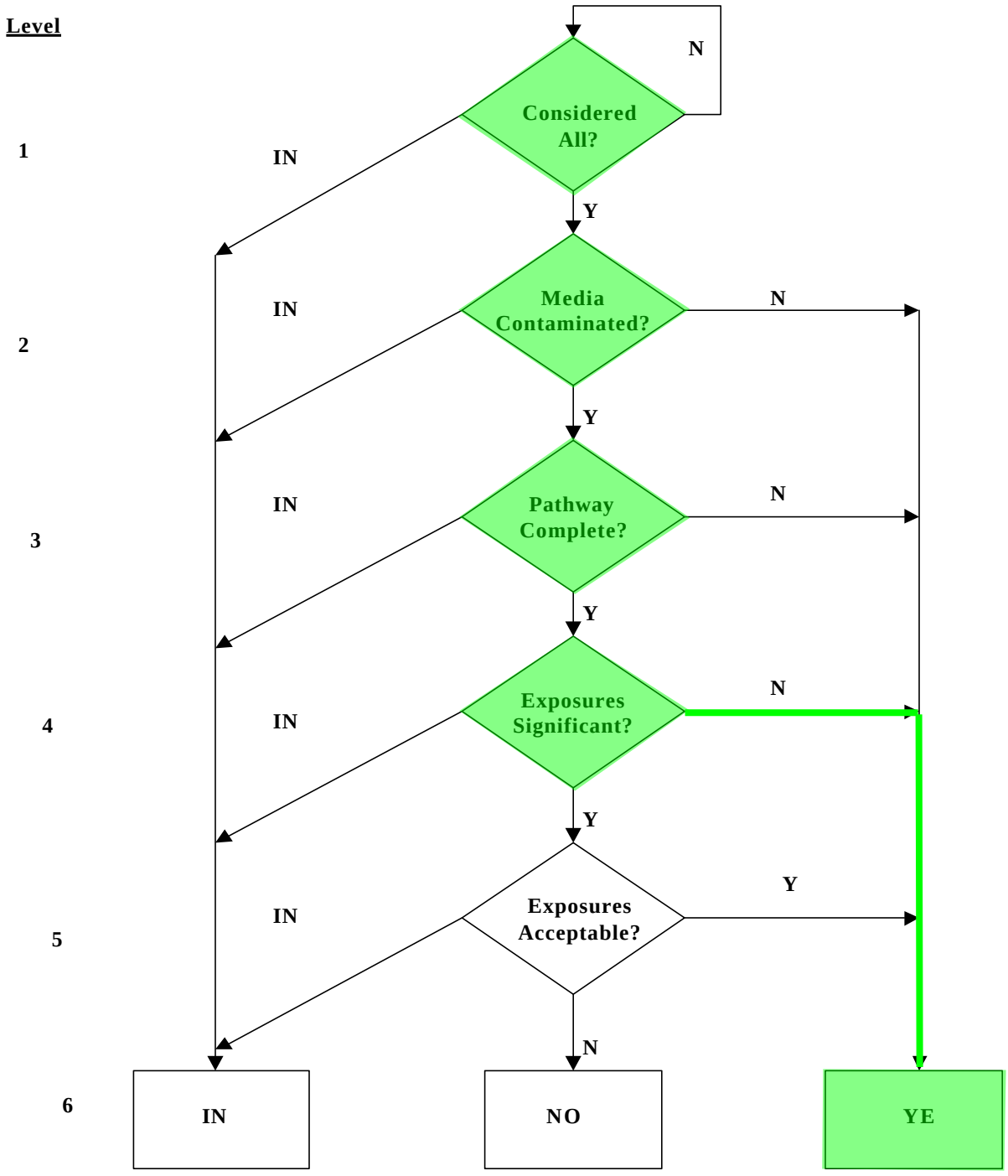
Contact telephone and e-mail numbers

(name) Peter Ramanauskus
(phone #) 312-886-7890
(e-mail) ramanauskas.peter@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.

Facility Name: Exide Technologies
EPA ID#: IND001647460
City/State: Frankfort, Indiana

CURRENT HUMAN EXPOSURES UNDER CONTROL (CA 725)



DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: Exide Technologies
Facility Address: 555 Hoke Avenue, Frankort, Indiana
Facility EPA ID #: IND001647460

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, 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 #8 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 "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "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 "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

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. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

_x_ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

_____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

Groundwater- TCE (and daughter compounds) was found in the groundwater surrounding the former UST's (AOC-3) at levels exceeding the IDEM RISC tap water standards. Groundwater contamination was encountered in the first round of groundwater sampling (May 2018) with elevated levels of (TCE 375,000 ug/L) as well as other VOCs in the samples at the MW-4 location. Extent of contamination and source is currently unknown. The hydraulic gradient appears to direct the groundwater into the Site and the nearest downgradient well (MW-3) is not impacted. MW-3 is also located between MW-4 and the Prairie Creek tributary.

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 appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

_____ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

__X___ If unknown - skip to #8 and enter "IN" status code.

Rationale and
Reference(s):_____

To date, the most significant groundwater impacts have been observed with chlorinated solvents (TCE, DCE, VC) at MW-4. (With minor impacts observed in other wells onsite). However, this information is based on only one round of groundwater sampling and it is unclear what if any trends or reproducibility is present in the data. Because the contaminants were not known to be used onsite, the location and extent of a source is not known (including offsite sources). The hydraulic gradient appears to be directing the groundwater into the Site.

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

_____ If yes - continue after identifying potentially affected surface water bodies.

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_X__ If unknown - skip to #8 and enter "IN" status code.

Rationale and
Reference(s):

The hydraulic link, if any, between impacted groundwater onsite and surface water is unclear. The nearest downgradient well located between MW-4 and the Prarie Creek tributary does not have impacts. The extent, if any that impacted sediment within the onsite stormwater piping is mobile is not known at this time.

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

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_____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_X_ If unknown - enter "IN" status code in #8.

Rationale and
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[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR
2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

__X__ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):_____
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[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

__X__ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

_____ If no - enter "NO" status code in #8.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s): _

Groundwater samples events will be performed in May and July 2018 on the eight monitoring wells installed in April 2018. Samples will be collected using low-flow methods and samples will be analyzed for RCRA eight metals and TCL VOCs/SVOCs. Historically, groundwater has been impacted by VOCs in the area surrounding the former UST's.

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

_____ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the _____ _____facility, EPA ID # _____, located at_____. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

_____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

__X___ IN - More information is needed to make a determination.

Completed by (signature)_____ Date _____
(print)_____
(title)_____

Supervisor (signature)_____ Date _____
(print)_____
(title)_____
(EPA Region or State)_____

Locations where References may be found:

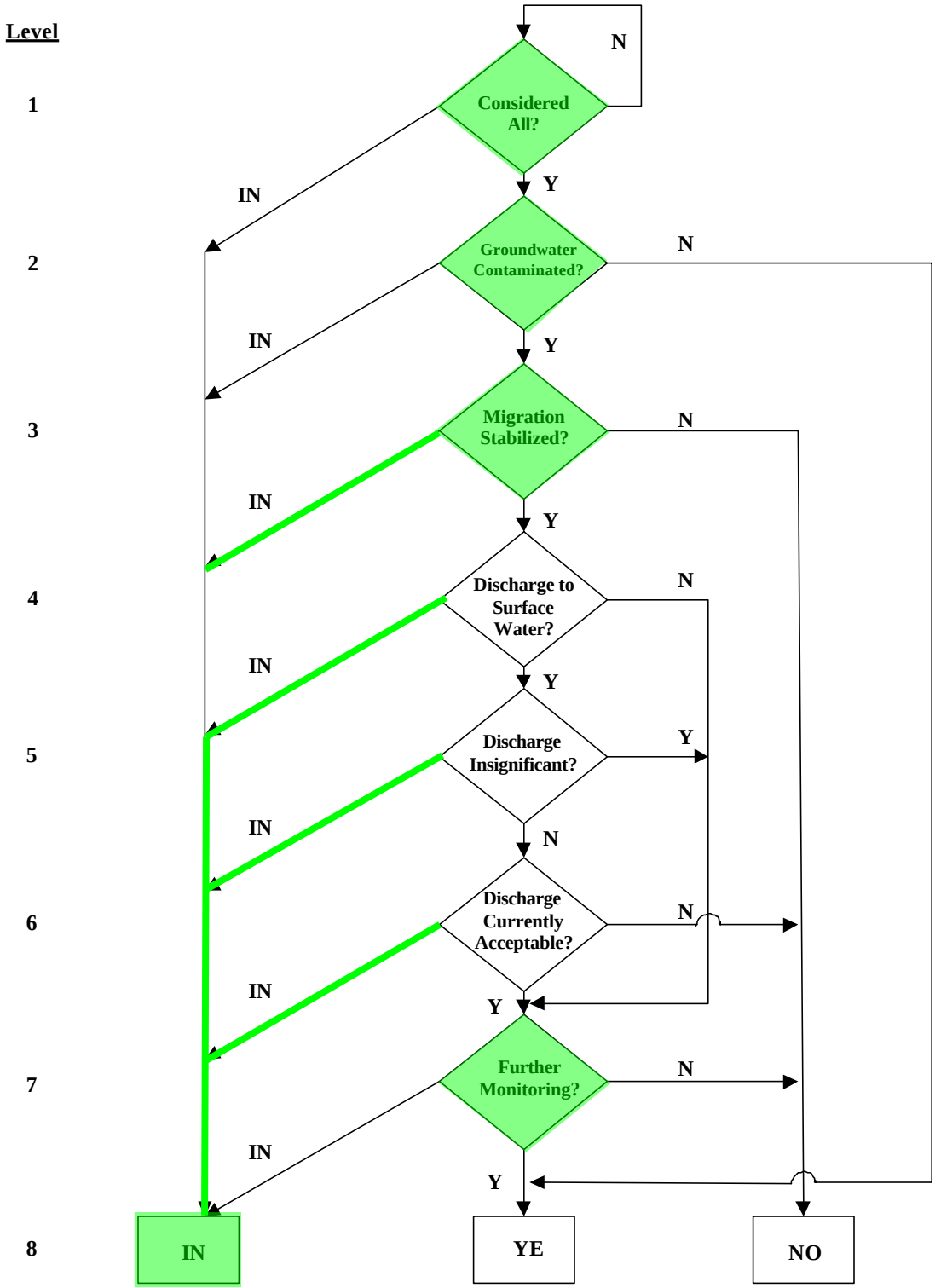
USEPA Region V
Waste, Pesticides, Toxics Division
77 West Jackson Boulevard
Chicago, IL 60604-3590

Contact telephone and e-mail numbers

(name)_____Peter Ramanauskus_____
(phone #)___312-886-7890_____
(e-mail)_____ramanauskas.peter@epa.gov_____

Facility Name: Exide Technologies
EPA ID#: 555 Hoke Avenue, Frankfort, Indiana
City/State: IND001647460

MIGRATION OF CONTAMINATED GROUNDWATER UNDER CONTROL (CA 750)



// Signed 2/5/99 //

MEMORANDUM

SUBJECT: Interim-Final Guidance for RCRA Corrective Action Environmental Indicators

FROM: Elizabeth Cotsworth, Acting Director
Office of Solid Waste

TO: RCRA Senior Policy Managers
Regions I-X

The RCRA corrective action program and achievement of its Government Performance Results Act (GPRA) goals are of highest priority for the national RCRA program. The RCRA program is using two Environmental Indicators (EI) to measure program performance for GPRA purposes: (1) Current Human Exposures Under Control (CA725), and (2) Migration of Contaminated Groundwater Under Control (CA750).

With this memorandum I am transmitting revised guidance on how to determine if a facility has met the RCRA corrective action Environmental Indicators (EI). This Interim-Final guidance will replace the existing EI guidance (from 1994 and 1995) and will remain the working guidance for at least one year. The Interim-Final guidance is similar to the earlier guidance but has been modified to facilitate more consistent determinations (across regions and states) and to be more explicit with regard to the minimum level of documentation required to ensure that the determinations will be verifiable.

This guidance has been developed with the cooperation and input of representatives from all ten EPA regions and at least one state from each region. The guidance is in the form of questions to be answered in making an EI determination. The questions and answer options express the minimum criteria for EI determinations and are not to be modified for regional, state or site-specific conditions. The "Rationale" portion of the forms can be filled in to explain unique situations to any length necessary. While the signed hard-copies of these forms should reside in the facility's administrative files, these forms should also be kept in electronic format that can be posted on an "EI database" web site to be developed by the Office of Solid Waste in the near future. The "EI database" will help communicate successes and provide examples for overcoming barriers to progress.

Thank you for your assistance with this important effort. If you have any questions, please call Bob Hall or Henry Schuver of my staff at (703) 308-8432 or 308-8656 respectively.

Attachment