DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name:	**FORMER JOHNSON MATTHEY WINSLOW \SITE**
Facility Address:	**PINEY HOLLOW ROAD, WINSLOW TOWNSHIP, CAMDEN, NJ 08095**
Facility EPA ID #:	**NJD000692194**

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_	___	___	_____
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):

References: ISRA Remedial Investigation Report and Remedial Action Plan Proposal, January 1995; April 1999 Semi-Annual Ground Water Sampling Results.

The Johnson Matthey site was constructed and operations started in 1971. The site occupies approximately seven acres. Activities included the production of process catalysts, salts manufacture, platinum-group metals beneficiation, arc smelting operations, incineration of trash papers and warehousing and packaging of various products. In October 1993 operations ceased at the Johnson Matthey Winslow site, thus triggering New Jersey's Industrial Site Recovery Act (ISRA). The primary site manufacturing building was demolished in 1993 following the cessation of operations. A second manufacturing building, called the Burnoff Building, formerly housed the arc smelting and catalyst beneficiation operations. The catalyst beneficiation operation ceased in 1983, and the arc smelting in 1985. The Burnoff Building was demolished in 1991. Two single-story warehouses remain intact at the site. The two warehouses were not used for any hazardous waste activities. The site was delineated to Residential Direct Soil Cleanup Criteria. A Declaration of Environmental Restriction (DER) was conditionally approved by the New Jersey Department of Environmental Protection (NJDEP) on August 16, 1995 (pending approval from New Jersey's Pinelands Commission). The Pinelands Commission approved the DER on February 6, 1996. The surrounding area in the vicinity of the site is designated as industrial.

Rational:
Groundwater: The groundwater contaminant plume is controlled within the Classification Exception Area (CEA) established by the State of New Jersey's Department of Environmental Protection, and has been decreasing over time. The intention of a CEA is to restrict groundwater use in a specific contaminated area of an aquifer until drinking water standards are achieved. A CEA was developed by NJDEP and approved on June 17, 1996 (Attachments 1 and 2). The nearest drinking water wells are located approximately five miles from the site.

Based on historical groundwater sampling results, a volatile compound plume has been delineated along the western fenceline of the operations area of the facility. Constituents of concern include: tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene and trans-1,2-dichloroethene (t-1,2-DCE). TCE and t-1,2-DCE are breakdown products of PCE. The past operations included the use of acid-based compounds, not volatile organic

compounds (VOCs). It is unclear the origin of the VOC contamination at the site. The groundwater at the site is currently being remediated through a monitored natural attenuation approach. Contaminant levels have been decreasing over time.

The contaminated groundwater plume that impacts the site is currently located between wells JM-5, JM-10 and WSL-16. WSL-16 is a sentinel well and located on the closed Winslow Township Municipal Landfill Site. Well JM-4 was required to be monitored due to historic contamination. Based on groundwater results, NJDEP determined that no further action is required for well JM-4. Groundwater flow is southwest of the site with upgradient wells JM-10 and JM-5, and downgradient wells JM-4 and WSL-16. Groundwater elevation data and depth of the monitoring wells are in Table 1-1 (Attachment 1A). Samples taken from downgradient wells JM-4 and WSL-16 were non-detect or below drinking water standards. NJDEP determined by letter dated February 9, 1999 that JM-4 can be removed from future sampling events due to prior six sampling events coming up non-detect (Attachments 3 and 4). Upgradient wells JM-5 and JM-10 continue to have PCE and TCE detected in the plume (see Table 3, April 1999 Semi-Annual Ground Water Sampling Results - Attachment 5). Contaminant levels in JM-5 and JM-10 are decreasing over time. The plume appears to be contained to the site and decreasing over time. Sampling for Well JM-10 will be done on a semi-annual basis, and JM-5 and WSL-16 on an annual basis.

Hyrdrogeology: The site is located in the Kirkwood-Cohansey Aquifer System. Due to the presence of a regional confining layer, the Cohansey Sand and the underlying Kirkwood Formation are in hydraulic connection. The Kirkwood-Cohansey is a water table aquifer. The groundwater flow direction roughly from the northeast to southwest across the site toward the Winslow Landfill (Attachment 6). Groundwater flow velocity is 25 feet per year. (See Reference: Remedial Investigation Report and Remedial Action Plan Proposal, January 1995).

Surface Water: The nearest surface water body is the Great Egg Harbor River located approximately one-quarter mile to the southwest of the site. (See Reference: Remedial Investigation Report and Remedial Action Plan Proposal, January 1995).

Soil and Groundwater Contamination: The contaminants of concern that were sampled included lead, cadmium, beryllium, hexavalent chromium, and PCBs. There were 13 SWMUs identified as part of the operations area of the site (see Reference: Remedial Investigation Report and Remedial Action Plan Proposal, January 1995):

SWMU 1: Former Manufacturing Building: Analytical results showed either non-detectable or below the NJDEP Residential Criteria for metals; therefore, no further action is required at this area.

SWMU 2: Former Residue and Burnoff Building: Analytical results showed that cadmium was detected below the NJDEP Residential Criteria for metals; therefore, no further action is required at this area.

SWMU 3: Former Quarantine Drum Storage Area: Analytical results showed either non-detectable or below the NJDEP Residential Criteria for metals; therefore, no further action is required at this area.

SWMU 4: Historical Drum Storage Area: Analytical results showed either non-detectable or below the NJDEP Residential Criteria for metals; therefore, no further action required at this area.

SWMU 5: Fuel Oil Spill Area: Soil remediation was conducted at this SWMU. Post excavation sampling showed either non-detectable or below the NJDEP Residential Criteria for metals; therefore, no further action is required at this area.

SWMU 6: Septic Fields: Analytical results showed either non-detectable or below the NJDEP Residential Criteria for metals; therefore, no further action is required at this area.

SWMU 7: West Pond Area: Analytical results showed either non-detectable or below the NJDEP Residential Criteria for metals; therefore, no further action is required at this area.

SWMU 8: East Pond Area: A surface soil sample for chromium indicated levels above NJDEP Residential Criteria. This area is included as part of the site's deed restriction.

SWMU 9: Southwest Swale: It was believed that the East Pond Area was acting as a migration route for potential contaminants. Sampling revealed an absence of contaminants; therefore, no further action is required for this area.

SWMU 10: Former Gasoline UST Area: Analytical results for metals and volatiles showed either non-detectable or below the NJDEP Residential Criteria for metals; therefore, no further action is required at this area.

SWMU 11: Facility Groundwater Quality: Groundwater contamination exists in the area West Pond Area. A CEA has been established to for this area, and approved on June 17, 1996. Continued monitoring is required, and a natural attenuation approach is being used as a remedial approach for this area.

SWMU 12: Potential PCB Locations: Analytical results for PCBs showed non-detectable levels; therefore, no further action is required at this area.

SWMU 13: Former No. 2 Fuel Oil UST: The UST was excavated and showed no sign of contamination. Testing for total petroleum hyrdrocarbons (THPs) supported this. No further action is required at this area.

NJDEP determined that no further action is required for soil contamination at the above areas. But, samples taken from different areas of the site revealed contamination above Residential Criteria, but below Non-Residential Criteria (Attachment 8). Johnson Matthey decided to implement a Deed Restriction for the entire operations area of the site. The Deed Restriction for the site was approved on February 6, 1996 (Attachment 1).

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	___	___	___	___			___
Air (indoors)	___	___	___				
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): ISRA Remedial Investigation Report and Remedial Action Plan Proposal, January 1995. Exposures to humans cannot be reasonably expected at this site. Regarding soil, the levels of contamination are below NJDEP's Non-Residential Criteria, which takes into account risk to workers (Attachments 7 and 8). The site is only being used for storage. The extent of activities at the site relate to the two existing warehouses in which workers load and unload materials. Regarding groundwater, the contaminant plume is contained to the site, and the groundwater is not used for potable use (see Reference: Remedial Investigation Report and Remedial Action Plan Proposal, January 1995).

[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)?

____ 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): N/A

[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): N/A

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 Johnson Matthey Winslow Site, EPA ID # NJD000692194, located at Piney Hollow Road, Winslow Township, Camden, New Jersey, 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: Anthony Kahaly **Date:** 9/30/99
Anthony Kahaly, Project Manager
RCRA Programs Branch
EPA Region 2

Barry Tornick **Date:** 9/30/99
Barry Tornick, Section Chief
RCRA Programs Branch
EPA Region 2

Approved by: R. Basso **Date:** 9/30/99
Raymond Basso, Chief
RCRA Programs Branch
EPA Region 2

Locations where References may be found:

References can be found with the EPA project manager, Anthony Kahaly, or the NJDEP Case Manager, John King.

Contact telephone and e-mail numbers:

EPA Project Manager

Anthony Kahaly
212-637-4116
kahaly.anthony@epa.gov

NJDEP Case Manager
John King
609-984-1854
jking@dep.state.nj.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.

Table 3-2
Historic Ground Water Analytical Data
Johnson Matthey
Former Winslow, New Jersey Facility

Well ID	Sampling Date	Volatile Organic Compounds (VOCs) (µg/L):								
		trans -1,2-dichloroethene	trichloroethene	tetrachloroethene	1,1-dichloroethene	chloromethane	vinyl chloride	methylene chloride	cis-1,2-dichloroethene	Total VOCs
JM-4	Oct-89	ND	ND	ND	ND	ND	ND	2 (J)		ND
JM-4	Apr-90	4 (J)	ND	ND	ND	ND	ND	9 (B)		ND
JM-4	Oct-91	15	2 (J)	2 (J)	ND	ND	ND	ND		15
JM-4	Mar-92	14	2 (J)	2 (J)	NA	NA	ND	ND		14
JM-4	Oct-92	11	3 (J)	3 (J)	NA	NA	ND	6		17
JM-4	Apr-93	ND	ND	ND	ND	ND	ND	ND		ND
JM-4	Sep-93	ND	ND	ND	ND	ND	ND	ND		ND
JM-4	Sep-94	ND	ND	ND	ND	ND	ND	ND		ND
JM-4	Nov-95	ND	ND	ND	ND	ND	ND	ND		ND
JM-4	Nov-96	ND	ND	ND	ND	ND	ND	ND	ND	ND
JM-4	Nov-97	ND	ND	ND	ND	ND	ND	ND	ND	ND
JM-5	Oct-89	254	53	45	ND	ND	ND	4 (J)		352
JM-5	Apr-90	148	28	37	ND	ND	ND	4 (J)		213
JM-5	Oct-91	95	12	11	ND	ND	ND	ND		118
JM-5	Mar-92	160	25	24	ND	ND	ND	ND		209
JM-5	Oct-92	92	23	30	ND	ND	ND	ND		145
JM-5	Apr-93	29	ND	18	ND	ND	ND	ND		47
JM-5	Sep-93	ND	ND	5	ND	ND	ND	ND		5
JM-5	Sep-94	ND	4	13	ND	ND	ND	ND		17
JM-5	Nov-95	ND	5	14	ND	ND	2	7		28
JM-5	Nov-96	ND	4	13	ND	ND	ND	ND	28	17 **
JM-5	Nov-97	ND	4	14	ND	ND	ND	ND	35	18**
JM-10	Apr-93	ND	ND	140	ND	ND	ND	ND		140
JM-10	Sep-93	ND	28	11	ND	ND	11	15 (B)		50
JM-10	Sep-94	56	83	22	2	12	ND	ND		175
JM-10	Nov-95	ND	39	23	ND	ND	7	2		71
JM-10	May-96	*	*	*	*	*	*	*	*	*
JM-10	Nov-96	2	16	6	ND	ND	1 (J)	ND	86	24 **
JM-10	Jun-97	ND	3	3	ND	ND	ND	ND	28	6**
JM-10	Nov-97	2 (J)	9	13	ND	ND	2 (J)	ND	97	26**
JM-10	May-98	2 (J)	31	24	ND	ND	1 (J)	ND	68	59**
WSL-16	Sep-94	ND	ND	ND	ND	ND	ND	ND		ND
WSL-16	Nov-95	ND	ND	2	ND	ND	ND	ND		2
WSL-16	Nov-96	ND	ND	ND	ND	ND	ND	ND	ND	ND
WSL-16	Nov-97	ND	ND	1	ND	ND	ND	ND	3	1**

* = The results for the May-96 sampling event are considered unusable as a result of data validation.

** = Total VOC concentration for this sample does not include the concentration of cis-1,2-dichloroethene present.

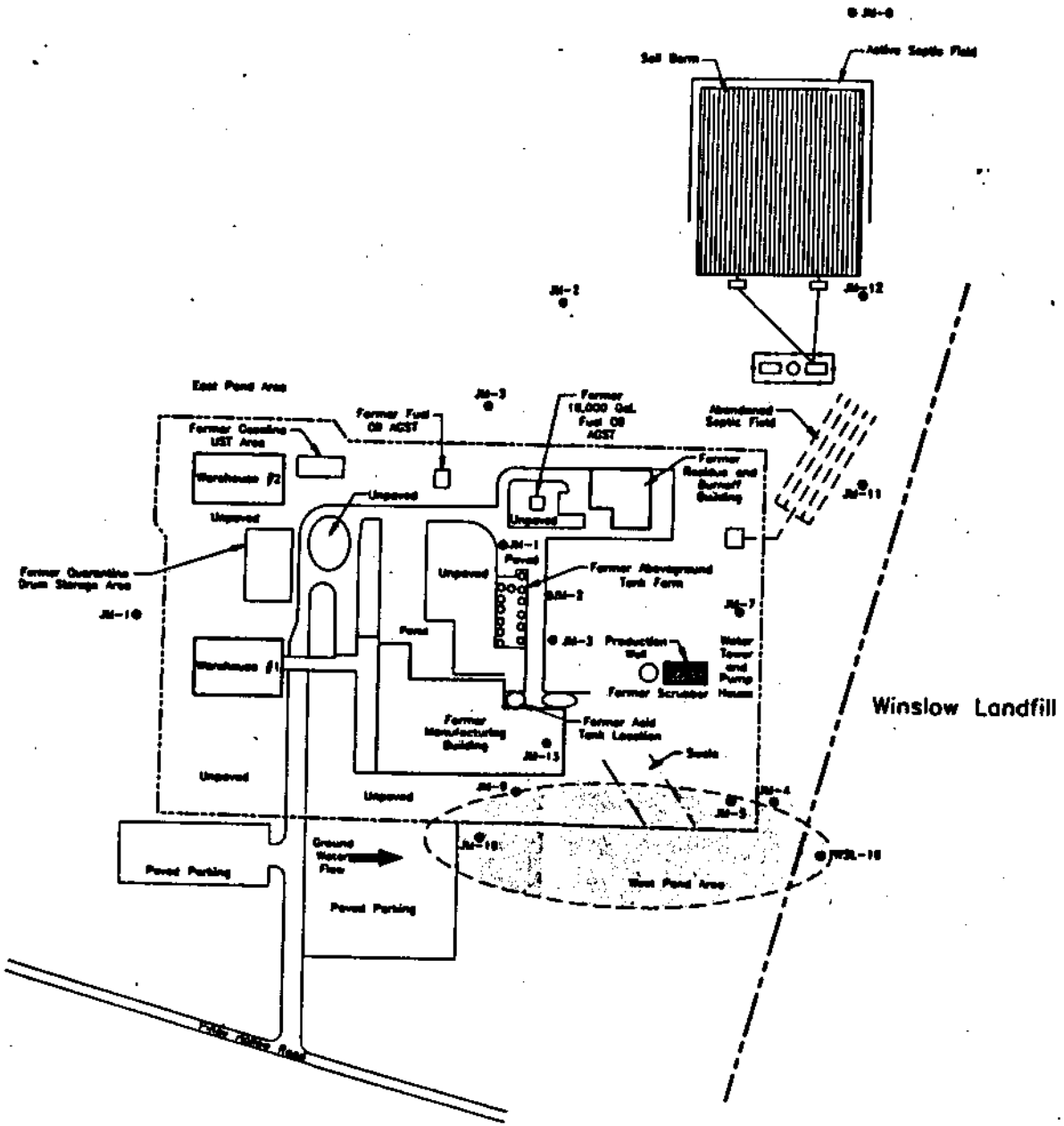
ND = Not detected above method detection limit.

NA = Not available.

J = Compound detected below method detection limit and is therefore an estimated value.

B = Compound was detected in an associated blank at a similar concentration.

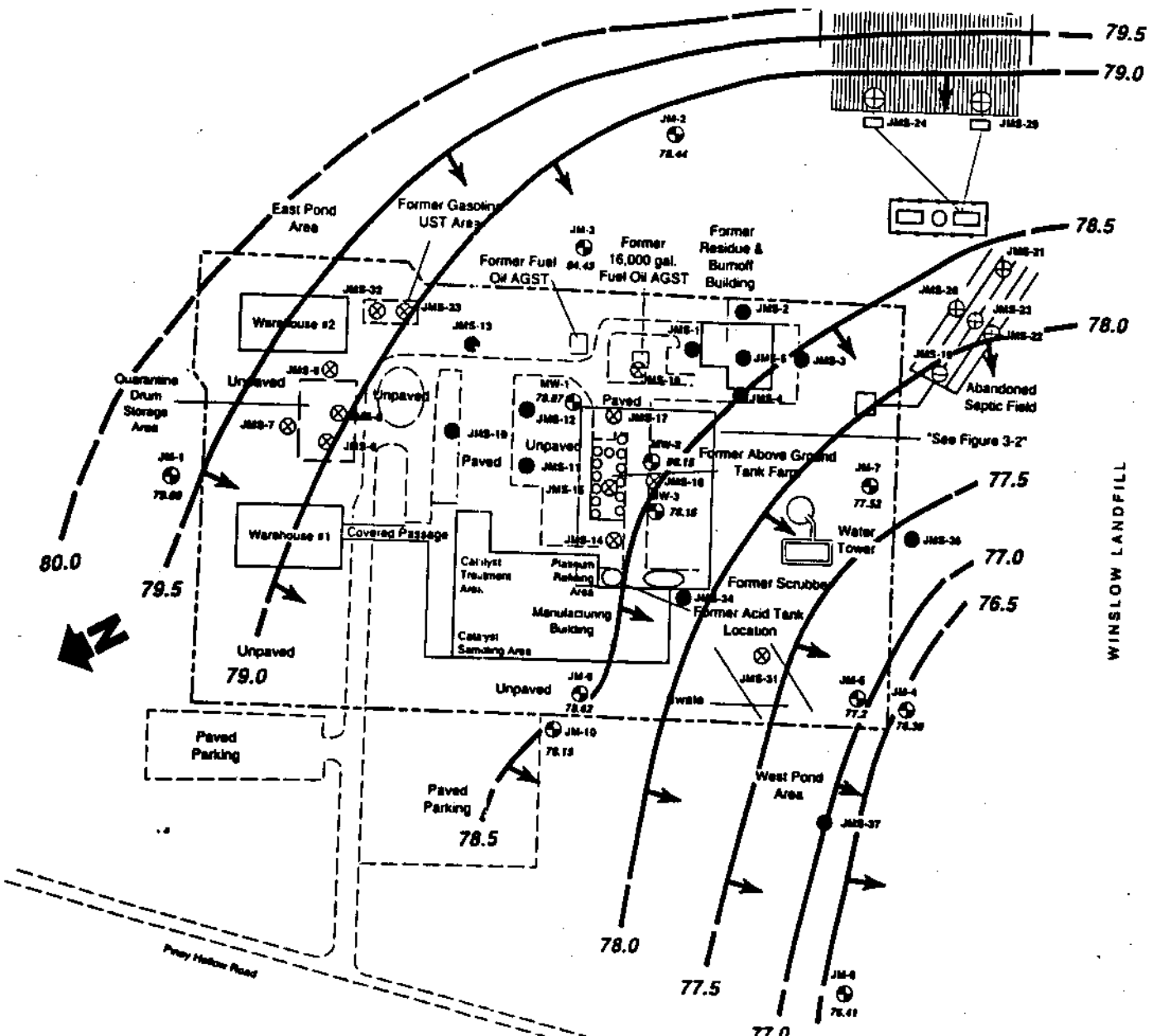
CEA Boundary Areal Extent
Johnson Matthey Facility
Winslow, New Jersey



Legend
- Property Boundary
- Operations Area Boundary
- Fence
- CEA Boundary Areal Extent
- Historical Monitoring Well Location
- Facility Production Well Location

150 75 0 150
Scale in Feet

22106 08 01 12 38 99-WKB 01 12 86-387. DWG


79.5
79.0
78.5
78.0
77.5
77.0
76.5
80.0
East Pond Area
Former Gasoline UST Area
Former Fuel Oil AGST
Former 16,000 gal. Fuel Oil AGST
Former Residue & Burnoff Building
Warehouse #2
Warehouse #1
Covered Passage
Quarantine Drum Storage Area
Unpaved
Paved
Abandoned Septic Field
"See Figure 3-2"
Former Above Ground Tank Farm
Water Tower
Former Scrubber
Former Acid Tank Location
Manufacturing Building
Catalyst Treatment Area
Catalyst Sampling Area
Paved Parking
West Pond Area
Piney Harbor Road
WINSLOW LANDFILL