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: MW Manufacturers
Facility Address: 433 N. Main Street, Rocky Mount, VA 24151
Facility EPA ID #: VAD 058 205 170

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

☒ If yes - check here and continue with #2 below.
☐ If no - re-evaluate existing data, or
☐ If data are not available, skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

The MW Manufacturers, Inc. (MW) facility is located at 433 North Main Street, within the Town of Rocky Mount in Franklin County, Virginia (see Attached Figure). The Facility is located on an approximately 38.7-acre property currently occupied by a 578,000 square foot building that houses MW's manufacturing, warehouse and office operations. The Facility manufactures vinyl and wood doors for the residential construction industry. There are 15 Solid Waste Management Units (SWMUs) and four Areas of Concern (AOC) at the site. Five (5) SWMUs and three (3) AOCs were investigated under the RCRA Facility Investigation (RFI). The majority of the property is paved or covered by buildings and other structures. An intermittent stream runs through the southern portion of the property.

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 [1]	X			Acrolein, Benzene, Chloroform, Cumene, 1,2-dichloroethane, 4-Aminobiphenyl, ethylbenzene, Naphthalene, Isopropanol, Isopropyltoluene, 1-methylnapthalene, 2-methylnapthalene, Pentachlorophenol, propyl benzene, safrole, 2,3,4,6-Tetrachlorophenol, 1,2,3-trimethylbenzene, 1,2,4-trimethylbenzene, 1,3,5 trimethylbenzene, 1,2,3-Trichloropropene, 1-methylpropyl-benzene, o-xylene, xylenes, Arsenic, Chromium VI, Copper, Iron, Manganese, Dioxin/Furans,
Air (indoors) [2]	X			Acrolein, Chloroform, Ethylbenzene, napthalene, 1,2,3-trimethylbenzene, 1,2,4-trimethylbenzene, 1,3,5-Trimethylbenzene. 1,2,3-trichloropropene, Dioxins/Furans
Surface Soil (e.g., <2 ft) [3]	X			Naphthalene, 1,4-Naphthoquinone, Pentachlorophenol, Arsenic, Copper, Dioxins,
Surface Water [4]	X			Pentachlorophenol, bis-2-ethylhexlphthalate, Iron, Manganese, Dioxin/Furans
Sediment [4]	X			Benzo(a)pyrene, Chromium VI, dibenz(a,h)anthracene, Pentachlorophenol, Arsenic, Iron, Dioxin/Furans
Subsurf. Soil (e.g., >2 ft) [5]	X			4-Aminobiphenyl, Naphthalene, n-Nonane, Pentachlorophenol, Arsenic, Iron, Manganese, Dioxin/Furans
Air (outdoors)		X		Facility maintains a Title V Air Permit (BRRO-30386), effective until February 20, 2019 with no active enforcement issues

☐ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

☒ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

☐ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale:

1. Site-wide groundwater was sampled for VOCs and TICs, SVOCs and TICs, Dioxin/Furans, and 3-Iodo-2-propynyl butylcarbamate (IDPB) and metals as part of the RCRA Facility Investigation. The contaminants listed above were observed above National Primary Drinking Water Maximum Contaminant Levels (MCLs) and/or risk based Regional Screening Levels (RSLs) published by EPA where no MCL is available.

2. The constituents listed above for indoor air were determined by comparing detected constituents in groundwater to the Virginia RCRA Corrective Action Screening levels for vapor intrusion at industrial sites.

3. The Facility is primarily paved or has structures located on it with no direct exposure pathways. However, the constituents above in soil were detected above the industrial screening levels.

4. The constituents listed in the table above were detected in surface water in the on-site intermittent stream above the lower of the Federal Water Quality Criteria (WQC) for Consumption of Water + Organism and the Virginia Public Health Water Quality Standard for Public Water Supply listed in 9 VAC 25-260. The constituents detected in sediment samples were detected above industrial soil screening levels which are conservative for potential human direct contact.

5. Subsurface soil (>2 ft bgs) at the site was sampled from discrete boring locations associated with SWMUs and AOCs. The constituents listed above exceed industrial screening levels.

Reference:

Report of RCRA RFI, MW Manufacturers, Inc., Rocky Mount, VA, December 2015.
Report on Phase 2 RFI, Rocky Mount, VA October 2018.

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) suggests 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.

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3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food*
Groundwater[1]	NO	NO	NO	NO	NO	NO	NO
Air (indoors) [2]	NO	**YES**	NO	NO	NO	NO	NO
Soil (surface, e.g., <2 ft) [3]	NO	NO	NO	NO	NO	NO	NO
Surface Water[4]	NO	NO	NO	**YES**	**YES**	**YES**	NO
Sediment [5]	NO	NO	NO	**YES**	**YES**	**YES**	NO
Soil (subsurface e.g., >2 ft) [3]	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 -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

☐ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

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

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

Rationale:

1. Although contaminants are present in groundwater at concentrations that exceed MCLs and/or risk-based RSLs for tap water, the groundwater pathway is not applicable to day-care, trespassers, recreation, and food due to the current industrial use of the site. In addition, the groundwater pathway is not applicable to residents because the adjacent properties use public water supply. The groundwater pathway for construction is not likely due to the depth to groundwater being greater than 15 feet below ground surface.

2. Volatile Organic Compounds (VOCs) and Semivolatile Organic Compounds (SVOCs) were assessed for indoor inhalation risks by using the EPA Vapor Intrusion Screening Level (VISL) calculator to model indoor air concentrations. The detected concentrations for constituents listed in Item 2 of this EI exceed VISLs indicating the potential for vapor intrusion.

3. Although contaminants are present in subsurface soil in concentrations that exceed residential and industrial risk-based RSLs for direct contact, the soil pathway is not applicable to residents, workers, day-care, trespassers, recreation, and food given the current industrial use of the site and because contaminants were observed in soil within areas surfaced with asphalt and/or concrete restricting access and/or exposure or at depths greater than 10 feet below grade. There are no current construction projects planned. However, in the event subsurface utility repairs or capital improvement projects in the future are needed, a Materials Management Plan has been prepared for the Facility to prevent exposure.

4. Potential contact with surface water would most likely be from the trespasser receptor. Pentachlorophenol, dioxin, and bis-2-ethylhexylphalate (BEHP) were detected above the lower of the Federal Water Quality Criteria (WQC) for Consumption of Water + Organism and Virginia Public Health Water Quality Standard for Public Water Supply listed in 9 VAC 25-260. The plant workers and construction workers will not be exposed to the surface water or sediment sample locations as they are not readily accessible from the north and require crossing an active rail line from the south. A Materials Management Plan has been prepared and approved by DEQ that addresses potential exposure during construction activities in this area. Although access from trespassers is possible, it is unlikely that trespassers or recreational users would access the property. "No Trespassing" signs were installed to mitigate the potential for exposure.

5. Potential contact with sediment in the intermittent stream would be transient in nature; the greatest likelihood of exposure would be associated with trespassing activities. Contaminants detected in sediment in the onsite intermittent stream exceed the industrial screening level for dioxin/furans. However, site-specific risk assessment shows site-specific exposure scenarios are below risk threshold criteria. The Facility has provided demonstration that signage and fencing is adequate to protect against trespasser exposure.

Reference:

Report of RCRA RFI, MW Manufacturers, Inc., Rocky Mount, VA, December 2015.
Response to Comments (Part 1) dated June 10, 2016 – Report on RCRA RFI, August 11, 2016.
Report of Phase 2 RCRA RFI, Rocky Mount, VA, October 2018

* 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"**[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 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):

Indoor Air: Due to the presence of volatile organic compounds in the subsurface soil in subsurface soils below the building footprint (Exposure Area 3), the potential for indoor air exposure to workers exists. However, based on the following evaluation, the vapor intrusion (VI) pathway is not considered a concern for potential **current** exposures:

VOCs and SVOCs with published risk-based screening levels were evaluated to determine volatility and compared to VA DEQ RCRA CA Table 13. Selection of Contaminants of Concern Groundwater – Vapor Intrusion Industrial. Chemicals were evaluated to determine if they are components of products currently used at the Facility. The chemicals present in groundwater that exceed the industrial screening level for potential vapor intrusion are components of chemicals currently in use at the Facility and thus subject to OSHA standards.

For volatile chemicals detected that are not listed on Safety Data Sheets (SDS) as being contained in products in use the facility, further evaluation was performed, including a review of soil data to identify frequency and concentration of detects. For the majority of constituents that required further review, detections were infrequent (e.g., one or two detections among all samples collected at the site) and/or concentrations were relatively low (e.g., orders of magnitude lower than direct contact standards). Based on this evaluation, no unacceptable risk of exposure has been identified as long the same chemicals are in use at the facility since OSHA applies.

Sediment/Surface Water (Exposure Area 4): Access to the stream is difficult due to steep terrain, thick vegetation, and the need to cross an active railroad line, which is elevated above the floodplain if approaching the stream from the south. Surface water and sediment in the unnamed stream do not exceed unacceptable risks for future land use conditions which assumes that trespassing could potentially occur in the stream. This conclusion considers that trespassing populations would likely include older children and adults, given the physical location and associated difficulty in accessing the stream. If, under a future land use condition, access

to the stream was made available such that a young child (ages 1 to 6) could trespass in the stream, the hazard index associated with sediment is estimated to be above a value of 1. However, this scenario is unlikely.

References:

Report of RCRA RFI, MW Manufacturers, Inc., Rocky Mount, VA, December 2015.
Response to Comments (Part 1) dated June 10, 2016 – Report on RCRA RFI, August 11, 2016.
Report of Phase 2 RCRA RFI, Rocky Mount, VA, October 2018

[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

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5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

☐ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

☐ If no - (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

☐ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code.

Rationale and Reference(s):

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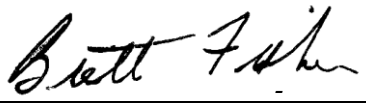
6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI (event code CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

☒ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the MW Manufacturers, EPA ID # VAD 058 205 170 , located at 433 N. Main Street, Rocky Mount, Virginia 22906. Specifically, this determination indicates that the migration of "contaminated" groundwater is 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  Date 2/12/2019
Tara Mason
Remedial Project Manager

Supervisor  Date 2/12/2019
Brett Fisher
RCRA CA and Groundwater Team Leader
Virginia Department of Environmental Quality

Locations where References may be found:

Virginia Department of Environmental Quality
1111 E. Main Street, Suite 1400
Richmond, Virginia 23219

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(phone #) 804-698-4218
(e-mail) tara.mason@deq.virginia.gov

NORTH MAIN STREET (ROUTE 220)

SMITHERS STREET

DIAMOND AVENUE

FRANKLIN STREET

FORMER UST RA5

FORMER UST R5

FORMER UST R3

ASTs 2-6

UST 3

S15/A1-1

DISPENSER ISLAND UST 3

FORMER UST R4

FORMER DIP TANK 2

FORMER UST R2

FORMER DIP TANK 1

FORMER UST R6

FORMER UST R7

FORMER UST R1

FORMER UST

AST 7

AST 1

METAL WATER TANK

BG-1

MW1

MW2

MW3

MW4

MW5

MW6

MW7

MW8

MW9

MW10

MW11

A2-1

A3-1

A4-1

S1-1

S1-2

S2-1

S7-1

S7-2

S7-3

S7-4

PZ-1

PZ-3

PZ-4

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S14-2

S14-3

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STA-104

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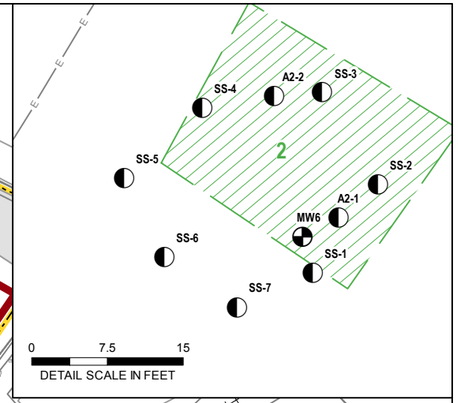
STA-106

STA-107

STA-108

EXTENT OF DETAIL



0 200 400
SCALE IN FEET

LEGEND

- MONITORING WELL
- SOIL BORING/PIEZOMETER
- SOIL SAMPLE
- SURFACE WATER/SEDIMENT SAMPLE
- TEMPORARY MONITORING WELL
- MANHOLE
- EXPOSURE AREA 1
- EXPOSURE AREA 2
- EXPOSURE AREA 3
- EXPOSURE AREA 4
- AOC
- SWMU
- SWMU/AOC RECOMMENDED NO FURTHER ACTION
- MW MANUFACTURERS PROPERTY BOUNDARY

NOTE

ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

HALEY ALDRICH

433 NORTH MAIN STREET
ROCKY MOUNT, VIRGINIA

EXPOSURE AREAS

SEPTEMBER 2018

FIGURE 9