

26 August 2024  
GSI Job No. 6878

Vahab Haghighatian, P.E., P.G., Project Manager  
Industrial and Hazardous Waste Permits Section  
Waste Permits Division  
TCEQ – Office of Waste, MC-130  
P.O. Box 13087  
Austin, Texas 78711

Via Email: [REDACTED]

**RE: Response to Technical Notice of Deficiency (NOD) 1 for the Class 3 Permit Modification for BASF Corporation,**  
BASF Beaumont Argo Plant, Beaumont, Texas.  
Hazardous Waste Permit No. 50219; RN100634922 / CN600124895

Dear Mr. Haghighatian:


On behalf of BASF Corporation (BASF), GSI Environmental Inc. is pleased to submit this response to the TCEQ Technical NOD 1 emails issued on 2 July and 14 August 2024.

This submittal includes an electronic version of the following:

- A table summarizing the Technical NOD1 comments and BASF's responses;
- A redline/strikeout version identifying all proposed changes for the application;
- Replacement pages for insertion into the application;
- A Response Action Completion Report (RACR) signature page;
- A revised Preliminary Review Unit Checklist for the new TCB release area;
- A revised Table I.1 for the proposed application changes; and
- A new Part B signature page

If you have any questions or comments regarding this response to the Technical NOD, please contact either Kendra Derrick of BASF (409-981-5184 or [REDACTED]) or Jim McDade at 832-721-6595 or [REDACTED]

Sincerely,



James M. McDade, P.E.  
Vice President and Principal Engineer

cc (via email):

Ms. Kendra Derrick, BASF Corporation  
Ms. Caitlin Wilding, BASF Corporation  
Mr. Wyatt Hook, TCEQ  
Ms. Joy Archuleta, TCEQ  
Ms. Isabel Newman, TCEQ  
Ms. Rachel Vander Nat, TCEQ



# RESPONSE TO TECHNICAL NOD 1: COMPLIANCE PLAN – CLASS 3 MODIFICATIONS

**HAZARDOUS WASTE PERMIT NO. 50219**  
**BASF Corporation Agro Plant**  
Beaumont, Jefferson County, Texas  
Industrial Solid Waste Registration No. 30053



**Issued:** 26 August 2024

**Prepared for:** **BASF Corporation**  
14385 W Port Arthur Road  
Beaumont, Texas 77705

**Prepared by:** **GSI ENVIRONMENTAL INC.**  
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# Texas Commission on Environmental Quality

## Waste Permits Division Correspondence

### Cover Sheet

Date: 8/26/2024

Facility Name: BASF Beaumont Argo Plant

Permit or Registration No.: 50219

Nature of Correspondence:

☐ Initial/New

☒ Response/Revision to TCEQ Tracking No.:  
N/A (from subject line of TCEQ letter  
regarding initial submission)

Affix this cover sheet to the front of your submission to the Waste Permits Division. Check appropriate box for type of correspondence. Contact WPD at (512) 239-2335 if you have questions regarding this form.

**Table 1 - Municipal Solid Waste Correspondence**

Applications	Reports and Notifications
<input type="checkbox"/> New Notice of Intent	<input type="checkbox"/> Alternative Daily Cover Report
<input type="checkbox"/> Notice of Intent Revision	<input type="checkbox"/> Closure Report
<input type="checkbox"/> New Permit (including Subchapter T)	<input type="checkbox"/> Compost Report
<input type="checkbox"/> New Registration (including Subchapter T)	<input type="checkbox"/> Groundwater Alternate Source Demonstration
<input type="checkbox"/> Major Amendment	<input type="checkbox"/> Groundwater Corrective Action
<input type="checkbox"/> Minor Amendment	<input type="checkbox"/> Groundwater Monitoring Report
<input type="checkbox"/> Limited Scope Major Amendment	<input type="checkbox"/> Groundwater Background Evaluation
<input type="checkbox"/> Notice Modification	<input type="checkbox"/> Landfill Gas Corrective Action
<input type="checkbox"/> Non-Notice Modification	<input type="checkbox"/> Landfill Gas Monitoring
<input type="checkbox"/> Transfer/Name Change Modification	<input type="checkbox"/> Liner Evaluation Report
<input type="checkbox"/> Temporary Authorization	<input type="checkbox"/> Soil Boring Plan
<input type="checkbox"/> Voluntary Revocation	<input type="checkbox"/> Special Waste Request
<input type="checkbox"/> Subchapter T Disturbance Non-Enclosed Structure	<input type="checkbox"/> Other:
<input type="checkbox"/> Other:	

**Table 2 - Industrial & Hazardous Waste Correspondence**

Applications	Reports and Responses
<input type="checkbox"/> New	<input type="checkbox"/> Annual/Biennial Site Activity Report
<input type="checkbox"/> Renewal	<input type="checkbox"/> CPT Plan/Result
<input type="checkbox"/> Post-Closure Order	<input type="checkbox"/> Closure Certification/Report
<input type="checkbox"/> Major Amendment	<input type="checkbox"/> Construction Certification/Report
<input type="checkbox"/> Minor Amendment	<input type="checkbox"/> CPT Plan/Result
<input type="checkbox"/> CCR Registration	<input type="checkbox"/> Extension Request
<input type="checkbox"/> CCR Registration Major Amendment	<input type="checkbox"/> Groundwater Monitoring Report
<input type="checkbox"/> CCR Registration Minor Amendment	<input type="checkbox"/> Interim Status Change
<input type="checkbox"/> Class 3 Modification	<input type="checkbox"/> Interim Status Closure Plan
<input type="checkbox"/> Class 2 Modification	<input type="checkbox"/> Soil Core Monitoring Report
<input type="checkbox"/> Class 1 ED Modification	<input type="checkbox"/> Treatability Study
<input type="checkbox"/> Class 1 Modification	<input type="checkbox"/> Trial Burn Plan/Result
<input type="checkbox"/> Endorsement	<input type="checkbox"/> Unsaturated Zone Monitoring Report
<input type="checkbox"/> Temporary Authorization	<input type="checkbox"/> Waste Minimization Report
<input type="checkbox"/> Voluntary Revocation	<input type="checkbox"/> Other:
<input type="checkbox"/> 335.6 Notification	
<input checked="" type="checkbox"/> Other: <b>Response to Technical NOD 1</b>	

## **Class 3 Hazardous Waste Permit Modification Application**

Hazardous Waste Permit No. 50219

### **Technical NOD 1 Response**

#### **ATTACHMENTS**

**Attachment 1 – Comment Response Summary Table**

**Attachment 2 – New/Replacement Pages**

## **Class 3 Hazardous Waste Permit Modification Application**

Hazardous Waste Permit No. 50219

### **Technical NOD 1 Response**

# **Attachment 1 – Comment Response Summary Table**

## Application Deficiencies – Technical NOD 1 - Compliance Plan

ID <sup>1</sup>	App. Part	App. Section	Location <sup>2</sup>	Citation	Error Type <sup>3</sup>	Deficiency Description/Resolution	Responses
CP 1	B	XI.A. and XI.D.	CP Table II and [Response Action Completion Report (RACR) Chronology]	30 TAC §335.167 and §350.95	Omitted	<p>a) Please clarify if there are other solid waste management units (SWMUs) or areas of concern (AOCs) at the facility that have not yet completed the RCRA Corrective Action obligations of BASF Corporation's permit and Compliance Plan; and</p> <p>b) Revise the RACR's Chronology if BASF Corporation has completed the RCRA Corrective Action obligations for the Dicamba AOC discovered in 2018.</p>	<p>a) In December 2021, BASF began investigating and delineating in accordance with 30 TAC 350 (Texas Risk Reduction Program; TRRP) a historical release discovered during remediation of the Dicamba AOC. The primary chemicals of concern include 1,2,4-trichlorobenzene (TCB) and its degradation byproducts 1,4-dichlorobenzene and 2,4-dichlorophenol. Impacts to both soil and groundwater are being investigated and delineated as part of the TCB AOC. A RCRA Facility Assessment report will be submitted to the TCEQ within 45 days of the submission of this response to the Technical NOD 1 in accordance with Section X.A.6 of BASF Permit No. 50219. See Attachment 2 for the revised CP Table II.</p> <p>b) The RACR's chronology has been updated (see Attachment 2) with the dates that the Dicamba AOC RCRA Correction Action was completed.</p>

ID <sup>1</sup>	App. Part	App. Section	Location <sup>2</sup>	Citation	Error Type <sup>3</sup>	Deficiency Description/Resolution	Responses
CP 2	B	XI.A.	[Notice of Registration (NOR)]	30 TAC §335.6 and §335.8	General	Please ensure to contact the TCEQ's Registration and Reporting Section to update the "unit status" for the Solid Waste Management Area (SWMA; WMU No. 010) on BASF Corporation's NOR once the TCEQ issues the Class 3 Permit Modification. No response is required for this comment.	BASF will contact the TCEQ's Registration and Reporting Section to update the NOR's "unit status" for WMU No. 010 once the TCEQ issues the Class 3 Permit Modification.
CP 3	B	XI.D	[RACR]	30 TAC §335.5, §335.8, and §350.95	Omitted	Revise the RACR to include a brief discussion of the waste management history of the SWMA. Please discuss whether the SWMA was clean-closed or if waste was left in-place. Include a draft deed notice in Appendix 3 if waste was left in-place, per Title 30 Texas Administrative Code (TAC) §335.5 and the TCEQ's guidance document " <a href="#">Closure of Waste Management Units Subject to TRRP</a> " (RG-366/TRRP-2A).	<p>The RACR was revised to include a brief discussion of the waste management history of the SWMA and the closure activities. The SWMA was clean-closed and is therefore not subject to 30 TAC 335.5. See Attachment 2 for the revised RACR text only, a copy of the "no further action" letter to BASF (then Sandoz) from the Texas Water Commission, and revised Appendix 1 of the RACR (References).</p> <p>A deed notice has been filed with the Jefferson County property records to restrict groundwater use within the plume management zone (PMZ) in November 2009, and a copy of the deed notice was included in Appendix 3 of the initial RACR submitted on 8 April 2024. Another copy is provided with this submission in Attachment 2.</p>
CP 4	B	XI.D	[RACR]	30 TAC §335.167	Omitted	Revise the RACR to demonstrate that BASF Corporation has met the requirements of Permit Provision XI.D.6.e to terminate the Corrective Action Program for the SWMA.	The RACR was revised to demonstrate that BASF Corporation has met the requirements of Permit Provision XI.D.6.e to terminate the Correction Action Program for the SWMA (see Attachment 2).

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- <sup>1</sup> Deficiency ID – Key: A#=Administrative deficiency (ex. A12); T#=Technical deficiency relating to Sections I-X and Sections XII-XIII of the Part B application (ex. T10); C#=Comment only (ex. C1); CP#=Technical deficiency relating to Section XI-Compliance Plan of the Part B application (ex. CP14); Number in parenthesis (*n*) = *n*th instance of same deficiency (ex. T1(2) is the second instance of deficiency T1 originally identified in previous NOD).
- <sup>2</sup> Location of deficiency in submittal/application. Items in square brackets [ ] refer to applicant's supplemental information submitted as attachments to the application form.
- <sup>3</sup> Possible Error Types: Ambiguous, Incomplete, Inconsistent, Incorrect, Omitted, Typo, or Format.

## **Class 3 Hazardous Waste Permit Modification Application**

Hazardous Waste Permit No. 50219

### **Technical NOD 1 Response**

## **Attachment 2 – New/Replacement Pages**

#### **Contents**

- Revised CP Table II: Response to CP 1
- Revised RACR Chronology: Response to CP 1
- Revised RACR: Response to CP 3 and CP 4
- Deed Notice: Response to CP 3
- TWC RCRA Facility Investigation Report Letter: Response to CP 3
- Revised RACR Appendix 1
- Revised Preliminary Review Unit Checklist in Part B – Section IX: Response to Email Bullet #1
- Revised Description of Proposed Application Changes – Table I.1: Response to Email Bullet #2
- New Part B Signature Page: Response to Email Bullet #3

## **Class 3 Hazardous Waste Permit Modification Application**

Hazardous Waste Permit No. 50219

### **Technical NOD 1 Response**

<h2><b>Attachment 2.1 – Revised CP Table II (Response to CP 1)</b></h2>
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**CP Table II: Solid Waste Management Units and/or Areas of Concern  
Addressed in Permit Section XI.H. for which Corrective Action Applies Pursuant to 30 TAC  
Section 335.167**

Unit Name	NOR Number, if applicable	SWMU or AOC	Affected Media <sup>1</sup>	Date Program Requirement and Remedy Standard Completed <sup>2</sup>
Dicamba		AOC	Soil	Remedy Standard A (removal via excavation) completed. NFA letter received on 24 May 2021.
TCB		AOC	Soil, GW	Investigation ongoing in accordance with 30 TAC 350.

**SWMU= Solid Waste Management Units**

**AOC= Area of Concern**

**Foot Note:**

1. Specify the affected media [i.e. soil, groundwater (GW), surface water (SW), sediment (SED)].
2. For each SWMU or AOC, specify the Remedy Standard that was completed and the date of the Commission's No Further Action (NFA) letter for the media of concern.
3. For sites with FOA authorization, list the SWMUs and/or AOCs that are subject to corrective action at the site. Please separate the SWMUs and/or AOCs that are located within the FOA boundary from the SWMUs and/or AOCs that are located outside of the FOA boundary.

**Note:**

CP Table II lists SWMUs and/or AOCs which have been identified in the RCRA Facility Assessment (RFA) Report as having a release(s) or a potential release(s) of hazardous waste, hazardous constituents, or other constituents of concern. The permittee is thus required to meet Corrective Action Objectives for the SWMUs and/or AOCs in accordance with Permit Section XI.H. and 30 TAC Section 335.167.

The permittee shall update CP Table II when a new SWMU and/or AOC that requires corrective action is identified. The permittee shall also update CP Table II as outlined in Footnote 2 when the corrective action status of a media for a SWMU or AOC has changed.

SWMUs and/or AOCs shall not be deleted from this table when the Corrective Action Objectives have been completed and a No Further Action (NFA) determination has been approved for the SWMU and/or AOC. In accordance with Permit Section XI.H., CP Table II is intended to be a historical record of the facility's corrective actions and to reflect when the Corrective Action Objectives have been met for each SWMU/AOC.

There may be cases in which the permittee fulfills the Corrective Action Objectives for soils at a SWMU/AOC, but long-term groundwater monitoring and corrective action may be necessary to meet the groundwater Corrective Action Objectives. In such instances, the SWMU/AOC

would be listed in CP Table I, Item C, and would be subject to all applicable provisions of this Compliance Plan. If a release from a SWMU/AOC is commingled with a RCRA-regulated unit, then the unit and the SWMU/AOC would be listed in CP Table I, Item D. In accordance with Permit Section XI.H., once the Corrective Action Objectives for groundwater are completed, the permittee shall modify or amend the Compliance Plan to reassign the SWMU/AOC in CP Table I, Item C or Item D, to CP Table II. CP Table II should reflect the new status of the SWMU/AOC. It should include the Remedy Standard achieved for all media of concern and the date of the Commission's NFA approval letter for each SWMU/AOC.

## **Class 3 Hazardous Waste Permit Modification Application**

Hazardous Waste Permit No. 50219

### **Technical NOD 1 Response**

## **Attachment 2.2 – Revised RACR Chronology (Response to CP 1)**

**CHRONOLOGY**  
**2024 Response Action Completion Report**  
 Solid Waste Registration No. 30053  
 BASF Corporation Agro Plant, Beaumont, Texas

Date of Report or Event(s)	Title of Report / Activity	By	Summary of Environmental Assessment and/or Correspondence
18 & 19 January 2024	Semiannual groundwater sampling	GSI	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
<u>January 2024</u>	<u>January 2024 Semiannual Corrective Action Report</u>	<u>RPS</u>	<u>The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.</u>
7 December 2023	Conditional Approval Request to Discontinue the Compliance Plan	TCEQ	TCEQ stated "The historical groundwater data provides adequate supporting documentation that the ground water protection standard (GWPS) has been achieved... BASF's request to discontinue the compliance plan, is conditionally approved; however, a modification of the IHW permit is required to be submitted to IHW Permits for review."
<u>July 2023</u>	<u>Semiannual groundwater sampling</u>	<u>RPS</u>	<u>Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.</u>
12 July 2023	July 2023 Semiannual Corrective Action Report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program. MW-6 not used due lack of updated survey data.
19 January 2023	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
<u>January 2023</u>	<u>January 2023 Semiannual Corrective Action Report</u>	<u>RPS</u>	<u>The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.</u>
21 July 2022	July 2022 Semiannual Corrective Action Report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program. MW-6 not used due lack of updated survey data.
<u>12 July 2022</u>	<u>Semiannual groundwater sampling</u>	<u>RPS</u>	<u>Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.</u>
26 April 2022	MW-6 Repaired	BASF	A new survey is anticipated prior for January sampling to get an updated elevation.

**CHRONOLOGY**  
**2024 Response Action Completion Report**  
 Solid Waste Registration No. 30053  
 BASF Corporation Agro Plant, Beaumont, Texas

Date of Report or Event(s)	Title of Report / Activity	By	Summary of Environmental Assessment and/or Correspondence
27 January 2022	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
20 January 2022	January 2022 Semiannual Corrective Action Report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
28 July 2021	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
21 July 2021	July 2021 Semiannual Corrective Action Report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
<u>24 May 2021</u>	<u>TCEQ Letter report regarding Response Action Completion Report (RACR) for Dicamba Area of Concern (AOC)</u>	<u>TCEQ</u>	<u>The TCEQ determined that Remedy Standard A Residential Protective Concentration Levels (PCLs) have been achieved, so such that no institutional controls or post-response action care are required. No further action is required under 30 TAC 350.</u>
<u>9 February 2021</u>	<u>Response Action Completion Report for Dicamba Area of Concern</u>	<u>GSI</u>	<u>RACR documenting the remedial action for the impacted soil was submitted to the TCEQ for the Dicamba AOC.</u>
29 January 2021	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
21 January 2021	January 2021 Semiannual Corrective Action Report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
<u>9-13</u> November 2020	Soil excavation in Dicamba <del>unit</del> <u>AOC</u>	BASF	BASF excavated and properly disposed of impacted soil in the Dicamba area.
26 October 2020	Monitoring well location survey	Arceneaux Wilson & Cole LLC	Top of casing broken at MW-6.
<u>13 &amp; 14</u> August 2020	Semiannual groundwater sampling	RSP	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.

**CHRONOLOGY**  
**2024 Response Action Completion Report**  
 Solid Waste Registration No. 30053  
 BASF Corporation Agro Plant, Beaumont, Texas

Date of Report or Event(s)	Title of Report / Activity	By	Summary of Environmental Assessment and/or Correspondence
21 July 2020	July 2020 Semiannual Corrective Action Report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
<u>17 July 2020</u>	<u>Soil Sampling in Dicamba AOC</u>	<u>GSI</u>	<u>On behalf of BASF, GSI conducted additional soil sampling to delineate the northern affected area for remediation activities.</u>
<u>19 March 2020</u>	<u>TCEQ approval of Remedy Standard A for Dicamba AOC through email correspondences</u>	<u>TCEQ</u>	<u>The TCEQ approved BASF's proposal for addressing Dicamba AOC under Remedy Standard A (i.e., excavation of affected soil with concentration greater than residential PCL) without the submission of a Response Action Plan. BASF suggests to document remedy and submit a Response Action Completion Report (RACR) after completion of excavation activities.</u>
29 & 30 January 2020	Semiannual groundwater sampling	RSP	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
<u>21 January 2020</u>	<u>Semiannual Corrective Action Report, 2H 2019</u>	<u>DiSorbo</u>	<u>The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.</u>
<u>3 December 2019</u>	<u>TCEQ Letter Approval of APAR for Dicamba AOC</u>	<u>TCEQ</u>	<u>The TCEQ approved the APAR and confirmed the BASF proposal to conduct a Response Action Plan (RAP) addressing the release under Remedy Standard B.</u>
<u>August 2019</u>	<u>APAR for Dicamba AOC</u>	<u>DiSorbo</u>	<u>Affected Property Assessment Report (APAR) was submitted to the TCEQ for the Dicamba AOC.</u>
21 July 2019	Semiannual Corrective Action Report, 1H 2019	DiSorbo	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
<u>2 July 2019</u>	<u>Semiannual groundwater sampling</u>	<u>DiSorbo</u>	<u>Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.</u>
<u>March – June 2019</u>	<u>Soil Sampling for Dicamba AOC</u>	<u>DiSorbo</u>	<u>On behalf of BASF, DiSorbo collected additional soil samples to fully delineate the Dicamba contamination and to characterize the subsurface soil strata.</u>

**CHRONOLOGY**  
**2024 Response Action Completion Report**  
 Solid Waste Registration No. 30053  
 BASF Corporation Agro Plant, Beaumont, Texas

Date of Report or Event(s)	Title of Report / Activity	By	Summary of Environmental Assessment and/or Correspondence
21 January 2019	Semiannual Corrective Action Report, January 2019	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
9 January 2019	Semiannual groundwater sampling	DiSorbo	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
<u>12 October 2018</u>	<u>TCEQ Approval of RFA</u>	<u>TCEQ</u>	<u>The TCEQ approved the RFA and directed BASF to conduct the RCRA Facility Investigation (RFI).</u>
<u>12 September 2018</u>	<u>RFA submission to TCEQ</u>	<u>DiSorbo</u>	<u>RCRA Facility Assessment Report (RFA) was submitted to the TCEQ for the Dicamba AOC.</u>
9 August 2018	<u>Notification of TCEQ Discovery of new about new area-of-concern AOC</u>	BASF	BASF notified the TCEQ of the new <del>area-of-concern (AOC)</del> inside the boundary of the Beaumont Chemical Plant. Pursuant to Provision XI.A.6 of the Permit/compliance Plan, a RCRA Facility Assessment RFA) report was submitted to the TCEQ on <u>12 September-12 2018, 2014</u> , within 45 days of the discovery. The APAR identified two Dicamba protective concentration level exceedance (PCLE) zones with Dicamba concentrations above the Tier 1 commercial/industrial PCL of 4.4 mg/kg in surface soils adjacent to facility rail spurs on the eastern interior of the site.
<u>30 July 2018</u>	<u>Confirmation of affected soil (Dicamba AOC)</u>	<u>BASF</u>	<u>Result of laboratory analysis indicated presence of herbicide (Dicamba) in the soil samples.</u>
24 & 25 July 2018	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
July 2018	Semiannual Corrective Action Report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
<u>6-13 July 2018</u>	<u>Surface soil sampling</u>	<u>BASF</u>	<u>Surface soil samples were collected, subsequent of observation of discolored water in rainwater puddles near the FFP Loading Rack Area. FFP Loading Rack is located adjacent to several rail spurs near the eastern side of BASF Beaumont Chemical Plant.</u>

**CHRONOLOGY**  
**2024 Response Action Completion Report**  
 Solid Waste Registration No. 30053  
 BASF Corporation Agro Plant, Beaumont, Texas

Date of Report or Event(s)	Title of Report / Activity	By	Summary of Environmental Assessment and/or Correspondence
19 January 2018	Semiannual Corrective Action Report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
9 January 2018	MW-6 first noted as damaged	RPS	First noted as damaged in the July 2018 Semiannual report.
9 January 2018	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
<u>26 &amp; 27 July 2017</u>	<u>Semiannual groundwater sampling</u>	<u>RPS</u>	<u>Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.</u>
July 2017	Semiannual Corrective Action Report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
24 & 25 January 2017	Semiannual <u>groundwater</u> sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
8 December 2016	Semiannual Corrective Action Report, January 2017	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
12 July 2016	<del>Semiannual</del> <u>Semiannual groundwater</u> sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
12 July 2016	Semiannual Corrective Action Report, July 2016	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
<u>4 &amp; 56</u> January 2016	Semiannual <u>groundwater</u> sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
21 January 2016	Semiannual Corrective Action Report, January 2016	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
<u>22 July 2015</u>	<u>Semiannual sampling</u>	<u>RPS</u>	<u>Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.</u>

**CHRONOLOGY**  
**2024 Response Action Completion Report**  
 Solid Waste Registration No. 30053  
 BASF Corporation Agro Plant, Beaumont, Texas

Date of Report or Event(s)	Title of Report / Activity	By	Summary of Environmental Assessment and/or Correspondence
10 September 2015	Hazardous waste permit/ compliance plan renewal and major amendment application issued	TCEQ	There were no changes in the PMZ and groundwater monitoring program between the 2009 major amendment and the 2015 Compliance Plan renewal.
<u>22 &amp; 23 July 2015</u>	<u>Semiannual groundwater sampling</u>	<u>RPS</u>	<u>Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.</u>
21 July 2015	Semiannual Corrective Action Report, July 2015	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
21- <u>23</u> April 2015	Semiannual- <u>groundwater</u> sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, <u>and R-8,</u> <u>and a DUP.</u>
21 January 2015	Semiannual Corrective Action Report, January 2015	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
21 July 2014	Semiannual Corrective Action Report, July 2014	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
23 <u>&amp; 24</u> June 2014	Semiannual- <u>groundwater</u> sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, <u>and R-8,</u> <u>and a DUP.</u>
21 <u>&amp; 22</u> January 2014	Semiannual <u>groundwater</u> sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, <u>and R-8,</u> <u>and a DUP.</u>
21 January 2014	Semiannual Corrective Action Report, January 2014	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
<u>17 &amp; 18</u> July 2013	Semiannual <u>groundwater</u> sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, <u>and R-8,</u> <u>and a DUP.</u>
17 July 2013	Semiannual Corrective Action Report, July 2013	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
22 January 2013	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, <u>and R-8,</u> <u>and a DUP.</u>

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Date of Report or Event(s)	Title of Report / Activity	By	Summary of Environmental Assessment and/or Correspondence
<u>24 &amp; 25 July 2012</u>	<u>Semiannual groundwater sampling</u>	<u>RPS</u>	<u>Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.</u>
<u>30 &amp; 31 January 2012</u>	<u>Semiannual groundwater sampling</u>	<u>RPS</u>	<u>Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.</u>
20 January 2012	Semiannual Groundwater report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
September 2011	MW-30 Modified to a flush mount.	RPS	
<u>14 &amp; 15 July 2011</u>	<u>Semiannual groundwater sampling</u>	<u>RPS</u>	<u>Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.</u>
27 January 2011	Commencement of semi-annual sampling post closure	RPS	Includes the sampling of MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, <del>and R-8,</del> <u>and DUP.</u>
<u>12 &amp; 13 July 2010</u>	<u>Semiannual groundwater sampling</u>	<u>RPS</u>	<u>Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.</u>
29 June 2010	Class 1 modification application issued	TCEQ	Corrected typographical errors and adjusted amount of financial assurance.
<u>26 &amp; 27 January 2010</u>	<u>Semiannual groundwater sampling</u>	<u>RPS</u>	<u>Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.</u>
17 November 2009	Submittal of Deed Notice		A deed notice documenting the plume management zone (PMZ) and restricting groundwater use within the PMZ was filed into the Real Property Records of Jefferson County Clerk's Office.
24 September 2009	Groundwater recovery system shut down	BASF	As issued by the major amendment.
4 September 2009	Major Amendment issued for the compliance plan	TCEQ	Discontinued active groundwater recovery, incorporated PMX with POE and AMO wells, modified groundwater monitoring program.
14 January 2009	Interagency memo	BASF	Responded to TCEQ notice of deficiency with comments and included a revised sampling plan
13 July 2008	Semiannual Ground Water Report	BASF	The overall groundwater recovery was satisfactory as indicated by the reduction in the total dissolved solids The cone depression created by

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Date of Report or Event(s)	Title of Report / Activity	By	Summary of Environmental Assessment and/or Correspondence
			pumping exceeds the area of the plume and it is recovering and controlling contaminated ground water.
May 2008	Response Action Plan	BASF	Report to TCEQ documenting the response action plan. It was concluded that a plume management zone with semi-annual sampling was the most appropriate response action.
19 January 2008	Semiannual Ground Water Report	BASF	The overall groundwater recovery was satisfactory as indicated by the reduction in the total dissolved solids The cone depression created by pumping exceeds the area of the plume and it is recovering and controlling contaminated ground water.
19 July 2007	Semiannual Ground Water Report	BASF	The overall groundwater recovery was satisfactory as indicated by the reduction in the total dissolved solids The cone depression created by pumping exceeds the area of the plume and it is recovering and controlling contaminated ground water.
2006	Number of recovery and monitoring wells used reduced	BASF	The number of recovery and monitoring wells were reduced due to the reduction of the area of the plume and the concentration of constituents of concern. The wells are MW-13, MW-19, MW-29, R-1, R-2, R-8, and R-9
8 September 2004	Compliance plan renewed	TCEQ	The sampling frequency for the recovery and supplemental wells was changed to the first and third quarters only. Wells were previously sampled every quarter.
January 2003	Semi-Annual Report For The Third And Fourth Quarters 2002	BASF	The cone of depression from pumping exceeds the area of the plume and it is recovering and controlling contaminated groundwater. However, some recovery wells encountered difficulties with pumping due to mechanical problems. TDS results show the overall area of the plume has been reduced,
11 December 2000	Inspection report	Texas Natural Resource Conservation Commission	TNRCC conducted a Comprehensive Ground-Water Monitoring evaluation inspection. Sampling event from October included split samples.

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Date of Report or Event(s)	Title of Report / Activity	By	Summary of Environmental Assessment and/or Correspondence
July 1998	Semi-Annual Report For The First And Second Quarters 1998	RMT Inc	Analytical data exhibits significant levels of contamination. Concluded that the flow directions of all parts of the plume is to recovery wells and given enough time will recover the contaminants. The groundwater recovery system worked as designed with the following exceptions. Wells 4,5 and 6 were down intermittently in January due to pump problems. Well 10 had to be restarted on the 27 <sup>th</sup> of January. Well 5 had a priming problem on the 6 <sup>th</sup> of February. Wells 4 and 6 had priming problems the first two weeks of March. Well 5 had its switch replaced this month. Wells 3 and 4 had pump motors replaced in April and well 1 had priming problems this month. Furin May there were problems with the motor on well 1. In June, there were leaks in well 1 and 3, the wastewater volume counter broke and was repaired.
November 1995	MW-6 replaced	BASF	
<u>30 January 1991</u>	<u>No Further Action letter for SWMA</u>	<u>TCEQ</u>	<u>TCEQ issued "No Further Action" letter for any of the facility's solid waste management units.</u>
<u>31 October 1990</u>	<u>RCRA Facility Investigation Report (RFI)</u>	<u>BASF</u>	<u>BASF submitted the results from the RFI and closure activities for solid waste management units to the TCEQ (formerly TNRCC).</u>
8 November 1988	Compliance plan first issued	TCEQ	Quarterly sampling commenced.

## **Class 3 Hazardous Waste Permit Modification Application**

Hazardous Waste Permit No. 50219

### **Technical NOD 1 Response**

# ***REPLACEMENT PAGES***

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18 & 19 January 2024	Semiannual groundwater sampling	GSI	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
January 2024	January 2024 Semiannual Corrective Action Report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
7 December 2023	Conditional Approval Request to Discontinue the Compliance Plan	TCEQ	TCEQ stated "The historical groundwater data provides adequate supporting documentation that the ground water protection standard (GWPS) has been achieved... BASF's request to discontinue the compliance plan, is conditionally approved; however, a modification of the IHW permit is required to be submitted to IHW Permits for review."
July 2023	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
12 July 2023	July 2023 Semiannual Corrective Action Report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program. MW-6 not used due lack of updated survey data.
19 January 2023	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
January 2023	January 2023 Semiannual Corrective Action Report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
21 July 2022	July 2022 Semiannual Corrective Action Report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program. MW-6 not used due lack of updated survey data.
12 July 2022	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
26 April 2022	MW-6 Repaired	BASF	A new survey is anticipated prior for January sampling to get an updated elevation.

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27 January 2022	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
20 January 2022	January 2022 Semiannual Corrective Action Report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
28 July 2021	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
21 July 2021	July 2021 Semiannual Corrective Action Report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
24 May 2021	TCEQ Letter report regarding Response Action Completion Report (RACR) for Dicamba Area of Concern (AOC)	TCEQ	The TCEQ determined that Remedy Standard A Residential Protective Concentration Levels (PCLs) were achieved, so no institutional controls or post-response action care are required. No further action is required under 30 TAC 350.
9 February 2021	Response Action Completion Report for Dicamba AOC	GSI	RACR documenting the remedial action for the impacted soil was submitted to the TCEQ for the Dicamba AOC.
29 January 2021	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
21 January 2021	January 2021 Semiannual Corrective Action Report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
9-13 November 2020	Soil excavation in Dicamba AOC	BASF	BASF excavated and properly disposed of impacted soil in the Dicamba area.
26 October 2020	Monitoring well location survey	Arceneaux Wilson & Cole LLC	Top of casing broken at MW-6.
13 & 14 August 2020	Semiannual groundwater sampling	RSP	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.

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Date of Report or Event(s)	Title of Report / Activity	By	Summary of Environmental Assessment and/or Correspondence
21 July 2020	July 2020 Semiannual Corrective Action Report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
17 July 2020	Soil Sampling in Dicamba AOC	GSI	On behalf of BASF, GSI conducted additional soil sampling to delineate the northern affected area for remediation activities.
19 March 2020	TCEQ approval of Remedy Standard A for Dicamba AOC through email correspondences	TCEQ	The TCEQ approved BASF's proposal for addressing Dicamba AOC under Remedy Standard A (i.e., excavation of affected soil with concentration greater than residential PCL) without the submission of a Response Action Plan. BASF suggests to document remedy and submit a RACR after completion of excavation activities.
29 & 30 January 2020	Semiannual groundwater sampling	RSP	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
21 January 2020	Semiannual Corrective Action Report, 2H 2019	DiSorbo	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
3 December 2019	TCEQ Letter Approval of APAR for Dicamba AOC	TCEQ	The TCEQ approved the APAR and confirmed the BASF proposal to conduct a RAP addressing the release under Remedy Standard B.
August 2019	APAR for Dicamba AOC	DiSorbo	Affected Property Assessment Report (APAR) was submitted to the TCEQ for the Dicamba AOC.
21 July 2019	Semiannual Corrective Action Report, 1H 2019	DiSorbo	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
2 July 2019	Semiannual groundwater sampling	DiSorbo	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
March – June 2019	Soil Sampling for Dicamba AOC	DiSorbo	On behalf of BASF, DiSorbo collected additional soil samples to fully delineate the Dicamba contamination and to characterize the subsurface soil strata.

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21 January 2019	Semiannual Corrective Action Report, January 2019	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
9 January 2019	Semiannual groundwater sampling	DiSorbo	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
12 October 2018	TCEQ Approval of RFA	TCEQ	The TCEQ approved the RFA and directed BASF to conduct the RCRA Facility Investigation (RFI).
12 September 2018	RFA submission to TCEQ	DiSorbo	RCRA Facility Assessment Report (RFA) was submitted to the TCEQ for the Dicamba AOC.
9 August 2018	Notification of TCEQ about new AOC	BASF	BASF notified the TCEQ of the new AOC inside the boundary of the Beaumont Chemical Plant. Pursuant to Provision XI.A.6 of the Permit/compliance Plan, a RCRA Facility Assessment RFA) report was submitted to the TCEQ on 12 September 2018, within 45 days of the discovery. The APAR identified two Dicamba protective concentration level exceedance (PCLE) zones with Dicamba concentrations above the Tier 1 commercial/industrial PCL of 4.4 mg/kg in surface soils adjacent to facility rail spurs on the eastern interior of the site.
30 July 2018	Confirmation of affected soil (Dicamba AOC)	BASF	Result of laboratory analysis indicated presence of herbicide (Dicamba) in the soil samples.
24 & 25 July 2018	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
July 2018	Semiannual Corrective Action Report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
6-13 July 2018	Surface soil sampling	BASF	Surface soil samples were collected, subsequent of observation of discolored water in rainwater puddles near the FFP Loading Rack Area. FFP Loading Rack is located adjacent to several rail spurs near the eastern side of BASF Beaumont Chemical Plant.

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19 January 2018	Semiannual Corrective Action Report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
9 January 2018	MW-6 first noted as damaged	RPS	First noted as damaged in the July 2018 Semiannual report.
9 January 2018	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
26 & 27 July 2017	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
July 2017	Semiannual Corrective Action Report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
24 & 25 January 2017	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
8 December 2016	Semiannual Corrective Action Report, January 2017	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
12 July 2016	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
12 July 2016	Semiannual Corrective Action Report, July 2016	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
4 & 5 January 2016	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
21 January 2016	Semiannual Corrective Action Report, January 2016	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.

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10 September 2015	Hazardous waste permit/ compliance plan renewal and major amendment application issued	TCEQ	There were no changes in the PMZ and groundwater monitoring program between the 2009 major amendment and the 2015 Compliance Plan renewal.
22 & 23 July 2015	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
21 July 2015	Semiannual Corrective Action Report, July 2015	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
21-23 April 2015	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, and R-8.
21 January 2015	Semiannual Corrective Action Report, January 2015	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
21 July 2014	Semiannual Corrective Action Report, July 2014	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
23 & 24 June 2014	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, and R-8.
21 & 22 January 2014	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, and R-8.
21 January 2014	Semiannual Corrective Action Report, January 2014	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
17 & 18 July 2013	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, and R-8..
17 July 2013	Semiannual Corrective Action Report, July 2013	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
22 January 2013	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, and R-8.
24 & 25 July 2012	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.

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Date of Report or Event(s)	Title of Report / Activity	By	Summary of Environmental Assessment and/or Correspondence
30 & 31 January 2012	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
20 January 2012	Semiannual Groundwater report	RPS	The PMZ is effective in controlling the migration of hazardous constituents in the vicinity of the SWMA as evidenced by the results of the groundwater monitoring program.
September 2011	MW-30 Modified to a flush mount.	RPS	
14 & 15 July 2011	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
27 January 2011	Commencement of semi-annual sampling post closure	RPS	Includes the sampling of MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and DUP.
12 & 13 July 2010	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
29 June 2010	Class 1 modification application issued	TCEQ	Corrected typographical errors and adjusted amount of financial assurance.
26 & 27 January 2010	Semiannual groundwater sampling	RPS	Sampled MW-8, MW-9, MW-10, MW-11, MW-12, MW-30, R-8, and a DUP.
17 November 2009	Submittal of Deed Notice		A deed notice documenting the plume management zone (PMZ) and restricting groundwater use within the PMZ was filed into the Real Property Records of Jefferson County Clerk's Office.
24 September 2009	Groundwater recovery system shut down	BASF	As issued by the major amendment.
4 September 2009	Major Amendment issued for the compliance plan	TCEQ	Discontinued active groundwater recovery, incorporated PMX with POE and AMO wells, modified groundwater monitoring program.
14 January 2009	Interagency memo	BASF	Responded to TCEQ notice of deficiency with comments and included a revised sampling plan
13 July 2008	Semiannual Ground Water Report	BASF	The overall groundwater recovery was satisfactory as indicated by the reduction in the total dissolved solids The cone depression created by pumping exceeds the area of the plume and it is recovering and controlling contaminated ground water.

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Date of Report or Event(s)	Title of Report / Activity	By	Summary of Environmental Assessment and/or Correspondence
May 2008	Response Action Plan	BASF	Report to TCEQ documenting the response action plan. It was concluded that a plume management zone with semi-annual sampling was the most appropriate response action.
19 January 2008	Semiannual Ground Water Report	BASF	The overall groundwater recovery was satisfactory as indicated by the reduction in the total dissolved solids The cone depression created by pumping exceeds the area of the plume and it is recovering and controlling contaminated ground water.
19 July 2007	Semiannual Ground Water Report	BASF	The overall groundwater recovery was satisfactory as indicated by the reduction in the total dissolved solids The cone depression created by pumping exceeds the area of the plume and it is recovering and controlling contaminated ground water.
2006	Number of recovery and monitoring wells used reduced	BASF	The number of recovery and monitoring wells were reduced due to the reduction of the area of the plume and the concentration of constituents of concern. The wells are MW-13, MW-19, MW-29, R-1, R-2, R-8, and R-9
8 September 2004	Compliance plan renewed	TCEQ	The sampling frequency for the recovery and supplemental wells was changed to the first and third quarters only. Wells were previously sampled every quarter.
January 2003	Semi-Annual Report For The Third And Fourth Quarters 2002	BASF	The cone of depression from pumping exceeds the area of the plume and it is recovering and controlling contaminated groundwater. However, some recovery wells encountered difficulties with pumping due to mechanical problems. TDS results show the overall area of the plume has been reduced,
11 December 2000	Inspection report	Texas Natural Resource Conservation Commission	TNRCC conducted a Comprehensive Ground-Water Monitoring evaluation inspection. Sampling event from October included split samples.
July 1998	Semi-Annual Report For The First And Second Quarters 1998	RMT Inc	Analytical data exhibits significant levels of contamination. Concluded that the flow directions of all parts of the plume is to recovery wells and given enough time will recover the contaminants. The groundwater

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Date of Report or Event(s)	Title of Report / Activity	By	Summary of Environmental Assessment and/or Correspondence
			recovery system worked as designed with the following exceptions. Wells 4,5 and 6 were down intermittently in January due to pump problems. Well 10 had to be restarted on the 27 <sup>th</sup> of January. Well 5 had a priming problem on the 6 <sup>th</sup> of February. Wells 4 and 6 had priming problems the first two weeks of March. Well 5 had its switch replaced this month. Wells 3 and 4 had pump motors replaced in April and well 1 had priming problems this month. Furin May there were problems with the motor on well 1. In June, there were leaks in well 1 and 3, the wastewater volume counter broke and was repaired.
November 1995	MW-6 replaced	BASF	
30 January 1991	No Further Action letter for SWMA	TCEQ	TCEQ issued "No Further Action" letter for any of the facility's solid waste management units.
31 October 1990	RCRA Facility Investigation Report (RFI)	BASF	BASF submitted the results from the RFI and closure activities for solid waste management units to the TCEQ (formerly TNRCC).
8 November 1988	Compliance plan first issued	TCEQ	Quarterly sampling commenced.

## **Class 3 Hazardous Waste Permit Modification Application**

Hazardous Waste Permit No. 50219

### **Technical NOD 1 Response**

## **Attachment 2.3 – Revised RACR (Response to CP 3 and CP 4)**

Executive Summary	Page 1 of 21	
	ID No. SWR No. 30053	Report Date: <u>8 April 2024</u> <u>Revised: 5</u> <u>August 2024,</u> <u>Rev. 1</u>

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY  
Response Action Completion Report

Cover Page

Regulatory ID number (Solid waste registration number, VCP ID number, etc) SWR 30053

check one: ☒ Initial RACR submittal for this on-site property ☐ Subsequent RACR submittal

Report date: 5 August 2024, Rev. 18-April 2024 TCEQ Region No.: 10

TCEQ Program (check one)

☒ Corrective Action (Mail Code 127)

☐ Superfund PRP Lead (Mail Code 143)

☐ Voluntary Cleanup Program (Mail Code 221)

☐ Municipal Solid Waste Permits (Mail Code 124)

☐ Petroleum Storage Tank Program (Mail Code 137)

On-Site Property Information

On-Site Property Name: BASF Corporation Agro Plant (BASF)

Street no. 14385 Pre dir: W Street name: Port Arthur Street type: Road Post dir:

City: Beaumont County: Jefferson County Code: 123 Zip: 77705

Nearest street intersection or location description:

Latitude: Degrees, Minutes, Seconds OR Decimal Degrees (circle one) North 29.969077

Longitude: Degrees, Minutes, Seconds OR Decimal Degrees (circle one) West 94.0583878

Off-Site Affected Property Information

Off-Site Affected Property Name: None

Street no.  Pre dir:  Street name:  Street type:  Post dir:

City:  County:  County Code:  Zip:

☐ Check if there are no off-site properties affected

Contact Person Information and Acknowledgement

Person (or company) Name: BASF Corporation

Contact Person: Elizabeth Monroe Title: Site Director

Mailing Address: 14385 West Port Arthur Road

City: Beaumont State: TX Zip: 77705 E-mail address

Phone: 409-981-5139 Fax:

By my signature below, I acknowledge the requirement of §350.2(a) that no person shall submit information to the executive director or to parties who are required to be provided information under this chapter which they know or reasonably should have known to be false or intentionally misleading, or fail to submit available information which is critical to the understanding of the matter at hand or to the basis

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of critical decisions which reasonably would have been influenced by that information. Violation of this rule may subject a person to the imposition of civil, criminal, or administrative penalties.

Signature of Person \_\_\_\_\_ Name, print: \_\_\_\_\_ Date: \_\_\_\_\_



<p style="text-align: center;"><b>Executive Summary</b></p>	<p style="text-align: right;"><b>Page 4 of 21</b></p>	
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1987), and BASF installed and operated a groundwater extraction system from 1988 to 2008, prior to implementation of the RAP.

Semiannual groundwater monitoring data collected by BASF from 2011 to 2024 has demonstrated that control of the groundwater plume has been achieved. During this time period there have been no detections of the COCs identified in the RAP (benzene, chlorobenzene, and 2,4-dichlorophenol) at any of the Alternate Monitoring Point (AMP) or Alternate Point of Exposure (POE) monitoring wells with the exception of low-level detections of benzene and phenol in January 2022 at Alternate POE well MW-30 at concentrations well below their Groundwater Water Protection Standards (GWPS's). Additionally, of the other COCs identified in the Compliance Plan (i.e., barium, 1,4-dichlorobenzene, 2,6-dichlorophenol, phenol, silvex, and 2,4-dimethylphenol), only naturally-occurring barium has been detected at the AMP and POE monitoring wells. The barium concentrations at AMP and POE monitoring wells have been detected at concentrations well below the GWPS of 2.0 mg/L (equivalent to the Protective Concentration Level; PCL). As a result, there are currently no PCLE zones present at the site within the established PMZ.

Based on the information summarized above and detailed within this report, BASF believes site conditions meet the following condition based on 30 TAC 350.33(i)(3):

*"The demonstration of no threat to human health or the environment shall be made by adequately documenting one of the following conditions:*

*(3) an affected property contains only a groundwater PCLE zone and such groundwater PCLE zone has been demonstrated to be reducing in size and to have boundaries which are sufficiently smaller than the boundaries of an institutional control so as to preclude any potential for the groundwater PCLE zone to migrate beyond the boundaries of the institutional control considering both natural hydrogeologic conditions and changes to hydraulic gradients by off-site activities;"*

Additionally, the information summarized above and detailed within this report ~~show~~demonstrate that COCs associated with the former SWMA did not exceed their respective GWPSs during the past 3 years of semiannual groundwater monitoring (i.e., January 2021 through January 2024) at any of the AMP and Alternate POE monitoring wells. Therefore, ~~BASF believes~~ site conditions have met the requirements to discontinue the Corrective Action Program for the former SWMA in accordance with [Compliance Plan CP-50219](#) Provision XI.D.6.e of Compliance Plan CP-50219:

*"If the GWPS established in this Compliance Plan for SMWUs and/or AOCs listed in CP Table I, Item C have not been exceeded for three (3) consecutive years in all wells for that unit, then the permittee may apply for a modification or amendment to the Compliance Plan to terminate the Corrective Action Program for that unit."*

BASF respectfully requests to discontinue post-response action care monitoring ~~at the Solid Waste Management Area~~and the Corrective Action Program at the ~~Solid Waste Management Area~~, as there is currently no PCLE zone within the established PMZ, concentration trends are generally stable or decreasing, and all AMP and Alternate POE wells have never had a detection and/or exceedance of the GWPS or PCLs for any of the site-specific COCs in the past 13 years.

# Checklist for Report Completeness

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## Checklist for Report Completeness

Use this checklist to determine the portions of the form that must be submitted for this report. Answer all questions by checking Yes or No. If the answer is Yes include that portion of the report. If the answer is No, do not complete or submit that portion of the report. All form contents that are marked "Required" must be submitted. Form contents marked with an asterisk (\*) are not included in the blank form and are to be provided by the person.

Report Contents

	Required	Cover Page	<input checked="" type="checkbox"/>
	Required	Executive Summary	<input checked="" type="checkbox"/>
	Required	Checklist for Report Completeness	<input checked="" type="checkbox"/>
	Required	Worksheet 1.0 Confirmation of Response Action Objectives	<input checked="" type="checkbox"/>
	Required	Attachment 1A* Maps and Cross Sections	<input checked="" type="checkbox"/>
	Required	Attachment 1B* Graphs	<input checked="" type="checkbox"/>
	Required	Attachment 1C* Response Action Diagrams	<input checked="" type="checkbox"/>
No <input type="checkbox"/>	<input checked="" type="checkbox"/> Yes	Worksheet 2.0 Plume Management Zone	<input checked="" type="checkbox"/>
		Attachment 2A* Map of Plume Management Zone	<input checked="" type="checkbox"/>
No <input checked="" type="checkbox"/>	<input type="checkbox"/> Yes	Worksheet 3.0 Technical Impracticability	<input type="checkbox"/>
		Attachment 3A* Map of Technical Impracticability Area	<input type="checkbox"/>
No <input type="checkbox"/>	<input checked="" type="checkbox"/> Yes	Worksheet 4.0 Institutional Controls	<input checked="" type="checkbox"/>
	Required	Worksheet 5.0 Performance Measures and Problems	<input checked="" type="checkbox"/>
No <input checked="" type="checkbox"/>	<input type="checkbox"/> Yes	Worksheet 6.0 Operation and Maintenance	<input type="checkbox"/>
No <input checked="" type="checkbox"/>	<input type="checkbox"/> Yes	Worksheet 7.0 Post-Response Action Care	<input checked="" type="checkbox"/>
No <input type="checkbox"/>	<input checked="" type="checkbox"/> Yes	Appendix 1* References	<input checked="" type="checkbox"/>

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No ☒

Was an ESA and/or Compensatory Restoration used as part of the response action?

☐ Yes

**Appendix 2\***  
ESA and Compensatory  
Restoration

☐

No ☐

Were institutional controls or landowner concurrence required in the response action?

☒ Yes

**Appendix 3\***  
Institutional Controls and  
Landowner Concurrence

☒

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No <input type="checkbox"/>	Is there data or boring/monitor well information not previously submitted?	<input checked="" type="checkbox"/> Yes	<b>Appendix 4*</b> Data Tables, Boring Logs, and Well Completions	<input checked="" type="checkbox"/>
No <input checked="" type="checkbox"/>	Did sampling procedures differ from those described in the RAP?	<input type="checkbox"/> Yes	<b>Appendix 5*</b> Sampling Procedures	<input type="checkbox"/>
No <input type="checkbox"/>	Has any sampling been conducted for which the analytical results were not previously submitted?	<input checked="" type="checkbox"/> Yes	<b>Appendix 6*</b> Laboratory Data Packages	<input checked="" type="checkbox"/>
No <input type="checkbox"/>	Were statistics or geostatistics used in the response action?	<input checked="" type="checkbox"/> Yes	<b>Appendix 7*</b> Statistical Methodology	<input checked="" type="checkbox"/>
No <input checked="" type="checkbox"/>	Were any wastes generated that were not reported through STEERS?	<input type="checkbox"/> Yes	<b>Appendix 8*</b> Waste Disposition	<input type="checkbox"/>

<b>Confirmation of Response Action Objectives</b>	<b>RACR Worksheet 1.0</b> <b>Page 8 of 21</b>	
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Use this worksheet to describe the attainment of the response action objectives in each media.

### Response Action Objectives

What was the selected remedy standard for this affected property?           A              X   B

List the environmental media to which this applies    Shallow groundwater

Repeat this section for each medium that had a different response action objective.

Provide a detailed description of the response action. Describe the removal actions, decontamination actions, treatment system(s), physical or institutional control actions, and any actions for ecological considerations (ecological services analysis and compensatory restoration plans) that were conducted in each media and indicate if there were any differences between the actions taken and the actions proposed in the SIN or RAP.

## Confirmation of Response Action Objectives

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BASF constructed the former SWMA consisting of former Ponds 1A, 1B, 2A, and 2B in the 1960s and registered the former SWMA as RCRA-exempt non-hazardous wastewater treatment unit in 1968 (i.e., Notice of Registration or NOR Unit No. 010) to manage wastewater associated with the treatment unit (i.e., ~~RCRA-exempt Wastewater Treatment Unit NOR No. 06~~) of waste from the production of Terephthalic Acid (TPA), benzoic acid, dicamba, and methazole. Operation of the former ponds was initiated in 1968, and investigation of areas near the SWMA in the mid-1980s indicated groundwater impacts due to infiltration of water from one or more of the former Ponds. The operation of the former SWMA was terminated, and the unit was closed in 1988. Impacted soil/sediments in the former SWMA were remediated and the ponds were clean-closed to prevent any future release as documented in the RAP (BASF, 2008) and RCRA Facility Investigation (RFI) submitted in 1990 by Sandoz (Sandoz, 1990). BASF received a compliance plan in 1988 to address the release from the former SWMA via the operation of groundwater recovery systems for approximately 20 years (1988-2009) and frequent routine groundwater monitoring. The Corrective Action Program associated with the compliance plan incorporates a PMZ and groundwater monitoring for natural attenuation.

Additionally, Response actions specified in the RAP consisted of the following two components:

**Plume Management Zone:** A PMZ encompassing the historical groundwater PLCE zones identified in the previous groundwater monitoring reports under Compliance Plan CP-50219 for the former SWMA was established in the RAP (BASF, 2008; see Attachment 1A.1). The PMZ consists of seven wells including two AMP and five Alternate POE wells. AALs were established for the two AMP wells for benzene, chlorobenzene, and 2,4-dichlorophenol and were equal to the PCL for each COC. Additionally, Groundwater Protection Standards (GWPSs) were established in accordance with Compliance Plan CP-50219 to ensure the concentrations at the Alternate AMP and POE wells are protective of human health and environment. The GWPSs are based on the groundwater ingestion PCL in accordance with 30 TAC 350 calculated in November 2014 (TCEQ, 2015), and updated PCLs (May 2023 Tier 1 Residential PCL for groundwater ingestion) have not changed since the November 2014 PCLs. Therefore, the GWPSs established in the Compliance Plan CP-50219 are still applicable. The GWPSs have not been exceeded at any wells for any COC within or at the PMZ boundary. As discussed in the Executive Summary, the PMZ boundaries were recorded in the institutional controls filed with Jefferson County in Texas in November 2009.

**Institutional Control:** Institutional controls have been filed with the Jefferson County property records to restrict groundwater use within the PMZ in November 2009.

While not specifically mentioned in the RAP, semiannual groundwater monitoring conducted from January 2011 through January 2024 was used in this Response Action Completion Report (RACR) to establish COC concentration trends and confirm the efficacy of monitored natural attenuation (MNA) for control of affected groundwater plume and migration. As noted previously, BASF installed and operated a groundwater extraction system from 1988 to 2008, prior to implementation of the RAP. The RAP submitted in 2008 demonstrated that the groundwater conditions at former SWMA were favorable to degrading or impeding the migration of the COCs beyond the boundary of the PMZ (BASF, 2008). Concentration trends for barium, the only COC detected in any well from 2011 to 2024, were evaluated in this RACR using the Mann-Kendall statistical analysis (see Appendix 7 for description of the statistical analysis). Concentration versus time graphs and results of the trend analyses are provided in Attachments 1B.1 and 1B.2. A groundwater potentiometric surface map for January 2024 is provided in Attachments 1A.2 and Attachment 1A.3 summarizes groundwater monitoring results for barium in January 2024. Note that potentiometric surface maps and groundwater monitoring results from 2011 to 2023 have been submitted in previous reports, including semiannual groundwater monitoring reports.

<b>Confirmation of Response Action Objectives</b>	<b>RACR Worksheet 1.0</b>		<b>Page 10 of 21</b>
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Describe how the response action achieved the property-specific response objectives for the PCLE zone in each media in the context of the response objectives set forth in §350.32 or §350.33, as applicable. Explain how the response action was appropriate based on the hydrogeologic and COC characteristics. Describe any unprotective conditions that continued or resulted from the remedial actions and the actions taken to mitigate unprotective conditions.

#### Response Objective and Approach

The response action objectives for the affected groundwater-bearing unit were control of the plume in accordance with Remedy Standard B as specified by 30 TAC 350.33(a)(1). Control of the plume was achieved primarily via a PMZ and MNA in accordance with 30 TAC 350.33(f)(4), which maintained the COCs concentrations below the applicable action levels, prevented any affected groundwater from migrating beyond the boundaries of the established PMZ and prevented exposure to affected groundwater within the limits of the PMZ.

#### COC Characteristics

The primary COCs at the former SWMA are barium, benzene, chlorobenzene, 1,4-dichlorobenzene, 2,4-dichlorophenol, 2,6-dichlorophenol, phenol, silvex (2,4,5-TP), 2,4-dimethylphenol. Primary attenuation processes for these COCs include biodegradation (both aerobic and anaerobic), sorption, and/or dispersion.

#### Hydrogeologic Characteristics

The shallow groundwater bearing unit is classified as a Class 2 groundwater resource. There are no current uses of the groundwater in the vicinity of the affected property and there is no information to suggest any future uses of groundwater from the affected zone. The groundwater from the affected property does not discharge to the land surface, and thus there is no complete exposure pathway to wildlife. Additionally, there are no crops or physical structures located within the PMZ boundary and there is no indication that vegetation overlying the area is in any way stressed due to the presence of the COCs. Therefore, the risk for human exposure to the COCs in the shallow ground water is very low as there are no uses of the shallow groundwater in the vicinity of the site and COC concentrations in groundwater are below the GWPS and <sup>Air</sup>GW<sub>Inh-V</sub> PCLs.

#### Unprotective Conditions

There were no unprotective conditions that continued or resulted from the response actions.

If different from the information provided in the RAP, explain how the COCs were handled, treated, disposed, or transferred to another media and document that the response action did not result in any additional exposure conditions due to response action activities.

Not applicable.

Explain how the response action achieved the objectives within the reasonable time frame.

As proposed, the post-response action care consisting of semiannual groundwater monitoring for MNA has been conducted for a period of 13 years out of the 30 years. As noted previously, the SWMA was closed in 1987 (i.e., no wastes were received after 1987), and BASF installed and operated a groundwater extraction system from 1988 to 2008, prior to implementation of the RAP. The groundwater concentrations results obtained between 2011 and 2024 demonstrate the COC concentrations have been below the applicable action levels, and any affected groundwater within the PMZ has not migrated beyond its boundary in the past 13 years of groundwater monitoring. Therefore, BASF believes that they

## Confirmation of Response Action Objectives

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have achieved the response action objectives with a reasonable timeframe.

As a result, no further action is requested for the affected groundwater associated with the former SWMA.

Were physical controls used as part of the response action? ☐ Yes ☒ No

If yes, describe the type and purpose of the physical control and discuss how the physical control has proved effective.

Not applicable.

## Soil Response Action Objectives

When using removal and/or decontamination with controls or controls only, demonstrate that the physical control or combination of measures reliably contained COCs within and/or derived from the surface soil and subsurface soil PCLE zone materials over time.

There are no soil PCLE zones identified within the affected property.

Explain how the removal or decontamination action reduced the concentration of COCs to the critical surface soil and subsurface soil PCL throughout the soil PCLE zone and prevented COC concentrations above the critical soil PCLs from migrating beyond the original boundary of the soil PCLE zone.

Not applicable.

## Groundwater Response Action Objectives

Name of groundwater-bearing unit to which this information applies Upper-Most Ground Water-Bearing Unit

Repeat this section for each groundwater-bearing unit for which a different response action was conducted.

Groundwater classification ☐ 1 ☒ 2 ☐ 3

Was a modified groundwater response action used for any part of the groundwater PCLE zone (§350.33(f)(2), (3), or (4))? ☒ Yes ☐ No

If yes, complete the appropriate portions of this report.

Explain how the removal or decontamination actions reduced the concentration of COCs to the critical groundwater PCL throughout the groundwater PCLE zone and prevented COC concentrations above the critical groundwater PCL from migrating beyond the original boundary of the groundwater PCLE zone. If COC concentrations above the critical groundwater PCL ever migrated beyond the original boundary of the groundwater PCLE zone, explain the actions taken to address the increase in the PCLE zone.

The groundwater concentrations results obtained between 2011 and 2024 demonstrate the effectiveness of the natural attenuation process (i.e., biodegradation, sorption, and/or dispersion) coupled with the relatively low groundwater seepage velocity to maintain the COC concentrations below the respective action levels and prevent the migration of COC beyond original boundary of the groundwater PCLE zone at concentrations above the GWPSs. As such, the COC concentrations have been below the applicable

## Confirmation of Response Action Objectives

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action levels, demonstrate stable or decreasing concentration trends for recent data (see Attachments 1B.1 and 1B.2), and any affected groundwater within the PMZ has not migrated beyond its boundary in the past 13 years of groundwater monitoring.

Explain how the response action prevented COCs from migrating to air at concentrations above the PCLs for air if the groundwater-to-air PCLs ( $^{Air}GW_{Inh-V}$ ) were exceeded.

Not applicable. As documented in the previous groundwater monitoring reports associated with the former SWMA (e.g., semiannual progress reports, and RAP) and this RACR, maximum COC concentrations in groundwater are well below  $^{Air}GW_{Inh-V}$  PCLs. On this basis, the groundwater-to-air pathway is not a concern at the site.

Explain how the response action prevented COCs from migrating to surface water at concentrations above the PCLs for groundwater discharges to surface water if surface water was a factor.

Not applicable. The nearest surface water body is approximately 0.9 miles away from the affected property, and groundwater monitoring data demonstrate that the affected groundwater plumes, if any, are of limited extent and do not pose a threat to surface water discharge.

Explain how the response action prevented human and ecological receptor exposure to the groundwater PCLE zone.

Any groundwater PCLE zone is entirely located on-site and within the Affected Property boundary where groundwater is currently not used, and future use of groundwater is restricted by establishment of the PMZ and institutional controls. Site access is restricted since the site is located on an active chemical manufacturing facility. There is no potential for impact to surface water or sediments, since the nearest surface water body is approximately 0.9 mile from the PMZ. Accordingly, there is no risk of human or ecological receptor exposure to the groundwater PLCE zone.

## Waste Management

Describe the volume and final disposition or reuse location of waste or environmental media that was removed from the affected property during the response action, if not previously reported under STEERS. Provide copies of all manifests, other documentation of disposition, and landowner consent for reuse of soil in Appendix 8.

The only waste generated during PMZ and MNA response action activities has been purge water collected during semiannual monitoring events. All purge water removed during the MNA activities is disposed in the on-site wastewater treatment system.

<b>Plume Management Zone</b>	<b>RACR Worksheet 2.0</b> <b>Page 13 of 21</b>	
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Complete this worksheet when a PMZ was used as part of the response action. Include in Attachment 2A a map of the PMZ with alternate POE(s) and attenuation monitoring points identified and the current groundwater PCLE zone (if applicable). If a PMZ was not used, do not submit this worksheet.

Groundwater-bearing unit Shallow Groundwater  
Repeat this worksheet for each groundwater-bearing unit for which a PMZ was used.  
Groundwater classification X 2           3

Is/was NAPL present?      Yes      X No  
If so, describe how the response action achieved the performance criteria in §350.33(f)(4)(E).  

Not applicable.

If this is a Class 2 groundwater, explain how the response action ensured that leachate from the surface soil and subsurface soil PCLE zones did not increase concentration of COCs greater than the measured concentrations at time of RAP submittal. (§350.33(a)(2))  

Not applicable.

Provide documentation that the COCs did not migrate beyond the downgradient boundary of the PMZ at concentrations above the critical PCL. Include supporting documentation in Attachments 1A, 1B, and 2A.  

As shown on Attachment 1A.1, there is currently no PCLE zone within the established PMZ and historical groundwater concentration data collected during the post-response action care period (i.e., since 2011, see Table 4.7 in Appendix 4) indicate that COC concentrations have never been detected and/or exceeded their PCLs at any of the AMP and Alternate POE wells.

List the attenuation action level determined for each attenuation monitoring point. Illustrate the attenuation monitoring points, initial, maximum, and final groundwater PCLE zones (or groundwater concentrations if less than the critical PCL) on the map in Attachment 2A.

COC	Attenuation Monitoring Point (well number)	Attenuation Action Level <sup>1</sup> (mg/L)	Maximum concentration measured at the attenuation monitoring point: <b>January 2024 Results</b> (mg/L)
Barium	MW-8	2.0	<b>0.267</b>
	R-8	2.0	<b>0.221</b>
Benzene	MW-8	0.005	<0.00046
	R-8	0.005	<0.00046
Chlorobenzene	MW-8	0.1	<0.000455
	R-8	0.1	<0.000455

<b>Plume Management Zone</b>	<b>RACR Worksheet 2.0</b> <b>Page 14 of 21</b>	
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COC	Attenuation Monitoring Point (well number)	Attenuation Action Level <sup>1</sup> (mg/L)	Maximum concentration measured at the attenuation monitoring point: <b>January 2024 Results</b> (mg/L)
1,4-Dichlorobenzene	MW-8	0.075	<0.000449
	R-8	0.075	<0.000449
2,4-Dichlorophenol	MW-8	0.073	<0.000115
	R-8	0.073	<0.000115
2,6-Dichlorophenol	MW-8	0.024	<0.000126
	R-8	0.024	<0.000126
Phenol	MW-8	7.3	<0.000202
	R-8	7.3	<0.000202
Silvex (2,4,5-TP)	MW-8	0.05	<0.0000402
	R-8	0.05	<0.0000402
2,4-Dimethylphenol	MW-8	0.49	<0.000148
	R-8	0.49	<0.000148

**Note:**

1. Attenuation Action Levels (AALs) for Benzene, Chlorobenzene, 2,4-Dimethylphenol were developed in the 2008 RAP for this plume management zone (PMZ). Additionally, Groundwater Protection Standards are used in accordance with Compliance Plan CP-50219 and are based on Class 1 or Class 2 Groundwater ingestion Protective Concentration Level of 30 TAC 350 from November 2014.

<b>Technical Impracticability</b>	<b>RACR Worksheet 3.0      Page 15 of 21</b>	
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Use this worksheet to document the use of technical impracticability to modify the groundwater response objectives. Also complete Worksheet 2.0 to document the plume management zone for the area of technical impracticability. Include a map of the groundwater PCLE zone and area of technical impracticability in Attachment 3A. If technical impracticability was not used as part of the response action, do not submit this worksheet.

If additional information beyond that provided in the RAP is available, describe how it was determined that it was technically impractical to reduce the COC concentrations in groundwater to the critical PCLs. Describe the response actions taken that did not prove effective. Provide graphs in Attachment 1B to illustrate COC concentrations over time and with distance from the source for each response action that did not prove effective. Describe in Worksheet 1.0 the removal/decontamination actions that were conducted for any PCLE zone outside the area of technical impracticability.

Not applicable.

Did COCs above the critical PCL migrate beyond the area of technical impracticability and/or beyond the initial boundary of the PCLE zone?

☐ yes      ☐ no

If yes, explain the actions taken to mitigate the migration of COCs.

Not applicable.

# Institutional Controls

## RACR Worksheet 4.0

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Complete this worksheet if an institutional control will be or has been used as part of the response action. Include in Appendix 3 copies of filed institutional controls and drafts of the proposed institutional controls, copies of landowner concurrences, and a list of landowners from whom landowner concurrence will be requested.

Specify the property for which this applies. BASF Corporation, Beaumont, Texas

Repeat this worksheet for each different property for which an institutional control will be used.

Institutional Control	Type of Institutional Control <sup>3</sup>				Property Ownership		Anticipated or actual filing date <sup>4</sup>
	Deed notice	Restrictive covenant	VCP Certificate of Completion	Equivalent zoning or governmental ordinance	Check if pertinent tract of land is owned by the person	Check if the pertinent tract of land is owned by an innocent owner or operator	
Document use of commercial/industrial land use (§350.31(g))							
Document use of physical or institutional control under Remedy Standard B §350.31(g))	<b>X</b>				<b>X</b>		Filed on 17 Nov 2009
Document notice of on-going long term response action (§350.31(h))							
Document use of occupational inhalation criteria as RBELs (§350.74(b)(1))							
Document variance from the default exposure factors (§350.74(j)(2)(L))							
Document the use of a non-default soil exposure area (§350.51(l)(3)&(4))							
Document WCU exclusion area (§350.33(f)(2))							
Document establishing a PMZ (§350.33(f)(4)(C)(I))	<b>X</b>				<b>X</b>		Filed on 17 Nov 2009
Document the demonstration of technical impracticability (§350.33(f)(3)(F))							
Relocation of soils containing COCs for reuse (§350.36(b)(4) and (c)(4))							
Other (specify)							

<sup>3</sup> Check the appropriate box(es) to indicate the type of institutional control required for the response action.

<sup>4</sup> Specify date or amount of time after RAP approval.

<b>Performance Measures and Problems</b>	<b>RACR Worksheet 5.0</b>		<b>Page 17 of 21</b>
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### Performance Measures

List and describe the performance measures for each environmental medium containing a PCLE zone that were used to determine if reasonable progress is being made by the response action in a timely manner. Provide documentation that these performance measures were met. Attach additional information if necessary.

The limited potential for any exposure at this site, the biodegradable nature and/or low mobility of the COCs make the use of a PMZ at this site a viable response action. The performance of the PMZ and MNA response action were measured in the following two ways: i) direct comparison of groundwater sample results to the GWPSs as approved in the Compliance Plan CP-50219; and ii) concentration versus time statistical evaluation of plume ~~trends-trends.~~

**Concentration Evaluation:** As previously mentioned, all AMP and Alternate POE wells have never had a detection of benzene, chlorobenzene, 1,4-dichlorobenzene, 2,4-dichlorophenol, 2,6-dichlorophenol, phenol, Silvex (2,4,5-T), 2,4-dimethylphenol in the 13-year monitoring history, with the exception of low detections of benzene and phenol in January 2022 at Alternate POE well MW-30 at concentrations well below their GWPSs. Additionally, barium has never been detected at any AMP and Alternate POE wells at concentrations above the GWPS. Therefore, current and historical groundwater concentrations do not evidence the potential for migration of COCs beyond the PMZ, and the response action objectives outlined in the RAP have been achieved.

**Concentration vs. Time Analysis:** Results from the groundwater sampling conducted from January 2011 to January 2024 were statistically evaluated using the Mann-Kendall Test. Mann-Kendall Test (a non-parametric test) was used to evaluate the stability conditions of the groundwater plumes (i.e., stable, decreasing, or increasing) based on concentration trends in individual wells during two time periods (i.e., 2011-2024, representing the full data set and 2019-2024, representing the last 5-years of data). Details of the Mann-Kendall statistical methods are presented in Appendix 7, and results of the Mann-Kendall evaluation for barium, which was the only COC consistently detected, are provided on Attachments 1B.1 and 1B.2. Mann-Kendall concentration trend analysis was not computed for the other COCs since Mann-Kendall trend analyses are not meaningful if the majority of the results for a well are non-detect.

Trend analyses for barium at AMP wells MW-8 and R-8 indicate increasing and decreasing trends, respectively, when considering the full data set between January 2011 and January 2024. However, the barium concentration trends at those AMP wells show probably decreasing and stable trends, respectively, when considering data for the last five years (i.e., 2019 through 2024). Furthermore, all barium concentrations detected at MW-8 and R-8 were well below the GWPS of 2.0 mg/L. Similarly, trend analyses for barium at the five alternate POE wells indicate mostly increasing for MW-9, MW-10, and MW-11 and decreasing concentration trends at MW-12 and MW-30 for the full data set. When considering the last five years (i.e., 2019 through 2024) of data, the barium concentration trends at those POE wells show probably decreasing or stable trends. Again, all barium concentrations detected at the five alternate POE wells were well below the GWPS of 2.0 mg/L, thus demonstrating that COCs are not migrating beyond the PMZ, and the response action objectives outlined in the RAP have been achieved.

### Problems

Complete the table for the response action. When the response action consisted of several components or multiple actions, complete one table for each major component or action.

<b>Performance Measures and Problems</b>	<b>RACR Worksheet 5.0</b> <b>Page 18 of 21</b>	
	ID No. SWR No. 30053	Report Date: <del>8 April 2024</del> <del>Revised: 5 August 2024, Rev. 1</del>

Response Action Name/Designation: PMZ with Institutional Controls

List the problems that were encountered during the response action, describe the impact of each problem, and the response to the problem.

Description of the Problem	Impact	Did this cause a response action failure?		Corrective Response
		Yes	No	
Not applicable.				

<b>Operation and Maintenance</b>	<b>RACR Worksheet 6.0</b>	<b>Page 19 of 21</b>
	ID No. SWR No. 30053	Report Date: <del>8 April 2024</del> <del>Revised: 5 August 2024,</del> <u>Rev. 1</u>

Use this worksheet to describe the operation and maintenance (O&M) activities conducted for each response action.

Response Action Name/Designation: Not applicable.  
List all portions of the response action to which this information applies. Repeat this worksheet for each major component or operation.

Describe the O&M and inspection activities that were conducted to operate and maintain response action components.

Not applicable.

## Post-Response Action Care

RACR Worksheet 7.0

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ID No. SWR No. 30053

Report Date:

8 April 2024

~~Revised: 5 August 2024, Rev. 1~~

Complete this worksheet only if the information has changed from that submitted in the RAP. If the information does not apply or if the RAP contains the most current information, do not submit this worksheet.

What is the proposed initial post-response action care period? (default 30 0 years yr.)

If the proposed initial post-response action care period is less than 30 years, provide a technical justification in accordance with §350.33(h).

Migration of the plume, if present, beyond the boundaries of the PMZ will not occur due to the effective natural attenuation processes (i.e., biodegradation, sorption, and dispersion) present in shallow groundwater at the former SWMA and the relatively low groundwater seepage velocity. Establishment of the PMZ and institutional controls prevent groundwater use and further protect human and ecological receptors. In addition, the affected groundwater is contained wholly on the BASF property, which is an active chemical manufacturing facility and is more than 0.9 mile from the nearest surface water body. Finally, COCs have never been detected and/or exceeded the GWPS at the Alternate POE wells; therefore, confirming that further migration of affected groundwater is highly unlikely.

What is the foreseeable land use during the post-response action care period? Commercial/Industrial

Describe how the future use of the property will not compromise the integrity of the physical controls, will not interfere with the function of the monitoring systems, will not pose a threat to human health or the environment, and will be in accordance with any institutional controls.

Future land use will continue to remain as a commercial/industrial property, and the institutional controls establishing the PMZ will remain in place. Therefore, there is no threat to human health or the environment.

Describe the proposed post-response action care activities. Describe the type of monitoring and/or inspections to be performed. Discuss the rationale for not including any COC(s) analyzed during the response action, monitoring or sampling point location, frequency of monitoring and/or inspections, and the duration of the monitoring program.

As discussed in the Executive Summary of this RACR, BASF respectfully requests that no further post-response action care be required for the affected groundwater plume at the former SWMA, as BASF believes that the groundwater data collected from the semiannual groundwater monitoring program since January 2011 (i.e., past 13 years of data) confirm that the response action objectives and conditions to terminate the Corrective Action Program under the Compliance Plan (-CP-50219) have been met.

Will PRAC sampling procedures be the same as those as previously documented for monitoring and/ or confirmation sampling? **Not applicable.** Yes No  
If no, provide in Appendix 6 a description of the monitoring or sampling collection procedures to be conducted during the post-response action care period.

### Cost Estimate

Complete this portion of the form only if this information has changed from that submitted in the RAP.

Specify the physical control to which this information applies: Groundwater monitoring

Complete this worksheet for each physical control that will be used as part of the response action.

## Post-Response Action Care

RACR Worksheet 7.0

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~~8 April 2024~~

~~Revised: 5 August~~  
~~2024, Rev. 1~~

What is the total estimated annual cost of O&M for the PRAC period? \$0 per year

What is the total estimated cost for a third party to perform PRAC activities? \$0 per year

Identify the type of financial assurance mechanism to be used, and the contact person managing fiduciary responsibility, if known.

Financial assurance for post-closure monitoring is required by the Compliance Plan associated with Hazardous Waste Permit No. 50219. BASF is proposing to discontinue post-closure monitoring; therefore, BASF is requesting that the financial assurance associated with the Compliance Plan is no longer required.

Does the person meet the criteria and definition of a small business? (see §350.33(n))      Yes   X   No

If yes and the person desires to pursue the reduced amount of financial assurance, attach a legally binding affidavit. Include in the affidavit the information requested in 30 TAC §350.33(l), (m), and (n).

## **Class 3 Hazardous Waste Permit Modification Application**

Hazardous Waste Permit No. 50219

### **Technical NOD 1 Response**

# ***REPLACEMENT PAGES***

Executive Summary	Page 1 of 19	
	ID No. SWR No. 30053	Report Date: 5 August 2024, Rev. 1

## TEXAS COMMISSION ON ENVIRONMENTAL QUALITY Response Action Completion Report

### Cover Page

**Regulatory ID number** (Solid waste registration number, VCP ID number, etc) SWR 30053  
 check one: ☒ Initial RACR submittal for this on-site property ☐ Subsequent RACR submittal  
 Report date: 5 August 2024, Rev. 1 TCEQ Region No.: 10

**TCEQ Program** (check one)

☒ Corrective Action (Mail Code 127) ☐ Superfund PRP Lead (Mail Code 143)  
☐ Voluntary Cleanup Program (Mail Code 221) ☐ Municipal Solid Waste Permits (Mail Code 124)  
☐ Petroleum Storage Tank Program (Mail Code 137)

**On-Site Property Information**

On-Site Property Name: BASF Corporation Agro Plant (BASF)  
 Street no. 14385 Pre dir: W Street name: Port Arthur Street type: Road Post dir:   
 City: Beaumont County: Jefferson County Code: 123 Zip: 77705  
 Nearest street intersection or location description:

Latitude: Degrees, Minutes, Seconds OR Decimal Degrees (circle one) North 29.969077  
 Longitude: Degrees, Minutes, Seconds OR Decimal Degrees (circle one) West 94.0583878

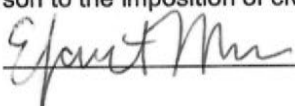
**Off-Site Affected Property Information**

Off-Site Affected Property Name: None  
 Street no.  Pre dir:  Street name:  Street type:  Post dir:   
 City:  County:  County Code:  Zip:   
☐ Check if there are no off-site properties affected

**Contact Person Information and Acknowledgement**

Person (or company) Name: BASF Corporation  
 Contact Person: Elizabeth Monroe Title: Site Director  
 Mailing Address: 14385 West Port Arthur Road  
 City: Beaumont State: TX Zip: 77705 E-mail address: [REDACTED]  
 Phone: 409-981-5139 Fax:

By my signature below, I acknowledge the requirement of §350.2(a) that no person shall submit information to the executive director or to parties who are required to be provided information under this chapter which they know or reasonably should have known to be false or intentionally misleading, or fail to submit available information which is critical to the understanding of the matter at hand or to the basis of critical decisions which reasonably would have been influenced by that information. Violation of this rule may subject a person to the imposition of civil, criminal, or administrative penalties.

Signature of Person  Name, print: Elizabeth Monroe Date: 8/5/24

<b>Executive Summary</b>	<b>Page 2 of 19</b>	
	<b>ID No. SWR No. 30053</b>	<b>Report Date: 5 August 2024, Rev. 1</b>

Check the reports/forms submitted:

**Remedy Standard A**

Self-Implementation Notice Submittal date: \_\_\_\_\_  
 Response Action Plan - Approval date: \_\_\_\_\_

**Remedy Standard B**

☒ Response Action Plan - Approval date: 4 September 2009

List all media (surface soil, subsurface soil, groundwater, sediment, surface water, air) that contained or contains a PCLE zone and specify the response action taken for each media. Indicate the type of removal, decontamination, physical control, or institutional control action that was used in the response action. If a media with a PCLE zone was not addressed in the response action, provide an explanation below.

Media	COCs <sup>1</sup>	Removal	Decontamination	Physical Control	Institutional Control	Modified Response Objective <sup>2</sup>		
						PMZ	WCU	TI
Groundwater	VOCs and SVOCs				X	X		

Note: VOCs: Benzene, Chlorobenzene, 1,4-Dichlorobenzene; SVOCs: 2,4-Dichlorophenol, 2,4-Dimethylphenol, 2,6-Dichlorophenol, Phenol; in addition, Silvex (2,4,5-T) and barium have also been sampled as part of the Compliance Plan.

Is there a media that contains a PCLE zone that was not addressed in the response action? yes ☐ no ☒  
 If yes, provide justification for not addressing the PCLE zone in the response action.

Current land use of the on-site affected property: ☐ Residential ☒ Commercial/industrial  
 Projected future land use of the on-site property (if known): ☐ Residential ☒ Commercial/industrial

Explain why you believe the response action to be complete.

BASF Corporation Agro Plant (BASF) implemented the response actions specified in the Response Action Plan (RAP; BASF, 2008) as approved by the TCEQ-issued Major Compliance Plan Amendment (TCEQ, 2009), subsequently updated in the Compliance Plan renewal (incorporated as Section XI of Hazardous Waste Permit No. 50219) on 10 September 2015 (TCEQ, 2015). The response actions consisted of i) establishing a Plume Management Zone (PMZ) around the PCLE zones identified in previous compliance monitoring reports associated the former Waste Management Area (SWMA) consisting of former Ponds 1A, 1B, 2A, and 2B; ii) conducting post-response action care groundwater monitoring on a semiannual basis to establish constituent of concern (COC) concentration trends and iii) filing an institutional control (deed restriction) on the affected property to restrict groundwater use within the PMZ. The overall response action objective of these activities was to control groundwater in accordance with 30 TAC 350.33 (Remedy Standard B). Note that the SWMA was closed in 1987 (i.e., no wastes were received after 1987), and BASF installed and operated a groundwater extraction system from 1988 to 2008, prior to implementation of the RAP.

<sup>1</sup> Specify either a specific COC or, if the response action is the same for all COCs in one type, specify the type of COC (for example, VOCs, SVOCs, metals).

<sup>2</sup> If a modified groundwater response objective was used, check the type(s) of modifications.

<b>Executive Summary</b>	<b>Page 3 of 19</b>	
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Semiannual groundwater monitoring data collected by BASF from 2011 to 2024 has demonstrated that control of the groundwater plume has been achieved. During this time period there have been no detections of the COCs identified in the RAP (benzene, chlorobenzene, and 2,4-dichlorophenol) at any of the Alternate Monitoring Point (AMP) or Alternate Point of Exposure (POE) monitoring wells with the exception of low-level detections of benzene and phenol in January 2022 at Alternate POE well MW-30 at concentrations well below their Groundwater Water Protection Standards (GWPS's). Additionally, of the other COCs identified in the Compliance Plan (i.e., barium, 1,4-dichlorobenzene, 2,6-dichlorophenol, phenol, silvex, and 2,4-dimethylphenol), only naturally-occurring barium has been detected at the AMP and POE monitoring wells. The barium concentrations at AMP and POE monitoring wells have been detected at concentrations well below the GWPS of 2.0 mg/L (equivalent to the Protective Concentration Level; PCL). As a result, there are currently no PCLE zones present at the site within the established PMZ.

Based on the information summarized above and detailed within this report, BASF believes site conditions meet the following condition based on 30 TAC 350.33(i)(3):

*"The demonstration of no threat to human health or the environment shall be made by adequately documenting one of the following conditions:*

*(3) an affected property contains only a groundwater PCLE zone and such groundwater PCLE zone has been demonstrated to be reducing in size and to have boundaries which are sufficiently smaller than the boundaries of an institutional control so as to preclude any potential for the groundwater PCLE zone to migrate beyond the boundaries of the institutional control considering both natural hydrogeologic conditions and changes to hydraulic gradients by off-site activities;"*

Additionally, the information summarized above and detailed within this report demonstrate that COCs associated with the former SWMA did not exceed their respective GWPSs during the past 3 years of semiannual groundwater monitoring (i.e., January 2021 through January 2024) at any of the AMP and Alternate POE monitoring wells. Therefore, site conditions have met the requirements to discontinue the Corrective Action Program for the former SWMA in accordance with Provision XI.D.6.e of Compliance Plan CP-50219:

*"If the GWPS established in this Compliance Plan for SMWUs and/or AOCs listed in CP Table I, Item C have not been exceeded for three (3) consecutive years in all wells for that unit, then the permittee may apply for a modification or amendment to the Compliance Plan to terminate the Corrective Action Program for that unit."*

BASF respectfully requests to discontinue post-response action care monitoring and the Corrective Action Program at the SWMA, as there is currently no PCLE zone within the established PMZ, concentration trends are generally stable or decreasing, and all AMP and Alternate POE wells have never had a detection and/or exceedance of the GWPS or PCLs for any of the site-specific COCs in the past 13 years.

# Checklist for Report Completeness

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ID No. SWR No. 30053

Report Date: 5 August  
2024, Rev. 1

## Checklist for Report Completeness

Use this checklist to determine the portions of the form that must be submitted for this report. Answer all questions by checking Yes or No. If the answer is Yes include that portion of the report. If the answer is No, do not complete or submit that portion of the report. All form contents that are marked "Required" must be submitted. Form contents marked with an asterisk (\*) are not included in the blank form and are to be provided by the person.

Report Contents

	Required	<b>Cover Page</b>	<input checked="" type="checkbox"/>
	Required	<b>Executive Summary</b>	<input checked="" type="checkbox"/>
	Required	<b>Checklist for Report Completeness</b>	<input checked="" type="checkbox"/>
	Required	<b>Worksheet 1.0</b> Confirmation of Response Action Objectives	<input checked="" type="checkbox"/>
	Required	<b>Attachment 1A*</b> Maps and Cross Sections	<input checked="" type="checkbox"/>
	Required	<b>Attachment 1B*</b> Graphs	<input checked="" type="checkbox"/>
	Required	<b>Attachment 1C*</b> Response Action Diagrams	<input checked="" type="checkbox"/>
No <input type="checkbox"/>	<input checked="" type="checkbox"/> Yes	<b>Worksheet 2.0</b> Plume Management Zone	<input checked="" type="checkbox"/>
		<b>Attachment 2A*</b> Map of Plume Management Zone	<input checked="" type="checkbox"/>
No <input checked="" type="checkbox"/>	<input type="checkbox"/> Yes	<b>Worksheet 3.0</b> Technical Impracticability	<input type="checkbox"/>
		<b>Attachment 3A*</b> Map of Technical Impracticability Area	<input type="checkbox"/>
No <input type="checkbox"/>	<input checked="" type="checkbox"/> Yes	<b>Worksheet 4.0</b> Institutional Controls	<input checked="" type="checkbox"/>
	Required	<b>Worksheet 5.0</b> Performance Measures and Problems	<input checked="" type="checkbox"/>
No <input checked="" type="checkbox"/>	<input type="checkbox"/> Yes	<b>Worksheet 6.0</b> Operation and Maintenance	<input type="checkbox"/>
No <input checked="" type="checkbox"/>	<input type="checkbox"/> Yes	<b>Worksheet 7.0</b> Post-Response Action Care	<input checked="" type="checkbox"/>
No <input type="checkbox"/>	<input checked="" type="checkbox"/> Yes	<b>Appendix 1*</b> References	<input checked="" type="checkbox"/>
No <input checked="" type="checkbox"/>	<input type="checkbox"/> Yes	<b>Appendix 2*</b> ESA and Compensatory Restoration	<input type="checkbox"/>
No <input type="checkbox"/>	<input checked="" type="checkbox"/> Yes	<b>Appendix 3*</b> Institutional Controls and Landowner Concurrence	<input checked="" type="checkbox"/>

Report Contents

No <input type="checkbox"/>	Is there data or boring/monitor well information not previously submitted?	<input checked="" type="checkbox"/> Yes	<b>Appendix 4*</b> Data Tables, Boring Logs, and Well Completions	<input checked="" type="checkbox"/>
No <input checked="" type="checkbox"/>	Did sampling procedures differ from those described in the RAP?	<input type="checkbox"/> Yes	<b>Appendix 5*</b> Sampling Procedures	<input type="checkbox"/>
No <input type="checkbox"/>	Has any sampling been conducted for which the analytical results were not previously submitted?	<input checked="" type="checkbox"/> Yes	<b>Appendix 6*</b> Laboratory Data Packages	<input checked="" type="checkbox"/>
No <input type="checkbox"/>	Were statistics or geostatistics used in the response action?	<input checked="" type="checkbox"/> Yes	<b>Appendix 7*</b> Statistical Methodology	<input checked="" type="checkbox"/>
No <input checked="" type="checkbox"/>	Were any wastes generated that were not reported through STEERS?	<input type="checkbox"/> Yes	<b>Appendix 8*</b> Waste Disposition	<input type="checkbox"/>

<b>Confirmation of Response Action Objectives</b>	<b>RACR Worksheet 1.0</b>		<b>Page 6 of 19</b>
	<b>ID No. SWR No. 30053</b>	<b>Report Date: 5 August 2024, Rev. 1</b>	

Use this worksheet to describe the attainment of the response action objectives in each media.

### Response Action Objectives

What was the selected remedy standard for this affected property?           A              X   B

List the environmental media to which this applies    Shallow groundwater

Repeat this section for each medium that had a different response action objective.

Provide a detailed description of the response action. Describe the removal actions, decontamination actions, treatment system(s), physical or institutional control actions, and any actions for ecological considerations (ecological services analysis and compensatory restoration plans) that were conducted in each media and indicate if there were any differences between the actions taken and the actions proposed in the SIN or RAP.

Confirmation of Response Action Objectives	RACR Worksheet 1.0 Page 7 of 19	
	ID No. SWR No. 30053	Report Date: 5 August 2024, Rev. 1

BASF constructed the former SWMA consisting of former Ponds 1A, 1B, 2A, and 2B in the 1960s and registered the former SWMA as RCRA-exempt non-hazardous wastewater treatment unit in 1968 (i.e., Notice of Registration or NOR Unit No. 010) to manage wastewater associated with the treatment unit (i.e., RCRA-exempt Wastewater Treatment Unit NOR No. 06) of waste from the production of Terephthalic Acid (TPA), benzoic acid, dicamba, and methazole. Operation of the former ponds was initiated in 1968, and investigation of areas near the SWMA in the mid-1980s indicated groundwater impacts due to infiltration of water from one or more of the former Ponds. The operation of the former SWMA was terminated, and the unit was closed in 1988. Impacted soil/sediments in the former SWMA were remediated and the ponds were clean-closed to prevent any future release as documented in the RAP (BASF, 2008) and RCRA Facility Investigation (RFI) submitted in 1990 by Sandoz (Sandoz, 1990). BASF received a compliance plan in 1988 to address the release from the former SWMA via the operation of groundwater recovery systems for approximately 20 years (1988-2009) and routine groundwater monitoring. The Corrective Action Program associated with the compliance plan incorporates a PMZ and groundwater monitoring for natural attenuation.

Additionally, response actions specified in the RAP consisted of the following two components:

**Plume Management Zone:** A PMZ encompassing the historical groundwater PLCE zones identified in the previous groundwater monitoring reports under Compliance Plan CP-50219 for the former SWMA was established in the RAP (see Attachment 1A.1). The PMZ consists of seven wells including two AMP and five Alternate POE wells. AALs were established for the two AMP wells for benzene, chlorobenzene, and 2,4-dichlorophenol and were equal to the PCL for each COC. Additionally, Groundwater Protection Standards (GWPSs) were established in accordance with Compliance Plan CP-50219 to ensure the concentrations at the Alternate AMP and POE wells are protective of human health and environment. The GWPSs are based on the groundwater ingestion PCL in accordance with 30 TAC 350 calculated in November 2014 (TCEQ, 2015), and updated PCLs (May 2023 Tier 1 Residential PCL for groundwater ingestion) have not changed since the November 2014 PCLs. Therefore, the GWPSs established in the Compliance Plan CP-50219 are still applicable. The GWPSs have not been exceeded at any wells for any COC within or at the PMZ boundary. As discussed in the Executive Summary, the PMZ boundaries were recorded in the institutional controls filed with Jefferson County in Texas in November 2009.

**Institutional Control:** Institutional controls have been filed with the Jefferson County property records to restrict groundwater use within the PMZ in November 2009.

While not specifically mentioned in the RAP, semiannual groundwater monitoring conducted from January 2011 through January 2024 was used in this Response Action Completion Report (RACR) to establish COC concentration trends and confirm the efficacy of monitored natural attenuation (MNA) for control of affected groundwater plume and migration. As noted previously, BASF installed and operated a groundwater extraction system from 1988 to 2008, prior to implementation of the RAP. The RAP submitted in 2008 demonstrated that the groundwater conditions at former SWMA were favorable to degrading or impeding the migration of the COCs beyond the boundary of the PMZ (BASF, 2008). Concentration trends for barium, the only COC detected in any well from 2011 to 2024, were evaluated in this RACR using the Mann-Kendall statistical analysis (see Appendix 7 for description of the statistical analysis). Concentration versus time graphs and results of the trend analyses are provided in Attachments 1B.1 and 1B.2. A groundwater potentiometric surface map for January 2024 is provided in Attachments 1A.2 and Attachment 1A.3 summarizes groundwater monitoring results for barium in January 2024. Note that potentiometric surface maps and groundwater monitoring results from 2011 to 2023 have been submitted in previous reports, including semiannual groundwater monitoring reports.

Describe how the response action achieved the property-specific response objectives for the PCLE zone in each media in the context of the response objectives set forth in §350.32 or §350.33, as applicable.

<b>Confirmation of Response Action Objectives</b>	<b>RACR Worksheet 1.0</b>		<b>Page 8 of 19</b>
	<b>ID No. SWR No. 30053</b>	<b>Report Date: 5 August 2024, Rev. 1</b>	

Explain how the response action was appropriate based on the hydrogeologic and COC characteristics. Describe any unprotective conditions that continued or resulted from the remedial actions and the actions taken to mitigate unprotective conditions.

#### Response Objective and Approach

The response action objectives for the affected groundwater-bearing unit were control of the plume in accordance with Remedy Standard B as specified by 30 TAC 350.33(a)(1). Control of the plume was achieved primarily via a PMZ and MNA in accordance with 30 TAC 350.33(f)(4), which maintained the COCs concentrations below the applicable action levels, prevented any affected groundwater from migrating beyond the boundaries of the established PMZ and prevented exposure to affected groundwater within the limits of the PMZ.

#### COC Characteristics

The primary COCs at the former SWMA are barium, benzene, chlorobenzene, 1,4-dichlorobenzene, 2,4-dichlorophenol, 2,6-dichlorophenol, phenol, silvex (2,4,5-TP), 2,4-dimethylphenol. Primary attenuation processes for these COCs include biodegradation (both aerobic and anaerobic), sorption, and/or dispersion.

#### Hydrogeologic Characteristics

The shallow groundwater bearing unit is classified as a Class 2 groundwater resource. There are no current uses of the groundwater in the vicinity of the affected property and there is no information to suggest any future uses of groundwater from the affected zone. The groundwater from the affected property does not discharge to the land surface, and thus there is no complete exposure pathway to wildlife. Additionally, there are no crops or physical structures located within the PMZ boundary and there is no indication that vegetation overlying the area is in any way stressed due to the presence of the COCs. Therefore, the risk for human exposure to the COCs in the shallow ground water is very low as there are no uses of the shallow groundwater in the vicinity of the site and COC concentrations in groundwater are below the GWPS and <sup>Air</sup>GW<sub>Inh-V</sub> PCLs.

#### Unprotective Conditions

There were no unprotective conditions that continued or resulted from the response actions.

If different from the information provided in the RAP, explain how the COCs were handled, treated, disposed, or transferred to another media and document that the response action did not result in any additional exposure conditions due to response action activities.

Not applicable.

Explain how the response action achieved the objectives within the reasonable time frame.

As proposed, the post-response action care consisting of semiannual groundwater monitoring for MNA has been conducted for a period of 13 years out of the 30 years. As noted previously, the SWMA was closed in 1987 (i.e., no wastes were received after 1987), and BASF installed and operated a groundwater extraction system from 1988 to 2008, prior to implementation of the RAP. The groundwater concentrations results obtained between 2011 and 2024 demonstrate the COC concentrations have been below the applicable action levels, and any affected groundwater within the PMZ has not migrated beyond its boundary in the past 13 years of groundwater monitoring. Therefore, BASF believes that they have achieved the response action objectives with a reasonable timeframe.

As a result, no further action is requested for the affected groundwater associated with the former SWMA.

<b>Confirmation of Response Action Objectives</b>	<b>RACR Worksheet 1.0</b>		<b>Page 9 of 19</b>
	<b>ID No. SWR No. 30053</b>	<b>Report Date: 5 August 2024, Rev. 1</b>	

Were physical controls used as part of the response action?      ☐ Yes    ☒ No  
 If yes, describe the type and purpose of the physical control and discuss how the physical control has proved effective.

Not applicable.

### Soil Response Action Objectives

When using removal and/or decontamination with controls or controls only, demonstrate that the physical control or combination of measures reliably contained COCs within and/or derived from the surface soil and subsurface soil PCLE zone materials over time.

There are no soil PCLE zones identified within the affected property.

Explain how the removal or decontamination action reduced the concentration of COCs to the critical surface soil and subsurface soil PCL throughout the soil PCLE zone and prevented COC concentrations above the critical soil PCLs from migrating beyond the original boundary of the soil PCLE zone.

Not applicable.

### Groundwater Response Action Objectives

Name of groundwater-bearing unit to which this information applies      Upper-Most Ground Water-Bearing Unit

Repeat this section for each groundwater-bearing unit for which a different response action was conducted.

Groundwater classification	1	X	2	3
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Was a modified groundwater response action used for any part of the groundwater PCLE zone (§350.33(f)(2), (3), or (4))?      ☒ Yes    ☐ No

If yes, complete the appropriate portions of this report.

Explain how the removal or decontamination actions reduced the concentration of COCs to the critical groundwater PCL throughout the groundwater PCLE zone and prevented COC concentrations above the critical groundwater PCL from migrating beyond the original boundary of the groundwater PCLE zone. If COC concentrations above the critical groundwater PCL ever migrated beyond the original boundary of the groundwater PCLE zone, explain the actions taken to address the increase in the PCLE zone.

The groundwater concentrations results obtained between 2011 and 2024 demonstrate the effectiveness of the natural attenuation process (i.e., biodegradation, sorption, and/or dispersion) coupled with the relatively low groundwater seepage velocity to maintain the COC concentrations below the respective action levels and prevent the migration of COC beyond original boundary of the groundwater PCLE zone at concentrations above the GWPSs. As such, the COC concentrations have been below the applicable action levels, demonstrate stable or decreasing concentration trends for recent data (see Attachments 1B.1 and 1B.2), and any affected groundwater within the PMZ has not migrated beyond its boundary in the past 13 years of groundwater monitoring.

Explain how the response action prevented COCs from migrating to air at concentrations above the PCLs for air if the groundwater-to-air PCLs (<sup>Air</sup>GW<sub>Inh-V</sub>) were exceeded.

<b>Confirmation of Response Action Objectives</b>	<b>RACR Worksheet 1.0</b>		<b>Page 10 of 19</b>
	<b>ID No. SWR No. 30053</b>	<b>Report Date: 5 August 2024, Rev. 1</b>	

Not applicable. As documented in the previous groundwater monitoring reports associated with the former SWMA (e.g., semiannual progress reports, and RAP) and this RACR, maximum COC concentrations in groundwater are well below <sup>Air</sup>GW<sub>Inh-V</sub> PCLs. On this basis, the groundwater-to-air pathway is not a concern at the site.

Explain how the response action prevented COCs from migrating to surface water at concentrations above the PCLs for groundwater discharges to surface water if surface water was a factor.

Not applicable. The nearest surface water body is approximately 0.9 miles away from the affected property, and groundwater monitoring data demonstrate that the affected groundwater plumes, if any, are of limited extent and do not pose a threat to surface water discharge.

Explain how the response action prevented human and ecological receptor exposure to the groundwater PCLE zone.

Any groundwater PCLE zone is entirely located on-site and within the Affected Property boundary where groundwater is currently not used, and future use of groundwater is restricted by establishment of the PMZ and institutional controls. Site access is restricted since the site is located on an active chemical manufacturing facility. There is no potential for impact to surface water or sediments, since the nearest surface water body is approximately 0.9 mile from the PMZ. Accordingly, there is no risk of human or ecological receptor exposure to the groundwater PLCE zone.

## Waste Management

Describe the volume and final disposition or reuse location of waste or environmental media that was removed from the affected property during the response action, if not previously reported under STEERS. Provide copies of all manifests, other documentation of disposition, and landowner consent for reuse of soil in Appendix 8.

The only waste generated during PMZ and MNA response action activities has been purge water collected during semiannual monitoring events. All purge water removed during the MNA activities is disposed in the on-site wastewater treatment system.

<h1>Plume Management Zone</h1>	<b>RACR Worksheet 2.0</b> <b>Page 11 of 19</b>	
	<b>ID No. SWR No. 30053</b>	<b>Report Date: 5 August 2024, Rev. 1</b>

Complete this worksheet when a PMZ was used as part of the response action. Include in Attachment 2A a map of the PMZ with alternate POE(s) and attenuation monitoring points identified and the current groundwater PCLE zone (if applicable). If a PMZ was not used, do not submit this worksheet.

Groundwater-bearing unit Shallow Groundwater  
 Repeat this worksheet for each groundwater-bearing unit for which a PMZ was used.  
 Groundwater classification   X   2             3

Is/was NAPL present?             Yes        X   No  
 If so, describe how the response action achieved the performance criteria in §350.33(f)(4)(E).

Not applicable.

If this is a Class 2 groundwater, explain how the response action ensured that leachate from the surface soil and subsurface soil PCLE zones did not increase concentration of COCs greater than the measured concentrations at time of RAP submittal. (§350.33(a)(2))

Not applicable.

Provide documentation that the COCs did not migrate beyond the downgradient boundary of the PMZ at concentrations above the critical PCL. Include supporting documentation in Attachments 1A, 1B, and 2A.

As shown on Attachment 1A.1, there is currently no PCLE zone within the established PMZ and historical groundwater concentration data collected during the post-response action care period (i.e., since 2011, see Table 4.7 in Appendix 4) indicate that COC concentrations have never been detected and/or exceeded their PCLs at any of the AMP and Alternate POE wells.

List the attenuation action level determined for each attenuation monitoring point. Illustrate the attenuation monitoring points, initial, maximum, and final groundwater PCLE zones (or groundwater concentrations if less than the critical PCL) on the map in Attachment 2A.

COC	Attenuation Monitoring Point (well number)	Attenuation Action Level <sup>1</sup> (mg/L)	Maximum concentration measured at the attenuation monitoring point: <b>January 2024 Results</b> (mg/L)
Barium	MW-8	2.0	<b>0.267</b>
	R-8	2.0	<b>0.221</b>
Benzene	MW-8	0.005	<0.00046
	R-8	0.005	<0.00046
Chlorobenzene	MW-8	0.1	<0.000455
	R-8	0.1	<0.000455
1,4-Dichlorobenzene	MW-8	0.075	<0.000449
	R-8	0.075	<0.000449

<b>Plume Management Zone</b>	<b>RACR Worksheet 2.0</b> <b>Page 12 of 19</b>	
	<b>ID No. SWR No. 30053</b>	<b>Report Date: 5 August 2024, Rev. 1</b>

COC	Attenuation Monitoring Point (well number)	Attenuation Action Level <sup>1</sup> (mg/L)	Maximum concentration measured at the attenuation monitoring point: <b>January 2024 Results</b> (mg/L)
2,4-Dichlorophenol	MW-8	0.073	<0.000115
	R-8	0.073	<0.000115
2,6-Dichlorophenol	MW-8	0.024	<0.000126
	R-8	0.024	<0.000126
Phenol	MW-8	7.3	<0.000202
	R-8	7.3	<0.000202
Silvex (2,4,5-TP)	MW-8	0.05	<0.0000402
	R-8	0.05	<0.0000402
2,4-Dimethylphenol	MW-8	0.49	<0.000148
	R-8	0.49	<0.000148

Note:

1. Attenuation Action Levels (AALs) for Benzene, Chlorobenzene, 2,4-Dimethylphenol were developed in the 2008 RAP for this plume management zone (PMZ). Additionally, Groundwater Protection Standards are used in accordance with Compliance Plan CP-50219 and are based on Class 1 or Class 2 Groundwater ingestion Protective Concentration Level of 30 TAC 350 from November 2014.

<b>Technical Impracticability</b>	<b>RACR Worksheet 3.0</b> <b>Page 13 of 19</b>	
	<b>ID No. SWR No.</b> <b>30053</b>	<b>Report Date: 5 August</b> <b>2024, Rev. 1</b>

Use this worksheet to document the use of technical impracticability to modify the groundwater response objectives. Also complete Worksheet 2.0 to document the plume management zone for the area of technical impracticability. Include a map of the groundwater PCLE zone and area of technical impracticability in Attachment 3A. If technical impracticability was not used as part of the response action, do not submit this worksheet.

If additional information beyond that provided in the RAP is available, describe how it was determined that it was technically impractical to reduce the COC concentrations in groundwater to the critical PCLs. Describe the response actions taken that did not prove effective. Provide graphs in Attachment 1B to illustrate COC concentrations over time and with distance from the source for each response action that did not prove effective. Describe in Worksheet 1.0 the removal/decontamination actions that were conducted for any PCLE zone outside the area of technical impracticability.

Not applicable.

Did COCs above the critical PCL migrate beyond the area of technical impracticability and/or beyond the initial boundary of the PCLE zone?

☐ yes ☐ no

If yes, explain the actions taken to mitigate the migration of COCs.

Not applicable.

<b>Institutional Controls</b>	<b>RACR Worksheet 4.0</b>		<b>Page 14 of 19</b>
	<b>ID No. SWR No. 30053</b>	<b>Report Date: 5 August 2024, Rev. 1</b>	

Complete this worksheet if an institutional control will be or has been used as part of the response action. Include in Appendix 3 copies of filed institutional controls and drafts of the proposed institutional controls, copies of landowner concurrences, and a list of landowners from whom landowner concurrence will be requested.

Specify the property for which this applies. BASF Corporation, Beaumont, Texas

Repeat this worksheet for each different property for which an institutional control will be used.

Institutional Control	Type of Institutional Control <sup>3</sup>				Property Ownership		Anticipated or actual filing date <sup>4</sup>
	Deed notice	Restrictive covenant	VCP Certificate of Completion	Equivalent zoning or governmental ordinance	Check if pertinent tract of land is owned by the person	Check if the pertinent tract of land is owned by an innocent owner or operator	
Document use of commercial/industrial land use (§350.31(g))							
Document use of physical or institutional control under Remedy Standard B §350.31(g))	<b>X</b>				<b>X</b>		Filed on 17 Nov 2009
Document notice of on-going long term response action (§350.31(h))							
Document use of occupational inhalation criteria as RBELs (§350.74(b)(1))							
Document variance from the default exposure factors (§350.74(j)(2)(L))							
Document the use of a non-default soil exposure area (§350.51(l)(3)&(4))							
Document WCU exclusion area (§350.33(f)(2))							
Document establishing a PMZ (§350.33(f)(4)(C)(I))	<b>X</b>				<b>X</b>		Filed on 17 Nov 2009
Document the demonstration of technical impracticability (§350.33(f)(3)(F))							
Relocation of soils containing COCs for reuse (§350.36(b)(4) and (c)(4))							
Other (specify)							

<sup>3</sup> Check the appropriate box(es) to indicate the type of institutional control required for the response action.

<sup>4</sup> Specify date or amount of time after RAP approval.

Performance Measures and Problems	RACR Worksheet 5.0 Page 15 of 19	
	ID No. SWR No. 30053	Report Date: 5 August 2024, Rev. 1

## Performance Measures

List and describe the performance measures for each environmental medium containing a PCLE zone that were used to determine if reasonable progress is being made by the response action in a timely manner. Provide documentation that these performance measures were met. Attach additional information if necessary.

The limited potential for any exposure at this site, the biodegradable nature and/or low mobility of the COCs make the use of a PMZ at this site a viable response action. The performance of the PMZ and MNA response action were measured in the following two ways: i) direct comparison of groundwater sample results to the GWPSs as approved in the Compliance Plan CP-50219; and ii) concentration versus time statistical evaluation of plume trends.

**Concentration Evaluation:** As previously mentioned, all AMP and Alternate POE wells have never had a detection of benzene, chlorobenzene, 1,4-dichlorobenzene, 2,4-dichlorophenol, 2,6-dichlorophenol, phenol, Silvex (2,4,5-T), 2,4-dimethylphenol in the 13-year monitoring history, with the exception of low detections of benzene and phenol in January 2022 at Alternate POE well MW-30 at concentrations well below their GWPSs. Additionally, barium has never been detected at any AMP and Alternate POE wells at concentrations above the GWPS. Therefore, current and historical groundwater concentrations do not evidence the potential for migration of COCs beyond the PMZ, and the response action objectives outlined in the RAP have been achieved.

**Concentration vs. Time Analysis:** Results from the groundwater sampling conducted from January 2011 to January 2024 were statistically evaluated using the Mann-Kendall Test. Mann-Kendall Test (a non-parametric test) was used to evaluate the stability conditions of the groundwater plumes (i.e., stable, decreasing, or increasing) based on concentration trends in individual wells during two time periods (i.e., 2011-2024, representing the full data set and 2019-2024, representing the last 5-years of data). Details of the Mann-Kendall statistical methods are presented in Appendix 7, and results of the Mann-Kendall evaluation for barium, which was the only COC consistently detected, are provided on Attachments 1B.1 and 1B.2. Mann-Kendall concentration trend analysis was not computed for the other COCs since Mann-Kendall trend analyses are not meaningful if the majority of the results for a well are non-detect.

Trend analyses for barium at AMP wells MW-8 and R-8 indicate increasing and decreasing trends, respectively, when considering the full data set between January 2011 and January 2024. However, the barium concentration trends at those AMP wells show probably decreasing and stable trends, respectively, when considering data for the last five years (i.e., 2019 through 2024). Furthermore, all barium concentrations detected at MW-8 and R-8 were well below the GWPS of 2.0 mg/L. Similarly, trend analyses for barium at the five alternate POE wells indicate mostly increasing for MW-9, MW-10, and MW-11 and decreasing concentration trends at MW-12 and MW-30 for the full data set. When considering the last five years (i.e., 2019 through 2024) of data, the barium concentration trends at those POE wells show probably decreasing or stable trends. Again, all barium concentrations detected at the five alternate POE wells were well below the GWPS of 2.0 mg/L, thus demonstrating that COCs are not migrating beyond the PMZ, and the response action objectives outlined in the RAP have been achieved.

## Problems

Complete the table for the response action. When the response action consisted of several components or multiple actions, complete one table for each major component or action.

Response Action Name/Designation: PMZ with Institutional Controls

<b>Performance Measures and Problems</b>	<b>RACR Worksheet 5.0</b> <b>Page 16 of 19</b>	
	<b>ID No. SWR No. 30053</b>	<b>Report Date: 5 August 2024, Rev. 1</b>

List the problems that were encountered during the response action, describe the impact of each problem, and the response to the problem.

Description of the Problem	Impact	Did this cause a response action failure?		Corrective Response
		Yes	No	
Not applicable.				

<b>Operation and Maintenance</b>	<b>RACR Worksheet 6.0</b>	<b>Page 17 of 19</b>
	ID No. SWR No. 30053	Report Date: 5 August 2024, Rev. 1

Use this worksheet to describe the operation and maintenance (O&M) activities conducted for each response action.

Response Action Name/Designation: Not applicable.  
List all portions of the response action to which this information applies. Repeat this worksheet for each major component or operation.

Describe the O&M and inspection activities that were conducted to operate and maintain response action components.

Not applicable.

## Post-Response Action Care

RACR Worksheet 7.0

Page 18 of 19

ID No. SWR No. 30053

Report Date: 5  
August 2024, Rev. 1

Complete this worksheet only if the information has changed from that submitted in the RAP. If the information does not apply or if the RAP contains the most current information, do not submit this worksheet.

What is the proposed initial post-response action care period? (default 30 \_\_\_\_\_ years yr.)

If the proposed initial post-response action care period is less than 30 years, provide a technical justification in accordance with §350.33(h).

Migration of the plume, if present, beyond the boundaries of the PMZ will not occur due to the effective natural attenuation processes (i.e., biodegradation, sorption, and dispersion) present in shallow groundwater at the former SWMA and the relatively low groundwater seepage velocity. Establishment of the PMZ and institutional controls prevent groundwater use and further protect human and ecological receptors. In addition, the affected groundwater is contained wholly on the BASF property, which is an active chemical manufacturing facility and is more than 0.9 mile from the nearest surface water body. Finally, COCs have never been detected and/or exceeded the GWPS at the Alternate POE wells; therefore, confirming that further migration of affected groundwater is highly unlikely.

What is the foreseeable land use during the post-response action care period? Commercial/Industrial

Describe how the future use of the property will not compromise the integrity of the physical controls, will not interfere with the function of the monitoring systems, will not pose a threat to human health or the environment, and will be in accordance with any institutional controls.

Future land use will continue to remain as a commercial/industrial property, and the institutional controls establishing the PMZ will remain in place. Therefore, there is no threat to human health or the environment.

Describe the proposed post-response action care activities. Describe the type of monitoring and/or inspections to be performed. Discuss the rationale for not including any COC(s) analyzed during the response action, monitoring or sampling point location, frequency of monitoring and/or inspections, and the duration of the monitoring program.

As discussed in the Executive Summary of this RACR, BASF respectfully requests that no further post-response action care be required for the affected groundwater plume at the former SWMA, as BASF believes that the groundwater data collected from the semiannual groundwater monitoring program since January 2011 (i.e., past 13 years of data) confirm that the response action objectives and conditions to terminate the Corrective Action Program under the Compliance Plan (CP-50219) have been met.

Will PRAC sampling procedures be the same as those as previously documented for monitoring and/ or confirmation sampling? **Not applicable.** \_\_\_\_\_ Yes \_\_\_\_\_ No  
If no, provide in Appendix 6 a description of the monitoring or sampling collection procedures to be conducted during the post-response action care period.

### Cost Estimate

Complete this portion of the form only if this information has changed from that submitted in the RAP.

Specify the physical control to which this information applies: Groundwater monitoring

Complete this worksheet for each physical control that will be used as part of the response action.

What is the total estimated annual cost of O&M for the PRAC period? \$0 per year

<b>Post-Response Action Care</b>	<b>RACR Worksheet 7.0</b>	<b>Page 19 of 19</b>
	<b>ID No. SWR No. 30053</b>	<b>Report Date: 5 August 2024, Rev. 1</b>

What is the total estimated cost for a third party to perform PRAC activities? \$0 per year

Identify the type of financial assurance mechanism to be used, and the contact person managing fiduciary responsibility, if known.

Financial assurance for post-closure monitoring is required by the Compliance Plan associated with Hazardous Waste Permit No. 50219. BASF is proposing to discontinue post-closure monitoring; therefore, BASF is requesting that the financial assurance associated with the Compliance Plan is no longer required.

Does the person meet the criteria and definition of a small business? (see §350.33(n)) ☐ Yes ☒ No  
If yes and the person desires to pursue the reduced amount of financial assurance, attach a legally binding affidavit. Include in the affidavit the information requested in 30 TAC §350.33(l), (m), and (n).

## **Class 3 Hazardous Waste Permit Modification Application**

Hazardous Waste Permit No. 50219

### **Technical NOD 1 Response**

<h2><b>Attachment 2.4 – Deed Notice (Response to CP 3)</b></h2>
---

**Texas Risk Reduction Program****Deed Notice**

STATE OF TEXAS

§

§

COUNTY OF JEFFERSON

§

This Notice is filed to provide information concerning certain environmental conditions and/or use limitations pursuant to the Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program Rule (TRRP) found at 30 Texas Administrative Code (TAC), Chapter 350, and affects the real property (Property) described as follows:

Tract 1 (200.00 acres) and Tract 2 (290.577 acres) as conveyed by deed dated December 24, 1996 from Sandoz Agro, Inc. to BASF Corporation, recorded in Clerk's File No. 96-9639343 of the Official Public Records of Real Property, County Clerk's Office, Jefferson County, Texas, as situated in and a part of the W.H. Sigler Survey, Abstract No. 48 of said County.

Portions of the groundwater of the Property contain certain identified chemicals of concern causing those portions of the Property to be considered an Affected Property as that term is defined in the TRRP. The portion considered to be Affected Property is described as follows:

Attached hereto and incorporated herein by reference is Exhibits A and B, which contains a metes and bounds description and survey, respectively, of the Affected Property.

This Notice is required for the following reasons:

The Affected Property is subject to the TRRP requirements for properties with an area overlying a TCEQ-approved plume management zone. A plume management zone is defined as an area of groundwater containing concentrations of chemicals of concern (e.g., barium, benzene, chlorobenzene, ethylbenzene, 1,4-dichlorobenzene, and 2,6-dichlorophenol) exceeding the TCEQ-approved protective concentration levels for a site, plus any additional area allowed by the TCEQ in accordance with 30 TAC §350.33(f)(4). The undersigned has established a plume management zone at the Property so that the chemicals of concern in the groundwater are managed such that human exposure is prevented and that other groundwater resources are protected. The TCEQ-approved Response Action Plan, which is on-file at the TCEQ, provides the location and extent of the plume management zone and describes the maintenance and monitoring required. This maintenance and monitoring is required until TCEQ approves some modification of those requirements. Exposure to groundwater within the plume management zone for any purpose is not advised until such time when all chemicals of concern no longer exceed the respective protective concentration levels. This deed notice must not be removed or modified without prior approval from TCEQ.

As of the date of this Notice, the record owner of fee title to the Property is BASF Corporation with an address at 14385 West Port Arthur Road, Beaumont, Texas 77705.

For additional information, contact:

TCEQ  
Central Records  
12100 Park 35 Circle, Building E

Mail: TCEQ - MC 199  
P O Box 13087  
Austin, Texas 78711-3087

Austin, Texas 78753

TCEQ Program and Identifier: SWR No. 30053

This Notice may be rendered of no further force or effect only by a superseding deed notice executed by the TCEQ or its successor agencies and filed in the same Real Property Records as those in which this Deed Notice is filed.

Executed this 12 day of November, 2009.

BASF Corporation

By: John Smoter

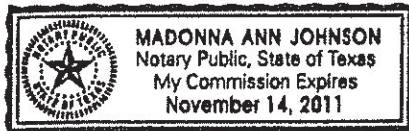
Name: John Smoter

Title: Site Manager

STATE OF TEXAS  
JEFFERSON COUNTY

BEFORE ME, on this the 12 day of November, 2009, personally appeared John Smoter, Site Manager, of BASF Corporation, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and in the capacity herein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 12 day of November, 2009.



Madonna Ann Johnson  
Notary Public in and for the State of Texas,  
County of Jefferson  
My Commission Expires:

After recording, return to:

BASF Corporation  
Attention: Ryan Yoes  
14385 West Port Arthur Road  
Beaumont, Texas 77705



**ARCENEUX & GATES**  
Consulting Engineers, Inc.

Engineers • Surveyors • Planners

**EXHIBIT "A"**

**METES AND BOUNDS DESCRIPTION OF  
54.57 ACRES OF LAND SITUATED IN THE  
W.H. SIGLER SURVEY, ABSTRACT NO. 48,  
JEFFERSON COUNTY, TEXAS**

**SOLID WASTE MANAGEMENT AREA  
PLUME MANAGEMENT ZONE**

Being a 54.57 acre tract or parcel of land, a portion of those certain two tracts of land (called Tract 1 – 200.00 acres, Tract 2 – 290.577 acres) as conveyed by deed dated December 24, 1996 from Sandoz Agro, Inc. to BASF Corporation, recorded in Clerk's File No. 96-9639343 of the Official Public Records of Real Property, County Clerk's Office, Jefferson County, Texas, as situated in and a part of the W.H. Sigler Survey, Abstract No. 48 of said County and being more particularly described by metes and bounds as follows;

**FOR LOCATIVE PURPOSES**, commence at a copper rod found located on the Westerly Right of Way line of West Port Arthur Road (a.k.a. Spur 93) marking the Northeast corner of said Tract 1 and the Southeast corner of a called 210.6 acres now or formerly owned by Louis M. Hebert, recorded in Volume 142, Page 279 of the Deed Records of said County, said commencing point having a coordinate value of North 13,934,482.49 and East 3,534,019.28;

**THENCE** South 86 deg. 44 min. 55 sec. West (North 89 deg. 59 min. West deed) along the common line of said Hebert tract and Tract 1 a distance of 2061.51 feet to a fence post found marking the Northeast corner and **POINT OF BEGINNING** of the herein described tract of land, this point having a coordinate value of North 13,934,365.57 and East 3,531,961.08;

**THENCE** South 53 deg. 58 min. 31 sec. East a distance of 764.96 feet to a monitor well found (called MW17) marking an angle point for corner, this point having a coordinate value of North 13,933,915.67 and East 3,532,579.76;

**THENCE** South 04 deg. 45 min. 14 sec. West a distance of 904.22 feet to a monitor well found (called MW1) marking the Southeast corner of the herein described tract of land, this point having a coordinate value of North 13,933,014.56 and East 3,532,504.82;

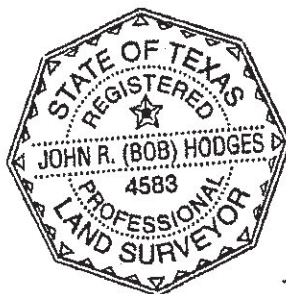
**THENCE** South 76 deg. 30 min. 57 sec. West a distance of 1380.79 feet to a monitor well found (called MW30) marking the Southwest corner of the herein described tract of land, this point having a coordinate value of North 13,932,692.59 and East 3,531,162.09;


**EXHIBIT "A"**

**THENCE** North 17 deg. 49 min. 50 sec. West a distance of 1707.47 feet to a fence post found marking the Northwest corner of the herein described tract of land, this point having a coordinate value of North 13,934,318.04 and East 3,530,639.26;

**THENCE** North 87 deg. 56 min. 26 sec. East a distance of 1322.68 feet to the Northeast corner and **POINT OF BEGINNING** and containing in area 54.57 acres of land, more or less.

Surveyed: October, 2009



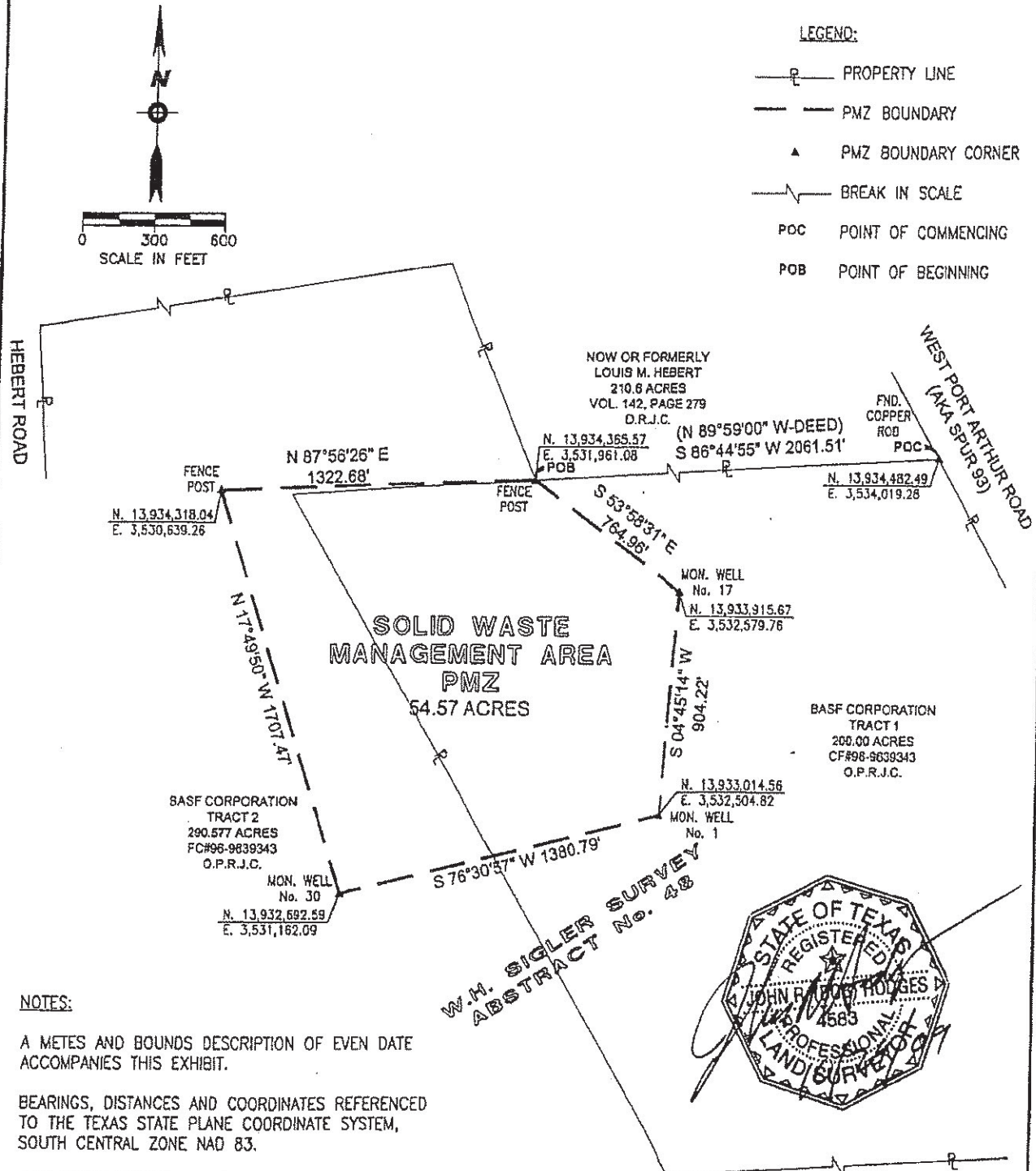
  
John R. (Bob) Hodges R.P.L.S. #4583  
10/29/09

**Notes:**

Bearings, distances and coordinates, referenced to the Texas State Plane Coordinate System, South Central Zone, NAD 83. Grid Scale Factor = 0.999924214

An Exhibit of even date is being submitted with this metes and bounds description.  
Acreage expressed in Surface Area.

# EXHIBIT "B"



## NOTES:

A METES AND BOUNDS DESCRIPTION OF EVEN DATE ACCOMPANIES THIS EXHIBIT.

BEARINGS, DISTANCES AND COORDINATES REFERENCED TO THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE NAD 83.

GRID SCALE FACTOR 0.999924214

ACREAGE EXPRESSED IN SURFACE AREA.



**ARCENEAUX & GATES**  
Consulting Engineers, Inc.  
Engineers Surveyors Planners

3101 Turtle Creek Drive, Suite 102  
Port Arthur, Texas 77642  
(409) 724-7858

EXHIBIT SHOWING SOLID WASTE MANAGEMENT AREA PLUME MANAGEMENT ZONE LOCATED AT THE BASF CORP. FACILITY WEST PORT ARTHUR ROAD BEAUMONT, JEFFERSON COUNTY, TEXAS			PAGE 1 OF 1
DATE: OCTOBER, 2009	SCALE: 1"=600'	DRAWN: TMR	
PROJ. No.: JDC-180	VER.: AutoCAD 2010	CHECKED: JRH	

**FILED AND RECORDED**

OFFICIAL PUBLIC RECORDS

*Carolyn L Guidry*

2009 Nov 17, 09:36 AM

2009043572

WILLIAMS: \$32.00

CAROLYN L. GUIDRY, COUNTY CLERK

JEFFERSON COUNTY, TEXAS

## **Class 3 Hazardous Waste Permit Modification Application**

Hazardous Waste Permit No. 50219

### **Technical NOD 1 Response**

<h2><b>Attachment 2.5 – TWC RCRA Facility Investigation Report Letter (Response to CP 3)</b></h2>
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TEXAS WATER COMMISSION



B. J. Wynne, III, Chairman  
John E. Birdwell, Commissioner  
Cliff Johnson, Commissioner

John J. Vay, General Counsel  
Michael E. Field, Chief Hearings Examiner  
Brenda W. Foster, Chief Clerk

Allen Beinke, Executive Director

January 30, 1991

Mr. Howard T. Baker  
Environmental Manager  
Sandoz Crop Protection Corporation  
Route 4, Box 327  
Beaumont, Texas 77705

RECEIVED  
JAN 31 1991  
H. I. BAKER

Re: RCRA Facility Investigation Report  
Hazardous Waste Permit No. HW-50219  
Industrial Solid Waste Registration No. 30053

Dear Mr. Baker:

The staff of the Texas Water Commission (TWC) has reviewed your RCRA Facility Investigation Report (RFI) dated October 31, 1990. Based on our review of the RFI Report, it appears that no significant contamination was identified in the investigated areas.

It appears that the requirements of Provision IX of the subject permit have been satisfied. Upon requesting a permit modification for your facility in the future, please include a request to modify the permit to reflect "no further action" status for the solid waste management units listed in Provisions IX.A.1.a. and b. Please note that a modification for the sole purpose of making this change is not required at this time.

If you have any questions in this regard, please contact Kari Bourland-Chesnut at 512/463-7998.

Sincerely,

*Ray Henry Austin, P.E.*

Minor Brooks Hibbs, Chief  
Permits Section  
Hazardous and Solid Waste Division

LOL:lol

cc: Cheryl Wilson, Information and Technical Services Section  
TWC District 6 Office - Beaumont  
Lydia Boada-Clista, EPA Region VI Office - Dallas

## **Class 3 Hazardous Waste Permit Modification Application**

Hazardous Waste Permit No. 50219

### **Technical NOD 1 Response**

# **Attachment 2.6 – Revised RACR Appendix 1**

## **APPENDIX 1 REFERENCE LIST**

### **2024 Response Action Completion Report Solid Waste Registration No. 30053 BASF Corporation Agro Plant, Beaumont, Texas**

BASF, 2008. Response Action Plan. May 2008.

Sandoz, 1990. RCRA Facility Investigation. 31 October 1990.

TCEQ, 2009. Major Compliance Plan Amendment. 4 September 2009.

TCEQ, 2015. Hazardous Waste Permit No. 50219; EPA ID. No. TXD067261412; ISWR No. 30053. Issued 10 September 2015.

## **Class 3 Hazardous Waste Permit Modification Application**

Hazardous Waste Permit No. 50219

### **Technical NOD 1 Response**

# ***REPLACEMENT PAGES***

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## **Class 3 Hazardous Waste Permit Modification Application**

Hazardous Waste Permit No. 50219

### **Technical NOD 1 Response**

**Attachment 2.7 – Revised Preliminary  
Review Unit Checklist in Part B –  
Section IX (Response to Email Bullet #1)**

**Preliminary Review Unit Checklist**

Facility:	BASF Corporation Agro Plant	City	Beaumont
ISW Reg. No:	30053	Date	Apr 8, 2024
Permit No.	50219	Reviewer:	BASF Corporation
EPA ID No.	TXD067261412		

**Waste Management Unit(s):**

A. NOR No.:

010

B. Description:

Solid Waste Management Area (Ponds 1A, 1B, 2A, 2B); Surface Impoundment (Surge Pond associated with RCRA-exempt Wastewater Treatment Unit NOR Unit No. 06)

C. Dates of Operation:

Inactive

Wastes Managed:

Wastewater associated with RCRA-exempt Wastewater Treatment Unit (NOR Unit No. 06)

Evidence of Release:

Shallow groundwater (i.e., the upper-most aquifer) was impacted by petroleum hydrocarbons and chlorinated phenols (i.e., constituents of concern; COCs) in the area of the former surface impoundments. The groundwater was impacted due to infiltration of water from one or more of the ponds, which were remediated to prevent any future releases. The impacted groundwater was limited to an on-site location within the chemical plant, and there are no affected or threatened receptors. The chlorinated compounds detected in groundwater above the Protective Concentration Levels (PCLs) are chlorobenzene, 1,4-Dichlorobenzene, 2,4-Dichlorophenol, and 2,6-Dichlorophenol.

Pollutant Dispersal Pathways:

The direction of groundwater flow does not present any particular issues (e.g., discharge of COCs to surface water will not occur). The contaminated groundwater does not discharge to the land surface and thus there is no complete exposure pathway to wildlife. There are no crops or physical structures located within the PMZ boundary and there is no indication that vegetation overlying the area is in any way stressed due to the presence of the COCs.

The area near the former wastewater ponds was initially investigated in the mid-1980s and a groundwater compliance plan application was submitted on March 20, 1987. Groundwater recovery operations began in 1988 and operated for 20 years. As the area of the plume and the concentrations of COCs were reduced, the number of recovery and monitoring wells were reduced in 2006 and completely shut down

## Summary:

in 2009.

In 2004, analyses for additional constituents (beyond those required for compliance monitoring in the Compliance Plan) indicated there are only a limited number of COCs that have concentrations above the Texas Risk Reduction Program (TRRP) Tier 1 PCLs.

Remedial actions for the SWMA were conducted under a Corrective Action Program in the Compliance Plan that incorporated a plume management zone (PMZ) and groundwater monitoring for natural attenuation. In February 2023, BASF submitted a report documenting achievement of PCLs (i.e., Groundwater Performance Standards), and TCEQ concurred in a letter dated December 7, 2023.

## Recommended Action:

No further action and removal of the Compliance Plan requirements from Hazardous Waste Permit No. 50219.

## A. NOR No.:

TCB AOC (no NOR Unit number assigned)

## B. Description:

FFP Loading/Unloading Area for BASF raw and finished products.

## C. Dates of Operation:

Active Investigation (2021 to present)

## Wastes Managed:

None

## Evidence of Release:

Soil and groundwater (i.e., the uppermost groundwater bearing unit) impacts were observed due to infiltration of 1,2,4-Trichlorobenzene (TCB) rail-car wash water and/or TCB releases in the vicinity of FFP rail car loading/unloading area. The impacted soils have been delineated laterally and vertically in accordance with 30 TAC 350 and are limited to an on-site location within the facility. The impacted groundwater is being investigated in accordance with 30 TAC 350. In addition to TCB, its degradation byproducts, 1,4-dichlorobenzene and 2,4-dichlorophenol, were also detected in soil and/or groundwater at concentrations above their Protective Concentration Levels (PCLs).

## Pollutant Dispersal Pathways:

The direction of groundwater flow, which is generally towards the east, is not anticipated to present any particular issues (e.g., discharge of COCs to surface water or water supply wells screened within the uppermost groundwater bearing unit). However, the impacted groundwater is still being investigated to achieve delineation in accordance with 30 TAC 350.

The soil and groundwater in the vicinity of the FFP Loading/Unloading area were initially investigated in the December 2021 and June 2022, respectively, after odors suspected to be TCB were observed during the remedial actions associated with the Dicamba AOC in November 2021. The June 2022 sampling efforts

Summary:

provided lateral and vertical delineation of the impacted soil, but also provided evidence of groundwater impacts. Several groundwater investigation efforts have been conducted since June 2022 to delineate the impacted groundwater. The groundwater investigation has included installation of temporary and permanent groundwater monitoring wells, slug testing, and groundwater sampling. The impacted groundwater is believed to be delineated to the west and south, but investigations are still ongoing to determine the northern and eastern boundaries in accordance with 30 TAC 350.

Recommended Action:

Continue the investigation in accordance with 30 TAC 350 and submit an Affected Property Assessment Report and Response Action Plans.

## **Class 3 Hazardous Waste Permit Modification Application**

Hazardous Waste Permit No. 50219

### **Technical NOD 1 Response**

<h2><b>Attachment 2.8 – Revised Description of Proposed Application Changes – Table I.1 (Response to Email Bullet #2)</b></h2>
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**Table I.1-Description of Proposed Application Changes**

Permit/Compliance Plan Application Appendix/Section	Brief Description of Proposed Change	Modification or Amendment Type	Supporting Regulatory Citation
Part A	Update site contact and other informational updates	Class 1	30 TAC 305.69(k)(a)(1)
Part B, Section I	Update site contact information	Class 1	30 TAC 305.69(k)(a)(1)
Part B, Section III	Remove requirements for inspections of Ponds 1A through 2B	Class 2	30 TAC 305.69(k)(B)(4)
Part B, Section IX	Update the Preliminary Review Facility and Unit Checklists	Class 1	30 TAC 305.69(k)(a)(1)
Part B, Section XI - Compliance Plan	Request termination of the Corrective Action Program for the Solid Waste Management Area (SWMA; WMU No. 010) and to add a new release area (the TCB AOC) included in CP Table II for further assessment under RCRA Corrective Action.	Class 3	30 TAC 305.69(k)(C)(8)

## **Class 3 Hazardous Waste Permit Modification Application**

Hazardous Waste Permit No. 50219

### **Technical NOD 1 Response**

**Attachment 2.9 – New Part B Signature  
Page (Response to Email Bullet #3)**

**Signature Page**

I, Elizabeth Monroe, Site Director  
(Operator) (Title)

certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: [Signature] Date: 8/22/24

**To be completed by the Operator if the application is signed by an Authorized Representative for the Operator**

I, \_\_\_\_\_, hereby designate \_\_\_\_\_  
[Print or Type Name] [Print or Type Name]

as my representative and hereby authorize said representative to sign any application, submit additional information as may be requested by the Commission; and/or appear for me at any hearing or before the Texas Commission on Environmental Quality in conjunction with this request for a Texas Water Code or Texas Solid Waste Disposal Act permit. I further understand that I am responsible for the contents of this application, for oral statements given by my authorized representative in support of the application, and for compliance with the terms and conditions of any permit which might be issued based upon this application.

Printed or Typed Name of Operator or Principal Executive Officer

Signature

SUBSCRIBED AND SWORN to before me by the said

On this 22<sup>nd</sup> day of August, 2024  
My commission expires on the 12<sup>th</sup> day of February, 2028

Notary Public in and for Jefferson County, Texas  
[Note: Application Must Bear Signature & Seal of Notary Public]

