

Appendix A. Summary of RCRA Optimization Projects

Table A.1. RCRA Optimization Projects Completed Since Fiscal Year 2020

Fiscal Year	Region	State	City	Site Name	EPA ID	Site Type	Scope of Optimization
2020	1	MA	Burlington	Alto Tronics	MAD049416001	Metals Manufacturing	Metal fabrication facility; cVOCs and 1,4-dioxane affecting municipal water supplies. Assistance with the groundwater extraction and treatment system (installed in 1999 with an upgrade to install UV for 1,4-dioxane in 2008) in terms of evaluating the RCRA EIs CA725 and CA750.
2020	5	IN	East Chicago	ArcelorMittal Indiana Harbor East	INR000127258	Metals Manufacturing	Differing remediation strategies by the site stakeholders stalled progress in achieving remediation goals. Assistance in obtaining consensus on how best to achieve remediation for all site stakeholders.
2020	8	MT	Great Falls	Calumet Montana Refining LLC (CMR)	MTD000475194	Refinery	Operating refinery; EIs not currently met and no selected remedy. Evaluate the groundwater monitoring system and historical data to determine whether hydrogeology and contamination has been adequately characterized; CSM; evaluation of RCRA EI CA 725 and 750; general recommendations for groundwater remedies potentially applicable at the site.
2020	8	MT	Cut Bank	Former Flying J Petroleum, Inc.	MTD002076370	Refinery	Former refinery with LNAPL [benzene] contamination. Assistance with evaluating historical data and CSM to optimize the current remedial response, site characterization, and monitoring, with particular focus on evaluating attainment of EIs CA725 and CA750, which are currently not met.
2021	8	CO	Boulder	Former Beech Aircraft Corporation Site (Raytheon)	COD007068646	Aerospace / Military and Defense	Aerospace components manufacturing with DNAPL and NDMA contamination; CA750 not met.
2021	6	AR	North Little Rock	Koppers Inc (North Little Rock Facility)	ARD006344824	Wood Treating	Wood preserving operations with DNAP, LNAPL contamination; CA 750 not met. Recommend targeted improvements to site characterization and CSM to address data gaps associated with a mobile dissolved-phase plume and a sparse monitoring network. Evaluate current remedy elements—including MNA, DNAPL extraction, and reinjection of untreated extracted groundwater that may contain dissolved DNAPL constituents. Provide recommendations to improve protectiveness and progress toward CA750.
2022	6	LA	Baton Rouge	Exide	LAD008184137	A secondary lead smelter and refinery	Evaluate leachate collection and groundwater systems and recommend improvements. For the leachate collection system, assess the cause of excessive production of daily leachate flow, recommend options to reduce leachate volume, and evaluate operational issues. For groundwater monitoring system, assess flow, gradient, monitoring network coverage, and recommend new well locations, and remediation system, including evaluations for efficiency and for scenario without stormwater collection.
2022	5	OH	Evendale	GE Aircraft Engines (aka GE Aviation Facility)	OHD000817304	Aerospace / Commercial	Goals are to optimize pumping rates, capture zones, and the monitoring well network. Evaluate plume stability through statistical means (MAROS and Mann Kendall) and natural degradation (BIOCHLOR).
2022	8	CO	Commerce City	Suncor Energy (USA) Inc - Commerce City Refinery	COD060627189	Refinery	Address PFAS contamination at the site and downgradient of the site.
2023	8	CO	Denver	Katzson Brothers	COD031992225	Dry Cleaner	Review of the Corrective Measures Study, evaluation of potential remedies, and measures to address onsite groundwater contamination and mitigate offsite groundwater releases.

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2023	6	LA	Shreveport	Standard Wood Preservers Inc Shreveport	LAD008053977	Wood Treating	Former wood preserving facility. Assistance with classification of groundwater at the site from creosote DNAPL and potential VI, and implementation of institutional and engineering controls;
2024	4	GA	Dalton	Dow Chemical CO (Dalton Plant)	GAD045929643	Chemical Manufacturing	Assistance on data gaps in site characterization, CSM, and RCRA EI determinations; recommendations for remedy technologies and effectiveness, technical improvement, cost reduction, progress to site closure, reuse / revitalization, and energy/material efficiency. Superfund site.
2024	8	MT	Butte	Solvay	MTD057558546	Chemical Manufacturing	Evaluate groundwater monitoring system and historical data to determine whether hydrogeologic and contamination have been adequately characterized; future contaminant migration; recommend improvements to current and proposed groundwater remedies including alternatives to the current approach; and evaluate site to RCRA Environmental Indicator CA750.
2024	10	WA	Newport	Stimson Lumber	WAD009624347	Chemical Manufacturing	Former chemical manufacturing facility; cPAHs and SVOCs in groundwater. Assistance in evaluation efficiency of MNA and protecting Padilla Bay.
2024	8	SD	Clear Lake	Tech OrD, A Division of AMTEC Corporation	SDD981549983	Chemical Manufacturing	Assistance with determining groundwater flow direction (site geology is challenging, located in glacial till/glacial outwash area), and options for optimal continued site monitoring, and possible measures to put in place.
2025	5	OH	Belpre	Kraton Polymers US LLC	OHD004343117	Chemical Manufacturing	Active manufacturing facility; arsenic, VOC, and DE contamination; request to investigate continued arsenic exceedances post remedy, evaluate the DE plume, and assess MNA of VOCs.
2025	6	AR	El Dorado	Lanxess	ARD000022186	Chemical Manufacturing	Manufactures bromine; primary COCs are ethylene dibromide (EDB) but ethylene dichloride (EDC), toluene, bromoform and 1,2-dichloropropane have also been detected. The optimization review focused on: 1. Evaluating the current monitoring network for effectiveness, data gaps, and applicability. 2. Providing recommendations on the characterization and control the spread of contaminated groundwater off-site, including groundwater remediation system performance and scaling issues encountered within the recovery system. 3. Evaluating the proposed groundwater sample collection approach change from low-flow groundwater sampling to the use of the HydraSleeve ® no-purge sampling technique.

Table A.2. Implementation Status of RCRA Optimization Recommendations by Facility

Unknown – means the implementation status of the recommendation was not identified in publicly available material reviewed. A request to the relevant site contact is recommended to obtain updated information.

Fiscal Year	Site Name	State	Region	Optimization Report Date	Rec. Number	Optimization Review Recommendation Name	Brief Recommendation Description	Rec. Status	Rec. Status Notes	General Rec. Category
2020	Alto Tronics	MA	1	8-May-20	5.1	Document an Exit Strategy	The remediation conducted up to 2020 resulted in substantial cVOC concentration reductions, but they may be temporary due to changes in groundwater flow patterns associated with pipe repairs conducted in late 2018. The optimization team recommended revisiting the remedial strategy and provided three paths forward for consideration.	Unknown	None	Cleanup Goals, Exit Strategy
2020	Alto Tronics	MA	1	8-May-20	5.2	Install Additional Bedrock Wells to Improve Capture Zone Evaluation and Plume Delineation	The optimization team recommended installing four bedrock wells around the plume. If contamination is present at the deeper wells, then further investigation may be needed upgradient to improve the capture zone.	Unknown	None	CSM, Site Characterization
2020	Alto Tronics	MA	1	8-May-20	5.3	Modify Extraction System (as appropriate)	Based on results from Rec. 5.1 and 5.2, the extraction system may need to be updated by installing new shallow extraction wells and/or deep extraction wells with the goal of achieving MCP GW1 standards at select locations to demonstrate the plume is under control.	Unknown	None	Remedy
2020	Alto Tronics	MA	1	8-May-20	5.4	Measure Static Groundwater Levels in VBA Wells	The optimization team recommended incorporating select Town of Burlington observation wells into the groundwater level monitoring program.	Unknown	None	Monitoring
2020	Alto Tronics	MA	1	8-May-20	5.5	Sample VBA Wells and Potentially Install New VBA Wells	The optimization team recommended sampling select VBA wells to understand off-site plume migration after the wells were installed in 2008. New VBA wells may need to be installed if existing VBA wells do not provide sufficient evidence of GWE/TS capture has not improved.	Unknown	None	CSM, Site Characterization
2020	Alto Tronics	MA	1	8-May-20	5.6	Testing of Potential Shutdown of Source Area Recovery Wells	If Site stakeholders elect to test the concept of shutting down the source area recovery wells, the optimization team recommends continuing the current level of operation and	Unknown	None	Cleanup Goals, Exit Strategy

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							monitoring for at least two years with quarterly monitoring if low concentrations remain consistent.			
2020	Alto Tronics	MA	1	8-May-20	5.7	Potential Enhancement of Reductive Dechlorination	If Site stakeholders elect to test the concept of enhancing reductive dechlorination, the optimization recommended using two existing wells and new bedrock injection wells upgradient or adjacent to high concentration areas to inject emulsified vegetable oil.	Unknown	None	Remedy
2020	Alto Tronics	MA	1	8-May-20	5.8	Considerations for Implementing the Recommendations	The optimization team recommended prioritizing Red. 5.4 and sampling existing wells in Rec. 5.5; then Rec. 5.2 and 5.3 as soon as possible thereafter. Then the appropriateness of installing new wells described in Rec. 5.5 can be determined and selecting an appropriate exit strategy (Rec. 5.1). Rec. 5.6 and 5.7 can be completed after completing Rec. 5.1 (exit strategy).	Unknown	None	Cleanup Goals, Exit Strategy
2020	ArcelorMittal Indiana Harbor East	IN	5	22-May-20	5.1	Annual Report	The optimization team recommends production of one annual monitoring report for the AME site that documents groundwater monitoring and SM performance for the year, instead of the four quarterly report currently produced.	Implemented	The consent decree was the driver for quarterly reporting.	Monitoring
2020	ArcelorMittal Indiana Harbor East	IN	5	22-May-20	5.2	Discuss Site Specific Factors Associated with Discharge of Groundwater to Surface Water	The optimization team recommends that stakeholders meet to discuss these technical considerations and other matters related to determining COCs and cleanup criteria for groundwater.	In Progress	O/O tried to establish their own dilution factors; this was rejected; Brandon wanted this recommendation	Cleanup Goals, Exit Strategy
2020	ArcelorMittal Indiana Harbor East	IN	5	22-May-20	5.2.1	Iron, Manganese, and BEHP	Review the possibility that BEHP, iron, and manganese may be removed as human health COPCs with respect to discharge of groundwater to surface water.	In Progress	Slag fill has Fe and Mn so don't want to remove BEHP to be considered in next QAPP review	Monitoring
2020	ArcelorMittal Indiana Harbor East	IN	5	22-May-20	5.2.2	Groundwater Classification	The optimization team believes the submittal of the groundwater classification system and associated IDEM review would be appropriate at this stage of the process.	Deferred to State or PRP	Still Class 2 - change in GW class probably would not be approved by IDEM	CSM, Site Characterization
2020	ArcelorMittal Indiana Harbor East	IN	5	22-May-20	5.2.3	Effects of Riprap	The optimization team recommends the research of mixing rates within riprap of this size or collect data to confirm that the groundwater leaving the riprap meets appropriate screening values.	Under Consideration	Open for O/O to implement but have not done it yet	Monitoring

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2020	ArcelorMittal Indiana Harbor East	IN	5	22-May-20	5.2.4	Quality of Receiving Water by FPA	The optimization team suggests evaluating groundwater to surface water discharges at the AME Site based on the receiving water body, the likely ecological receptors associated with those receiving water bodies, the attenuation of those contaminants in those water bodies prior to migration into Lake Michigan, and the relevant policies or regulations.	Planned	Not done, but should be addressed as part of larger establishment of clean-up standards	CSM, Site Characterization
2020	ArcelorMittal Indiana Harbor East	IN	5	22-May-20	5.3	Address Benzene in Groundwater Near Outfall 18	The optimization team recommends additional investigation of sources of groundwater contamination discharging near Outfall 18 and likely designation of an area near Outfall 18 as a priority source area	Implemented	At the time of the optimization, outfall 18 CSM was driven by modeling; O/O fought but ultimately agreed to collected field data	CSM, Site Characterization
2020	ArcelorMittal Indiana Harbor East	IN	5	22-May-20	5.4	Remedial Options for ISA 3 / SWMA 3	The optimization team recommends the consideration to discontinue operation of the groundwater extraction component of the remedy and transitioning to monthly manual LNAPL recovery (to the degree practicable) and soil vapor extraction (SVE).	Deferred to State or PRP	Open for O/O to implement but have not done it yet	Remedy
2020	ArcelorMittal Indiana Harbor East	IN	5	22-May-20	5.5	Remedial Options for ISA 2 / SWMA 14	As a conservative approach, the optimization team recommends groundwater extraction and treating the extracted water with GAC to remove the naphthalene.	Deferred to State or PRP	Open for O/O to implement but have not done it yet	Remedy
2020	ArcelorMittal Indiana Harbor East	IN	5	22-May-20	5.6	Remedial Options for ISA 1 / SWMA 5	The optimization team recommends installation of two deep wells to close the gap in plume delineation to the northwest.	Implemented	None	CSM, Site Characterization
2020	ArcelorMittal Indiana Harbor East	IN	5	22-May-20	5.7	Reuse of Area Associated with SWMA 5	Construction of a solid waste storage unit (landfill) within the SWMA 5 boundaries, is potentially an appropriate use of currently unused land and could provide an environmentally sound solution to an industrial waste issue.	Implemented	None	Remedy
2020	ArcelorMittal Indiana Harbor East	IN	5	22-May-20	5.8	Stabilization Measures Effectiveness Monitoring Plan	The optimization team recommends reducing the list of analytes to priority contaminants such as BTEX, naphthalene, bis(2-ethylhexyl) phthalate, PAHs, iron, manganese, ammonia, cyanide.	Implemented	None	Monitoring
2020	ArcelorMittal Indiana Harbor East	IN	5	22-May-20	5.9	Facility Interior Area Report	The optimization team recommends either completion of the FIA Report or inclusion of data on the interior of the facility in another report format (see section 5.1) to document current groundwater concentrations of COCs in interior areas of the facility.	Deferred to State or PRP	Up to IDEM	Monitoring

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2020	ArcelorMittal Indiana Harbor East	IN	5	22-May-20	5.10	Optimization Team Support of Other Items	IDEM stated that at another site they set up a framework for making re-use decisions to streamline the process when opportunities arose. The optimization team would support the same approach at the AME Site. AME stated a preference to documenting NFA for specific areas, and IDEM stated that there is potential to split soil and groundwater for that purpose. The optimization team would support closeout of those areas that have met criteria to simplify the overall management of the subsurface issues at AME Site and to help focus on the more complex areas over the long-term.	Deferred to State or PRP	Up to IDEM	Cleanup Goals, Exit Strategy
2020	Calumet Montana Refining LLC (CMR)	MT	8	8-Apr-20	5.1	Review and Expand Revised Geologic Model Site-Wide	The optimization team recommends developing geologic cross-sections along transects throughout the Site at a vertical scale that allows elevations to be adequately discerned to validate and/or revise the CSM.	In Progress	See RFI Phase 1 and 2 activities. Under RFI Phase 1, drilling of 50 soil borings + additional monitoring wells was completed, along with soil sample collection and analysis at 110 locations. RFI Phase 2 activities include drilling and installing additional data gap monitoring wells, additional soil borings, and additional LIF borings (numbers to be determined).	CSM, Site Characterization
2020	Calumet Montana Refining LLC (CMR)	MT	8	8-Apr-20	5.2	VI Mitigation at Office Building West of 10th Street NE	The optimization team recommended that VI mitigation measures be implemented (e.g., sub-slab depressurization system) unless a lack of complete exposure pathway can be demonstrated.	In Progress	During RFI Phase 1 activities, installation and sampling of soil gas monitoring points was completed at 11 locations and sub-slab soil vapor samples were collected from three sampling locations in May 2024. The site contractor proposed to collect a second round of sub-slab soil vapor samples during winter months (approximately February 2026) to further assess potential for VI. (see Section 2.11 in RFI Phase 2 Work Plan).	Remedy

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2020	Calumet Montana Refining LLC (CMR)	MT	8	8-Apr-20	5.3	Abandon MW-41 and Add a Deep Monitoring Well in the Same General Area	The optimization team recommended using deep well MW-62 to monitor benzene concentration changes over time instead of using MW-41.	Not implemented	"Ten (10) monitoring wells (MW-011, MW-014R, MW-019R, MW-048, MW-056, MW-060D, MW-062, MW-091, MW-102, and MW-103) and two piezometers (PZ-02 and PZ-83) were abandoned during RFI Phase 1 activities." (see Section 2.3.3).	Monitoring
2020	Calumet Montana Refining LLC (CMR)	MT	8	8-Apr-20	5.4	Add Deep Monitoring Well South of West Rail Rack Recovery Trench	The optimization team recommended installing a permanent deep monitoring well, screened above the river elevation, 50 ft downgradient of the recovery trench on the municipal WWTP property with sampling every two years. This Rec. relates to meeting RCRA EI CA 750 and seeks to confirm the impacted groundwater is not migrating towards the Missouri River.	In Progress	RFI Phase 1 activities: Characterization of four groundwater pathways to the Missouri River are complete (i.e., Eastern Site Boundary, Central, West, and Western Site Boundary). Characterization of the groundwater pathway from the Legacy Refinery to the Missouri River is not complete. Nine investigative units (i.e., Investigative Units 1, 3, 8B, 9A, 10A, 10B, 12C, 12F, and 12G) require additional N/E delineation and/or characterization. Three areas require additional Human Health Risk Assessment (HHRA)/Ecological Risk Assessment (ERA) delineation. A focused Phase 2 investigation is recommended to address identified data gaps remaining at the Site, collection of calibration soil and groundwater data for the ERI investigation, and collection of an additional round of Site-wide groundwater data.	Monitoring

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2020	Calumet Montana Refining LLC (CMR)	MT	8	8-Apr-20	5.5	Eliminate Some Metals from Ongoing Monitoring	The optimization team recommended two years of metal sampling analytical results to determine if future sampling should include the current set of 13 metals, or if eliminating all but the three metals most recently detected above DEQ-7 standards (arsenic, barium, and selenium) is warranted.	Unknown	"The evaluation of N/E of impacts during this RFI is being implemented using an iterative framework. Data gaps and future data collection opportunities will be determined after a N/E and ERA/HHRA Site-specific screening of exposure risk is conducted. Supplemental data may be necessary to further refine N/E, exposure risk, or fate and transport characteristics developed from Phase 1 results."	Monitoring
2020	Calumet Montana Refining LLC (CMR)	MT	8	8-Apr-20	5.6	Develop a New RFI Work Plan	The optimization team recommended modifying the 2015 draft RFI work plan (which was not approved prior to the optimization review) or replacing it with a new RFI work plan.	Complete	New RFI Work Plan published April 2023 and approved by MDEQ on May 19, 2023. Certain elements in the 2023 RFI Work Plan were modified in the 2024 RFI Work Plan Addendum (approved by MDEQ in March 2024) due to health and safety concerns. RFI Phase 2 Work Plan published June 2025.	CSM, Site Characterization
2020	Calumet Montana Refining LLC (CMR)	MT	8	8-Apr-20	5.7	Recommendations Regarding Remedy Approach	The optimization team recommended continuing with the LNAPL removal efforts; determining whether remediation is needed in the area near MW-91 and MW-97 and, if applicable, implementing one of the suggested remedies in the optimization report; and an additional path forward for eliminating deep aquifer zone concerns near AOC 16.	In Progress	(1) AOC-16 IM Remedies Constructed Fall 2021: Dual-Phase Extraction (DPE) Remediation System in Truck Loading Rack; and LNAPL recovery trench and passive treatment trench (PTT) utilizing colloidal activated carbon at an area along North River Road (2) AOC-16 IM LNAPL Trench Extended Summer 2022 (3) AOC-16 IM Remedies Currently Operational	Remedy
2020	Calumet Montana Refining LLC (CMR)	MT	8	8-Apr-20	5.8	Recommendations Regarding CA 725 and CA 750	The optimization team recommended several items in order to answer "YE" for CA 725 and CA 750.	In Progress	Relevant activities to be completed under RFI Phase 2 Work Plan	RCRA EIs

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2020	Former Flying J Petroleum, Inc.	MT	8	8-Apr-20	5.1	Additional delineations	A deep monitoring well was recommended to confirm plume is not migrating at depth.	RTI is reviewing and will update accordingly		CSM, Site Characterization
2020	Former Flying J Petroleum, Inc.	MT	8	8-Apr-20	5.2	Additional characterization— groundwater flow	At least two new wells were recommended to evaluate whether migration of plume into bedrock was occurring.	RTI is reviewing and will update accordingly		CSM, Site Characterization
2020	Former Flying J Petroleum, Inc.	MT	8	8-Apr-20	5.3	Additional sampling	Naphthalene and 2-methylnaphthalene should be sampled periodically in all wells to evaluate plume distribution and more rigorously track remedy progress.	RTI is reviewing and will update accordingly		Monitoring
2020	Former Flying J Petroleum, Inc.	MT	8	8-Apr-20	5.4	More frequent groundwater sampling	Annual monitoring for four more years and reduce after natural attenuation is attained.	RTI is reviewing and will update accordingly		Monitoring
2020	Former Flying J Petroleum, Inc.	MT	8	8-Apr-20	5.5	Additional characterization— MTBE and oxidation reduction potential (ORP) maps	Contours of MTBE concentrations and ORP values recommended. The latter to evaluate transition to aerobic conditions. Replace ND with "<" and method detection limits in maps.	RTI is reviewing and will update accordingly		CSM, Site Characterization
2020	Former Flying J Petroleum, Inc.	MT	8	8-Apr-20	5.6	Additional characterization— update trend plots	Concentration plots from 2017 RFI should be updated with data since RFI.	RTI is reviewing and will update accordingly		Data Management
2020	Former Flying J Petroleum, Inc.	MT	8	8-Apr-20	5.7	Additional characterization— surface water sampling	No sampling for hydrocarbons in sediments and surface water in Spring Coulee. Recommended sampling one time at downstream locations for hydrocarbons and expand to full analytes (VOCs, SVOCs, and metals) if hydrocarbons are detected.	RTI is reviewing and will update accordingly		CSM, Site Characterization
2020	Former Flying J Petroleum, Inc.	MT	8	8-Apr-20	5.8	Modify remedy-- engineering and institutional controls	Four wheelers use can increase exposure risks to humans via dusts. Recommendations were made to verify perimeter security, to post warning signage on exposure risks and on prohibitions of ground disturbances, and to implement institutional controls to force protections in case of future human occupations	RTI is reviewing and will update accordingly		Remedy
2020	Former Flying J Petroleum, Inc.	MT	8	8-Apr-20	5.9	Modify remedy	Alternatives were recommended based on whether groundwater impacts are stable. If stable, monitor long-term for natural attenuation, implement engineering and institutional controls, and target some areas	RTI is reviewing and will update accordingly		Remedy

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							for active remediation. If not stable, investigate and implement active remediation.			
2021	Former Beech Aircraft Corporation Site (Raytheon)	CO	8	30-Jul-21	5.1	Surface Water Seeps	The optimization team recommended eliminating the discrepancy between the two sets of criteria and encouraged regulators to consider low flow rates, intermittent flow, and contaminant volatilization after discharge.	Unknown	None	Cleanup Goals, Exit Strategy
2021	Former Beech Aircraft Corporation Site (Raytheon)	CO	8	30-Jul-21	5.2.1	Reporting - Documentation and Data Repository	The optimization team recommended that the EPA obtain digital historical documents related to site characterization and remedy implementation.	Unknown	None	Data Management
2021	Former Beech Aircraft Corporation Site (Raytheon)	CO	8	30-Jul-21	5.2.2	Reporting - Seep and Groundwater Quality Data	The optimization team identified missing and illegible monitoring data in the reports and recommended the appropriate format for presenting the data	Unknown	None	Data Management
2021	Former Beech Aircraft Corporation Site (Raytheon)	CO	8	30-Jul-21	5.2.3	Reporting - Groundwater Potentiometric Surfaces	The optimization team recommended obtaining groundwater elevation data in the appropriate format	Unknown	None	Data Management
2021	Former Beech Aircraft Corporation Site (Raytheon)	CO	8	30-Jul-21	5.2.4	Reporting - Remedial Action Summary	The optimization team recommended including a remedial action chronology showing the start and end dates of each remedial actions.	Unknown	None	Data Management
2021	Former Beech Aircraft Corporation Site (Raytheon)	CO	8	30-Jul-21	5.3	Refine CSM for Contaminant Migration in the Fort Hays Limestone	The optimization team recommended revisiting the CSM to explain the TCE and DCE trends discussed in Section 4.5 and to consider changes to the remedial strategy as appropriate.	Unknown	None	CSM, Site Characterization
2021	Former Beech Aircraft Corporation Site (Raytheon)	CO	8	30-Jul-21	5.4.1	Potential Options for Addressing Seeps 1 and 2	The optimization team recommended considering installation of an interceptor trench upstream of the seeps if hydraulic seep control is preferred. The optimization team also recommended considering air injection upstream of the seeps to volatilize	Unknown	None	Remedy

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2021	Former Beech Aircraft Corporation Site (Raytheon)	CO	8	30-Jul-21	5.4.2	Groundwater Extraction from the Niobrara Shale	VOCs in groundwater if addressing VOC contamination at the seeps is a concern. Groundwater extraction from the Niobrara Shale is also recommended, primarily from EW-1 and potentially from other former extraction wells in the area	Unknown	None	Remedy
2021	Former Beech Aircraft Corporation Site (Raytheon)	CO	8	30-Jul-21	5.4.3	Additional Source Area Remediation	The optimization team favored continued groundwater extraction for contaminant mass removal and containment and recommends enhancing extraction by reactivating one or more existing extraction wells that are not currently in operation	Unknown	None	Remedy
2021	Former Beech Aircraft Corporation Site (Raytheon)	CO	8	30-Jul-21	5.5	Monitoring Network	The optimization team recommended sampling all remaining non-dry groundwater wells every five years to check for unexpected concentration increases, with selected Niobrara Shale wells sampled every two years to evaluate the potential for recontamination of the UDA.	Unknown	None	Monitoring
2021	Former Beech Aircraft Corporation Site (Raytheon)	CO	8	30-Jul-21	5.5	Monitoring Network	The optimization team recommended sampling wells HCA-56A, HCA-56B, HCA-74A, HCA-64, and HCA-57 (if present) every two years to demonstrate ongoing source depletion.	Unknown	None	Monitoring
2021	Former Beech Aircraft Corporation Site (Raytheon)	CO	8	30-Jul-21	5.5	Monitoring Network	The optimization team recommended collecting data to confirm that Fort Hays contamination does not migrate to seeps or affect shallower groundwater to the northeast, and should prepare five-year statistical trend analyses for TCE, DCE, and VC.	Unknown	None	Monitoring
2021	Former Beech Aircraft Corporation Site (Raytheon)	CO	8	30-Jul-21	5.6	Attainment to Other Statistical Analyses	The optimization team suggested considering EPA guidance in evaluating attainment rather than rely on the results from two consecutive events. The EPA guidance includes the Recommended Approach for Evaluating Completion of Groundwater Restoration Remedial Actions at a Groundwater Monitoring Well (OSWER 9283.1-44) (USEPA 2014) and the EPA Groundwater Statistics Tool outline a	Unknown	None	Cleanup Goals, Exit Strategy

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2021	Former Beech Aircraft Corporation Site (Raytheon)	CO	8	30-Jul-21	5.7	Recommendations Regarding CA 725 and CA 750	process for demonstrating attainment of groundwater cleanup goals. If the seeps were the only area of concern for achieving EI CA 750, the optimization team would recommend considering the role of volatilization in the determination; no recommendations were made related to EI CA 725.	Unknown	None	RCRA Els
2021	Koppers Inc (North Little Rock Facility)	AR	6	30-Jul-21	5.1	Additional characterization— install well clusters	Team recommended installing three additional well clusters to address data gaps in the monitoring program used to evaluate MNA. Sampling and well gauging from these wells will help improve understanding of plume width and groundwater flow directions.	RTI is reviewing and will update accordingly		CSM, Site Characterization
2021	Koppers Inc (North Little Rock Facility)	AR	6	30-Jul-21	5.2	Additional characterization— hydraulic influence from groundwater extraction/injection	Team recommended reviewing historical water level and water quality data to better understand the impact of groundwater extraction and injection on the plume trajectory. This will avoid a scenario in which increased flow rates sufficiently alter the plume trajectory to require additional MNA monitoring wells.	RTI is reviewing and will update accordingly		CSM, Site Characterization
2021	Koppers Inc (North Little Rock Facility)	AR	6	30-Jul-21	5.3	Modify remedy— optimize groundwater extraction and injection	Team recommends optimization of flow rates to balance DNAPL recovery, plume trajectory, and degradation	RTI is reviewing and will update accordingly		Remedy
2021	Koppers Inc (North Little Rock Facility)	AR	6	30-Jul-21	5.4	Modify remedy— define endpoint for DNAPL recovery before transition to new remedy	Team recommended a constraint on future DNAPL recovery for practical reasons because eventually, remediation is more effectively achieved with another technology. The potential for installing additional DNAPL recovery wells, now or in the future, should be considered as part of this discussion. With regard to other remedial technologies, treatment with surfactants and/or activated persulfate are potential candidates. Consideration of remedial options may be based on the strength of the residual source of COCs, cost, and projected effectiveness.	RTI is reviewing and will update accordingly		Remedy
2021	Koppers Inc (North Little Rock Facility)	AR	6	30-Jul-21	5.5	Additional characterization— analyze injected water	The optimization team recommends sampling the injected water for the current	RTI is reviewing and will update accordingly		Monitoring

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2021	Rock Facility) Koppers Inc (North Little Rock Facility)	AR	6	30-Jul-21	5.6	Additional characterization— insufficient at an area of concern	parameters in the monitoring program within the next year and once every year thereafter. The optimization team focused on the C-Zone and D-Zone because DNAPL, contaminant transport, and MNA in this aquifer is the primary focus of the remedy documents. In addition, information about the Azone is very limited. During its review, the optimization team noted that only one down gradient A-zone well (MW-29A) is sampled.	RTI is reviewing and will update accordingly		CSM, Site Characterization
2022	Exide	LA	6	30-Jul-21	1	Interpret leachate source loading using flow rates	Review team recommends evaluating influent flow rates as the basis for prioritizing and targeting potential mitigations to reduce the influent from the largest flow contributors to the WWTS. Specific recommendations were given, including installing dataloggers, monitoring surface water, using precipitation data, hydrogeology evaluation, and cross-analyze with groundwater levels.	RTI is reviewing and will update accordingly		CSM, Site Characterization
2022	Exide	LA	6		2	Evaluate groundwater infiltration into leachate collection system	Leachate trench may be below groundwater table, collecting groundwater mixed in with leachate. Team recommended survey of collection system wells depths and pump depths relative to potentiometric surface.	RTI is reviewing and will update accordingly		CSM, Site Characterization
2022	Exide	LA	6		3	Evaluate stormwater infiltration into leachate collection system	Repair concrete in stormwater collection area and inspect other features of collection system for repairs	RTI is reviewing and will update accordingly		Remedy
2022	Exide	LA	6		4	Evaluate leachate flow rate/frequency reductions	If leachate collection system is stopped, team recommended groundwater monitoring wells be installed downgradient of leachate sources.	RTI is reviewing and will update accordingly		Monitoring
2022	Exide	LA	6		5	Evaluate scenario without waste water treatment system	Suspending operation of the WWTS would generally cause the discharge of untreated leachate and first-flush stormwater to Outfall 001 and the bayou. This untreated discharge would contain high concentrations of arsenic and lead, and lower, but elevated concentrations of selenium and mercury. Alternatively, limiting operation	RTI is reviewing and will update accordingly		Cleanup Goals, Exit Strategy
2022	GE Aircraft Engines (aka GE	OH	5	16-Sep-22	5.1	Prioritize Plume Capture at Facility Boundary	The technical team believes that plume capture at/near the facility boundary should be prioritized. The team does not endorse a general	Under Consideration	Unknown	Cleanup Goals, Exit Strategy

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	Aviation Facility)						approach to transition from P&T to MNA when concentrations at the Facility boundary achieve the constituent- specific CMOs developed in in the CMS.			
2022	GE Aircraft Engines (aka GE Aviation Facility)	OH	5	16-Sep-22	5.2	Additional Monitoring Locations Southwest/South of Facility	The technical team recommends additional monitoring locations in the USG and LSG locations to help delineate the downgradient extent of the plume and to address concerns about the sparse monitoring network beyond the facility boundary that is currently used to evaluate plume capture and attenuation.	In Progress	Unknown	Monitoring
2022	GE Aircraft Engines (aka GE Aviation Facility)	OH	5	16-Sep-22	5.3	Improved Evaluation of Groundwater Flow Directions Southwest /South of the Facility	The technical team recommends hydraulic gradient vectors be calculated for routine monitoring periods at locations downgradient of the Facility, using a triangle based approach.	Under Consideration	Unknown	Monitoring
2022	GE Aircraft Engines (aka GE Aviation Facility)	OH	5	16-Sep-22	5.4	Re-Implement Extraction Near Former Extraction Well EW-7S	The optimization team recommends resuming groundwater extraction in the USG area to provide capture. Prior to doing so, additional characterization is merited to better understand the target capture zone.	In Progress	Unknown	Remedy
2022	GE Aircraft Engines (aka GE Aviation Facility)	OH	5	16-Sep-22	5.5	Periodically Analyze Extraction Wells for 1,4- Dioxane	The optimization team recommends sampling IRM extraction wells for 1,4-dioxane once every 1.5 years.	Implemented		Monitoring
2022	GE Aircraft Engines (aka GE Aviation Facility)	OH	5	16-Sep-22	5.6	Improve Reporting for Extraction Rates	The optimization team recommends improving the tracking and reporting of extraction rates so that long-term variation in extraction rate at each extraction well is summarized in Site reports.	Implemented		Data Management
2022	GE Aircraft Engines (aka GE Aviation Facility)	OH	5	16-Sep-22	5.7	Other Improvements to Capture Zone Evaluation	The optimization team recommends evaluating the capture with a groundwater model (i.e., flow model plus particle tracking), since a groundwater model for the Site has been previously developed.	Implemented	Capture zone evaluation is forthcoming from O/O	Remedy
2022	GE Aircraft Engines (aka GE Aviation Facility)	OH	5	16-Sep-22	5.8	Other Reporting Improvements	Monitoring reports are inconsistent with the information that is provided, the optimization review recommends several improvements to improve reporting consistency.	Implemented		Data Management
2022	GE Aircraft Engines (aka GE	OH	5	16-Sep-22	5.9	Evaluate Use/Status of Building Southeast PMW- 3 VP	The technical team recommends that building use/status be evaluated to determine if there is a need for VI investigation for that building.	Implemented	Expanded investigation	CSM, Site Characterization

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2022	Aviation Facility) GE Aircraft Engines (aka GE Aviation Facility)	OH	5	16-Sep-22	5.10	Recommendations Regarding EI Determinations	The technical team believes there are gaps in capture and continued migration of impacted groundwater across the facility boundary that compromises the long-term objective of attaining cleanup goals beyond the facility boundary.	Under Consideration		RCRA Els
2022	Suncor Energy (USA) Inc - Commerce City Refinery	CO	8	11-Jul-22	5.1	Overall PFAS Remediation Strategy	The optimization team recommends groundwater extraction and treatment by bituminous derived GAC and/or PFAS-specific ion exchange resin for reliable treatment. The current pilot GAC system is not intended as a permanent solution and will need to be replaced. The optimization team recommends the PFAS treatment for extracted water be more comprehensively documented for the pilot system.	Unknown	None	Remedy
2022	Suncor Energy (USA) Inc - Commerce City Refinery	CO	8	11-Jul-22	5.2	Initial PFAS Characterization	The technical team recommends additional interior hotspot identification/characterization, additional boundary control monitoring, and general delineation for the interior portion of the Refinery to support future interpretation of the nature and extent of PFAS contamination.	Unknown	None	CSM, Site Characterization
2022	Suncor Energy (USA) Inc - Commerce City Refinery	CO	8	11-Jul-22	5.3	Considerations for Interpreting Analytical Results	When attempting to identify PFAS source areas, consideration should be given to analyzing for total oxidizable precursors (TOP) in select locations. This analytical technique involves oxidizing PFAS samples to convert precursor compounds into perfluoroalkyl acids (PFAAs). The optimization team cautions, however, that the TOP approach may transform precursors into PFAS compounds that would not normally occur under natural conditions.	Unknown	None	Data Management
2022	Suncor Energy (USA) Inc - Commerce City Refinery	CO	8	11-Jul-22	5.4	Conduct a Source Area Investigation of the FTA	The FTA is a known source with a location that is known by the facility owner/operator. The technical team recommends conducting a direct-push technology (DPT) investigation of soil and groundwater at and around the FTA to understand the nature and extent of this source area. The investigation should be	Unknown	None	CSM, Site Characterization

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							sufficiently thorough to evaluate the horizontal and vertical extent of the PFAS contamination and provide the information necessary to determine the volume of contaminated soil to be removed, if any.			
2022	Suncor Energy (USA) Inc - Commerce City Refinery	CO	8	11-Jul-22	5.5	Contain PFAS Contamination Migrating North and South of the Burlington Ditch Barrier Wall	Sampling results and groundwater flow patterns indicate that PFAS contamination is migrating around the north and south ends of the Burlington Ditch Barrier Wall, into areas beyond the Refinery boundary. If the FTA-specific approach recommended in Section 5.4 is not sufficient to adequately address PFAS impacts migrating around the south and/or north end of the Burlington Ditch Barrier Wall, the technical team would recommend localized groundwater extraction and treatment to contain the PFAS contamination that is migrating around the Burlington Ditch Barrier Wall to the north and/or to the south.	Unknown	None	Remedy
2022	Suncor Energy (USA) Inc - Commerce City Refinery	CO	8	11-Jul-22	5.6	Considerations for Groundwater Extraction and Treatment	The optimization team expects that the PFAS remedy will eventually include groundwater extraction and treatment in one or more new locations (e.g., near the FTA and near other source areas further east). The optimization team envisions a few different ways the groundwater extraction and treatment could be implemented, including centralized groundwater treatment and discharge; localized groundwater treatment and discharge; localized groundwater treatment and on-site injection.	Unknown	None	Remedy
2022	Suncor Energy (USA) Inc - Commerce City Refinery	CO	8	11-Jul-22	5.7	Establish and Document Controls to Prevent Potential Human Exposures	BTEX and PFAS groundwater and soil contamination appear extensive throughout the Refinery property, and PFAS impacts to groundwater extend beyond the Refinery property boundaries. The optimization team encourages the owner/operator to document the ICs and engineering controls that have been implemented on and off the Refinery property to prevent human exposures. This step may be sufficient to allow the Site to meet CA 725.	Unknown	None	RCRA EIs

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2022	Suncor Energy (USA) Inc - Commerce City Refinery	CO	8	11-Jul-22	5.8	EI Determinations	The technical team does not believe there are currently human exposures to Site-related contamination; however, the technical team is unaware of ICs that would prevent contact with contaminated media. For this reason, the technical team cannot conclusively state that human exposures are under control (CA 725). However, implementation of Recommendation 5.7 may be sufficient to achieve this EI determination. Additionally, PFAS from Suncor is known to enter Sand Creek which merges with the South Platte River. Before CA 725 can be fully evaluated, additional study is likely needed to determine if drinking water intakes from the South Platte River and/or well fields adjacent to the South Platte River, in the downstream direction from the Refinery, are impacted by PFAS, and if so, whether or not PFAS discharged to Sand Creek from the Refinery may be contributing to such impacts.	Unknown	None	RCRA Els
2023	Katzson Brothers	CO	8	13-Jun-23	5.1	Install and Monitor Permanent Sub-Slab Monitoring Points	No sub-slab monitoring has occurred since 207 and therefore, current sub-slab vapor concentrations are not well characterized. The technical team recommends that these 10 locations be monitored at least twice prior to completing the CMS and implementing future remediation activities to document current conditions and to provide a baseline for evaluating effectiveness of the subsequent remediation activities.	Unknown	None	Monitoring
2023	Katzson Brothers	CO	8	13-Jun-23	5.2	Consider Near-Term Vapor Extraction	The optimization team recommends consideration of SVE as an interim measure while additional characterization/delineation is performed (see Sections 5.3 to 5.5), prior to completing the CMS and selection of any subsequent corrective actions (Section 5.6). More specifically, the optimization team suggests an SVE pilot test in two general locations: 1) beneath a northern portion of the building; and 2) at the source area in the	Unknown	None	CSM, Site Characterization

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							southwestern portion of the Facility (near MW-2R). For the test beneath the building, the preferred location would be near former soil vapor probe SSV-2 where the highest sub-slab vapor concentrations were observed in 2007, which is also near the highest PCE concentration in indoor air measured in 2021, and is also near monitoring well 6M-5, which can serve as a useful location for monitoring SVE impact on groundwater. It is further recommended that this pilot testing include coupled SVE extraction wells (shallow and deep) at two or three locations in each of the two pilot test areas.			
2023	Katzson Brothers	CO	8	13-Jun-23	5.3	Vertical Groundwater Characterization at the Facility	The optimization team presented four locations where bedrock wells are recommended to better evaluate contamination within bedrock prior to completing the CMS.	Unknown	None	CSM, Site Characterization
2023	Katzson Brothers	CO	8	13-Jun-23	5.4	Downgradient Characterization	The extent of the VOC plume migrating from the Facility is unknown, and VOC contamination potentially migrates to the north, northwest, west, and southwest. Additional information is needed in directions aside from the west and northwest. The optimization team recommends five clustered well locations with shallow (alluvium) and deep (shallow bedrock) wells to better characterize the VOC plume.	Unknown	None	CSM, Site Characterization
2023	Katzson Brothers	CO	8	13-Jun-23	5.5	Bedrock Aquifer Testing	The optimization team recommends installing a bedrock extraction test well in each of the two former PCE storage tank source areas (e.g., near MW-2R and near MW-6) to characterize the contaminant mass likely present in the bedrock underlying the Facility and whether the mass extends west under Vallejo Street.	Unknown	None	Monitoring
2023	Katzson Brothers	CO	8	13-Jun-23	5.6	Considerations for Remedial Strategy	The optimization team notes that control of contaminant migration is needed but the information about the bedrock is too limited to develop a preliminary corrective action	Unknown	None	CSM, Site Characterization

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							approach. The optimization team provides a list of information/items prior to completing the CMS and necessary to develop a remedial strategy, including implementation of SVE; remediation of DNAPL in fractured bedrock, in situ technologies.			
2023	Katzson Brothers	CO	8	13-Jun-23	5.7	Increase Groundwater Monitoring Frequency	The last comprehensive groundwater sampling event for the Facility was in 2019, and the previous comprehensive groundwater monitoring event (for most portions of the Facility) was in 2012. The optimization team recommends a suite of annual sampling be performed at select wells for better evaluation of concentration trends.	Unknown	None	Monitoring
2023	Katzson Brothers	CO	8	13-Jun-23	5.8	Make Combined Maps for Katzen Brothers and Neighboring Facilities	Historically, the maps prepared for Katzson Brothers, such as groundwater elevation maps and contaminant concentration maps, have generally been limited to data from wells at Katzson Brothers and at East-West, located immediately south of the Facility. However, the impacts from contamination that originated from historical Katzson Brothers sources potentially extends beyond the property in multiple directions. To adequately reflect the CSM and monitor future remedy performance, it is recommended that data be collected and reported/displayed in a manner that allows the full extent of the impacted area(s) to be represented.	Unknown	None	CSM, Site Characterization
2023	Katzson Brothers	CO	8	13-Jun-23	5.9	Include Well Construction Table in Reports	The optimization team recommends that future reports include a table that indicates well depths, screened intervals, and unit(s) screened (e.g., alluvium, weathered bedrock, alluvium and weathered bedrock, etc.).	Unknown	None	Data Management
2023	Katzson Brothers	CO	8	13-Jun-23	5.10	Recommendations Regarding EI Determinations	The optimization team recommends a suite of recommendations to get to YE for CA 725 and 750.	Unknown	None	RCRA EIs
2023	Standard Wood Preservers	LA	6	13-Sep-23	6.1.1	Recommendations to improve the remedy's ability - Conduct Site Assessment to Address CSM Data Gaps	The optimization team recommended implementing site characterization work to	Unknown	Preliminary Assessment report was submitted in June	CSM, Site Characterization

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	Inc Shreveport						further characterize soil and groundwater quality - An initial phase of soil and groundwater sampling at 8 to 15 locations using hollow stem auger or direct push technology (DPT) methods including recommended initial use of laser-induced fluorescence (LIF) probing to focus selection of coring locations.		2025, concluding that the site is NFRA. The site didn't meet CERCLA criteria for a removal action and has been removed from the EPA Response and Removal Brach work list.	
2023	Standard Wood Preservers Inc Shreveport	LA	6	13-Sep-23	6.1.1	Recommendations to improve the remedy's ability - Conduct Site Assessment to Address CSM Data Gaps	The optimization team recommended implementing site characterization work to further characterize soil and groundwater quality - Continuous core soil sampling until the saturated zone or vertical extent of constituents has been defined by organic vapor measurements	Unknown	Preliminary Assessment report was submitted in June 2025, concluding that the site is NFRA. The site didn't meet CERCLA criteria for a removal action and has been removed from the EPA Response and Removal Brach work list.	CSM, Site Characterization
2023	Standard Wood Preservers Inc Shreveport	LA	6	13-Sep-23	6.1.1	Recommendations to improve the remedy's ability - Conduct Site Assessment to Address CSM Data Gaps	The optimization team recommended implementing site characterization work to further characterize soil and groundwater quality - Collection of groundwater samples from temporary wells to be installed	Unknown	Preliminary Assessment report was submitted in June 2025, concluding that the site is NFRA. The site didn't meet CERCLA criteria for a removal action and has been removed from the EPA Response and Removal Brach work list.	CSM, Site Characterization
2023	Standard Wood Preservers Inc Shreveport	LA	6	13-Sep-23	6.1.1	Recommendations to improve the remedy's ability - Conduct Site Assessment to Address CSM Data Gaps	The optimization team recommended implementing site characterization work to further characterize soil and groundwater quality - Analysis of soil and groundwater samples for 19 SVOC PAHs	Unknown	Preliminary Assessment report was submitted in June 2025, concluding that the site is NFRA. The site didn't meet CERCLA criteria for a removal action and has been removed from the EPA Response and Removal Brach work list.	CSM, Site Characterization
2023	Standard Wood Preservers Inc Shreveport	LA	6	13-Sep-23	6.1.1	Recommendations to improve the remedy's ability - Conduct Site Assessment to Address CSM Data Gaps	The optimization team recommended implementing site characterization work to further characterize soil and groundwater quality - Conduct of a fluid level survey to document groundwater elevation and NAPL intervals (if present)	Unknown	Preliminary Assessment report was submitted in June 2025, concluding that the site is NFRA. The site didn't meet CERCLA criteria for a removal action and has been removed from the EPA Response and Removal Brach work list.	CSM, Site Characterization
2023	Standard Wood Preservers	LA	6	13-Sep-23	6.1.1	Recommendations to improve the remedy's ability - Conduct Site Assessment to Address CSM Data Gaps	The optimization team recommended implementing site characterization work to further characterize soil and groundwater	Unknown	Preliminary Assessment report was submitted in June 2025, concluding that the site	CSM, Site Characterization

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	Inc Shreveport						quality - Hydraulic testing to estimate K at wells		is NFRA. The site didn't meet CERCLA criteria for a removal action and has been removed from the EPA Response and Removal Brach work list.	
2023	Standard Wood Preservers Inc Shreveport	LA	6	13-Sep-23	6.1.1	Recommendations to improve the remedy's ability - Conduct Site Assessment to Address CSM Data Gaps	The optimization team recommended implementing site characterization work to further characterize soil and groundwater quality - Related surveying and reporting work.	Unknown	Preliminary Assessment report was submitted in June 2025, concluding that the site is NFRA. The site didn't meet CERCLA criteria for a removal action and has been removed from the EPA Response and Removal Brach work list.	CSM, Site Characterization
2023	Standard Wood Preservers Inc Shreveport	LA	6	13-Sep-23	6.1.1	Recommendations to improve the remedy's ability - Conduct Site Assessment to Address CSM Data Gaps	The optimization team recommended the additional components: - Installation of at least two borings and wells (screened in the uppermost aquifer) in the neighborhood downgradient of existing wells MW-15 and MW-16;	Unknown	Preliminary Assessment report was submitted in June 2025, concluding that the site is NFRA. The site didn't meet CERCLA criteria for a removal action and has been removed from the EPA Response and Removal Brach work list.	CSM, Site Characterization
2023	Standard Wood Preservers Inc Shreveport	LA	6	13-Sep-23	6.1.1	Recommendations to improve the remedy's ability - Conduct Site Assessment to Address CSM Data Gaps	The optimization team recommended the additional components: - Fluid level measurement and groundwater sampling for VOC and SVOC analysis at any accessible wells in the neighborhood north of the SWP property	Unknown	Preliminary Assessment report was submitted in June 2025, concluding that the site is NFRA. The site didn't meet CERCLA criteria for a removal action and has been removed from the EPA Response and Removal Brach work list.	CSM, Site Characterization
2023	Standard Wood Preservers Inc Shreveport	LA	6	13-Sep-23	6.1.1	Recommendations to improve the remedy's ability - Conduct Site Assessment to Address CSM Data Gaps	The optimization team recommended the additional components: - Groundwater sampling at approximately twenty existing and new wells including the seven wells that are currently sampled, two new wells that do not contain creosote DNAPL for EPA Method 8260 and 8270	Unknown	Preliminary Assessment report was submitted in June 2025, concluding that the site is NFRA. The site didn't meet CERCLA criteria for a removal action and has been removed from the EPA Response and Removal Brach work list.	CSM, Site Characterization
2023	Standard Wood Preservers Inc Shreveport	LA	6	13-Sep-23	6.1.1	Recommendations to improve the remedy's ability - Conduct Site Assessment to Address CSM Data Gaps	The optimization team recommended the additional components: - Additional borings in the creosote DNAPL release source areas to enhance delineating of creosote presence and recoverability above the clay layer.	Unknown	Preliminary Assessment report was submitted in June 2025, concluding that the site is NFRA. The site didn't meet CERCLA criteria for a removal action and has been removed	CSM, Site Characterization

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									from the EPA Response and Removal Brach work list.	
2023	Standard Wood Preservers Inc Shreveport	LA	6	13-Sep-23	6.1.1	Recommendations to improve the remedy's ability - Conduct Site Assessment to Address CSM Data Gaps	The optimization team recommended the additional components: - After analysis of newly aquifer data, use of DPT methods to sense and sample contaminants in soil and groundwater to determine potential creosote DNAPL migration beneath the clay layer at strategic locations.	Unknown	Preliminary Assessment report was submitted in June 2025, concluding that the site is NFRA. The site didn't meet CERCLA criteria for a removal action and has been removed from the EPA Response and Removal Brach work list.	CSM, Site Characterization
2023	Standard Wood Preservers Inc Shreveport	LA	6	13-Sep-23	6.1.2	Recommendations to improve the remedy's ability - Implement Institutional and Engineering Controls.	The technical team recommended that the site team coordinate with the local health authority to adopt institutional controls (IC) in the neighborhood north of the site to: Prohibit shallow well drilling, monitor the drilling of any deep well in the area, and prevent any cross-contamination from the shallow zone to deep well screen interval	Unknown	Preliminary Assessment report was submitted in June 2025, concluding that the site is NFRA. The site didn't meet CERCLA criteria for a removal action and has been removed from the EPA Response and Removal Brach work list.	Institutional Controls
2023	Standard Wood Preservers Inc Shreveport	LA	6	13-Sep-23	6.1.2	Recommendations to improve the remedy's ability - Implement Institutional and Engineering Controls.	The technical team recommended that the site team coordinate with the local health authority to adopt institutional controls (IC) in the neighborhood north of the site to: Require vapor intrusion mitigation system for new construction of habitable structures.	Unknown	Preliminary Assessment report was submitted in June 2025, concluding that the site is NFRA. The site didn't meet CERCLA criteria for a removal action and has been removed from the EPA Response and Removal Brach work list.	Institutional Controls
2023	Standard Wood Preservers Inc Shreveport	LA	6	13-Sep-23	6.1.2	Recommendations to improve the remedy's ability - Implement Institutional and Engineering Controls.	The technical team recommended performing VI monitoring including sub-slab and indoor air sampling	Unknown	Preliminary Assessment report was submitted in June 2025, concluding that the site is NFRA. The site didn't meet CERCLA criteria for a removal action and has been removed from the EPA Response and Removal Brach work list.	Monitoring
2023	Standard Wood Preservers Inc Shreveport	LA	6	13-Sep-23	6.1.2	Recommendations to improve the remedy's ability - Implement Institutional and Engineering Controls.	The technical team recommended implementing VIMS at slab on grade structures in the neighborhood. 641 Rollins Street (Cedar Grove 7th Day Adventist Church) would be the first location.	Unknown	Preliminary Assessment report was submitted in June 2025, concluding that the site is NFRA. The site didn't meet CERCLA criteria for a removal action and has been removed from the EPA Response and Removal Brach work list.	Remedy

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2024	Dow Chemical CO (Dalton Plant)	GA	4	19-Mar-24	1	Subsurface characterization	Further characterization of the overburden, fractured bedrock, and competent bedrock needs to occur in the geology beneath the site. Characterizing the subsurface in this area may better delineate fractures and features important to fate & transport. Current CSM is oversimplified.	Unknown	None	CSM, Site Characterization
2024	Dow Chemical CO (Dalton Plant)	GA	4		2	Additional delineations	The installation of additional monitoring wells, including those in bedrock, is necessary to achieve vertical delineation of the bedrock plume. Wells drilled in the Main Plant Area need to be at least 100 feet to fully delineate the vertical extent of contamination. The review team believes there may be value in implementing a step-in/step-out procedure in tandem with rapid screening techniques.	Unknown	None	CSM, Site Characterization
2024	Dow Chemical CO (Dalton Plant)	GA	4		3	Improve annual capture zone analysis	EPA's six-step capture zone analysis is the best tool for assessing capture in a pump-and-treat system such as the one at the Site. Plume maps shown in the Annual Effectiveness Reports are difficult to interpret and analyze because the sum of all sampled VOCs is contoured. Future capture assessments should focus on specific VOCs, not total VOCs. More lines of evidence are needed to assess captures.	Unknown	None	Data Gaps
2024	Dow Chemical CO (Dalton Plant)	GA	4		4	Alternative remedies	Based on the analysis of Section 4.6, the technical team recommends that Dow explore potential alternative remedies in the Main Plant Area to reduce the time to full remediation (e.g., in situ thermal treatment or bioremediation).	Unknown	None	Remedy
2024	Solvay	MT	8	?	5.1	Demonstrate horizontal groundwater delineations of antimony, benzene, iron, mercury, naphthalene, nickel, radium 226, thallium, and zinc based on current (on or after September 2023) sampling data. If constituents are no longer monitored, demonstrate reasons via historical trends and/or statistical analyses.	Analytes not horizontally delineated	Unknown	None	CSM, Site Characterization
2024	Solvay	LA	6	?	5.2	Plot horizontal concentrations of all groundwater COPCs	No concentration contour available	Unknown	None	Data Gaps

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2024	Solvay	LA	6	?	5.3	Designate gross alpha as a constituent of potential concern (COPC) in monitoring and reporting of groundwater impacts	Missing data for COPC	Unknown	None	Data Gaps
2024	Solvay	LA	6	?	5.4	Demonstrate horizontal groundwater delineations of fluoride, beryllium, and radium 228 based on current (on or after September 2023) sampling data	Extents of impacts undelineated for listed analytes	Unknown	None	Data Gaps
2024	Solvay	LA	6	?	5.5	Recalculate background concentration levels for COPCs in groundwater using concentrations from unbiased locations and with sufficiently large sample size	Outdated and potential biased background values	Unknown	None	Data Gaps
2024	Solvay	LA	6	?	5.6	Assess the sampling locations and sizes used to establish background concentrations of COPCs in surface water and sediments and assign additional locations if necessary.	Outdated and potential biased background values	Unknown	None	Data Gaps
2024	Solvay	LA	6	?	5.7	Determine whether analytes in groundwater, surface water, and sediments with concentrations greater than SLs but below potentially biased background levels in 2017 HHRA and BERA are COPCs	Outdated and potential biased background values	Unknown	None	Data Gaps
2024	Solvay	LA	6	?	5.8	Report revised COPCs screening for groundwater using revised background levels and report as part of updates to 2017 HHRA and BERA	Outdated nature & extent of COPCs	Unknown	None	Data Gaps
2024	Solvay	LA	6	?	5.9	Collect additional arsenic and uranium concentrations from locations downgradient of MW-12-06 and MW-06-1 (i.e., from new sentinel wells, from surface water, from residential wells, or a combination thereof) to determine if arsenic and uranium are migrating toward Silver Bow Creek or downgradient residences	Missing downgradient delineation	Unknown	None	Data Gaps
2024	Solvay	LA	6	?	5.10	Evaluate the current selenium impacts in surface water by monitoring and screening selenium in surface water of Sheep Gulch and Silver Bow Creek to the Montana Water Quality Standards for acute and aquatic life or by comparing the mass flux of selenium entering surface water to the aquatic life standards.	Missing assessment in surface water	Ongoing	Solvay agreed to begin sampling surface water. Contact EPA RSM for exact list of targeted analytes.	RCRA Els
2024	Solvay	LA	6	?	5.11	Consider monitoring Silver Bow Creek for arsenic, uranium, and other COPCs potentially identified after background levels are recalculated	Missing assessment in surface water	Ongoing	Solvay agreed to begin sampling surface water. Contact EPA RSM for exact list of targeted analytes.	Monitoring
2024	Solvay	LA	6	?	5.12	Report gross beta and gross alpha concentrations using detection limits less than SLs and demonstrate current delineations by plotting the horizontal contours of their concentrations (including a contour level for the SL)	Incorrect (i.e., too low) detection limits were used in analytical methods which caused a gap in delineation for the analytes	Unknown	None	Data Gaps

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2024	Solvay	LA	6	?	5.13	Reconcile the discrepancies in the screening samples of 2006 and 2012 (including selenium and naphthalene) in Sheep Gulch surface water to SL between RFI and HHRA and BERA (e.g., excluded ESI samples)	Inconsistent screening levels between historical reports	Unknown	None	Data Gaps
2024	Solvay	LA	6	?	5.14	Assess exposure risks to COPCs (including any new COPCs) via surface water and sediments in Silver Bow Creek	Missing assessment in surface water	Ongoing	Solvay agreed to begin sampling surface water. Contact EPA RSM for progress whether they have had sufficient samples to evaluate exposure.	RCRA Els
2024	Solvay	LA	6		5.15	Reassess human health (especially exposure risks of arsenic and uranium to offsite residents) and ecological exposure risks to current and any new COPCs (if any) in groundwater, sediments, and surface water using recalculated background concentrations and recent toxicity standards in addenda to 2017 HHRA and 2018 BERA	Outdated and potential biased background values	Unknown	None	RCRA Els
2024	Solvay	LA	6		4.16	Demonstrate how the proposed remedy can control the migration of arsenic and uranium (not delineated as of 2023) in groundwater, including projections of when all groundwater COPCs are expected to attenuate to less than their SL	Remedy missing projections to reach screening levels	Unknown	None	Remedy
2024	Solvay	LA	6		5.17	Demonstrate via revised modeling (or other technical approaches) the containment of groundwater COPCs horizontally and vertically within SL after source isolation by the proposed remedy	Remedy missing source isolation evidence	Unknown	None	Remedy
2024	Solvay	LA	6		5.18	Reevaluate attenuation capacity of arsenic in future numerical simulations of arsenic attenuation because the isotherm that was calculated using synthetic approximations of groundwater and tailings water likely overestimated adsorption capacity at Site	Technical modification—numerical modeling	Unknown	None	Remedy
2024	Solvay	LA	6		5.19	Evaluate expected improvements (e.g., reduced concentrations of COPCs in surface water and sediments) in Sheep Gulch and Silver Bow Creek by the proposed remedy	Remedy missing projections to reach screening levels	Unknown	None	Remedy
2024	Solvay	LA	6		5.20	Demonstrate the effectiveness of the proposed remedy in targeting soils areal impacts by overlaying proposed covered and consolidated areas on top of concentration contours of COPCs in soils, including reasons for not consolidating soils in SWMU 9, 13, and 14	Remedy missing targeted areas	Unknown	None	Remedy

Fiscal Year	Site Name	State	Region	Optimization Report Date	Rec. Number	Optimization Review Recommendation Name	Brief Recommendation Description	Rec. Status	Rec. Status Notes	General Rec. Category
2024	Solvay	LA	6		5.21	Document remedial action, including the areal extent and depth of any removal or excavation of materials relative to soil sampling results in SWMU 6. As part of this recommendation, document extent and depth of raw materials remaining in SWMU 6.	Remedy missing documentation	Unknown	None	Remedy
2024	Solvay	LA	6		5.22	Demonstrate the effectiveness of the proposed remedy in targeting vertical impacts in soils by showing in cross-sections the depth of the consolidation area and the depth of the soil cover relative to depths of COPCs in soils	Remedy missing documentation	Unknown	None	Remedy
2024	Solvay	LA	6		5.23	Reconsider the determination that risk-based corrective measures are not needed for CMS groups 4 through 6 and group 8 (including SMWUs 9, 13, and 14) after 2017 HHRA and 2018 BERA are reevaluated	Remedy technical modification—lack of risk-based for some areas of concern	Unknown	None	Remedy
2024	Solvay	LA	6		5.24	Evaluate groundwater levels within consolidated and covered areas and whether COPCs in soils are expected to leach from contaminated soils to aqueous media. Evaluate the potential for migration of leached COPCs relative to the permeability of the materials beneath the proposed covers (i.e., evaluate leaching or dissolving of COPCs from contaminated soils and tailings to groundwater and potential groundwater migration).	Remedy technical modification—lack of leaching analysis	Unknown	None	Remedy
2024	Solvay	LA	6		5.25	Demonstrate via cross-sections the geology of the base of the Tailings Basin consolidation area and how it is expected to control vertical migration of COPCs from soils to groundwater	Remedy technical modification—lack of base layer evaluation	Unknown	None	Remedy
2024	Solvay	LA	6		5.26	Describe operations and maintenance plan to maintain the soil cap and evapotranspiration cover	Remedy missing O&M documentation	Unknown	None	Remedy
2024	Solvay	LA	6		5.27	Monitor groundwater and surface water for plume stability after source isolation	Remedy missing monitoring plan	Unknown	None	Monitoring
2024	Solvay	LA	6		5.28	Report breaching of sentinel wells or sustained increase in groundwater and surface water concentrations of COPCs	Remedy missing monitoring plan	Unknown	None	Data Gaps
2024	Solvay	LA	6		5.29	Describe a contingency plan if a COPCs plume breaches sentinel wells to the west of Site or if cap and cover are not providing sufficient limitations on impacts in groundwater and surface water	Remedy missing contingency plan	Unknown	None	Remedy
2024	Stimson Lumber	WA	10	27-Jun-25	5.1	Establish the site metrics and site cleanup goals associated with timeline	The technical team recommended establishing both site metrics for evaluating remediation effectiveness and site progress, as well as clear site cleanup goals to define	Unknown	None	Cleanup Goals, Exit Strategy

Fiscal Year	Site Name	State	Region	Optimization Report Date	Rec. Number	Optimization Review Recommendation Name	Brief Recommendation Description	Rec. Status	Rec. Status Notes	General Rec. Category
							remediation timelines. This approach will ensure effective site management			
2024	Stimson Lumber	WA	10	27-Jun-25	5.2	Install an upgradient monitoring well	The technical team recommended installing a monitoring well upgradient of the contaminated site.	Unknown	None	Monitoring
2024	Stimson Lumber	WA	10	27-Jun-25	5.3	Conduct additional investigation for site characterization and enhancing the CSM	The technical team recommended conducting additional investigation to ensure the accuracy and reliability of the site characterization and conceptual site model (CSM).	Unknown	None	CSM, Site Characterization
2024	Stimson Lumber	WA	10	27-Jun-25	5.4	Implement additional remediation technologies	The optimization team recommended the application of additional remediation technologies near the injection area such as bioaugmentation or other suitable methods.	Unknown	None	Remedy
2024	Stimson Lumber	WA	10	27-Jun-25	5.5	Update the groundwater flow and contaminant transport model	The optimization team recommended to update the groundwater flow and contaminant transport model to accurately reflect current site conditions.	Unknown	None	CSM, Site Characterization
2024	Stimson Lumber	WA	10	27-Jun-25	5.6	Recommendation toward CA725 and CA750 compliance	The optimization team recommended re-evaluating EI CA750 after implementing Recommendations 5.1 through 5.4.	Unknown	None	RCRA Els
2024	Tech Ord, A Division of AMTEC Corporation	SD	8	31-Jul-24	5.1.1	Conceptual Site Model Refinement 5.1.1 Additional Delineation/Monitoring Locations	The optimization recommends installing a deep monitoring well, ideally in the vicinity of MW-2 to help delineate the plume laterally at depth in that area. The review team recommends relocating MW-9 and MW-16 to be immediately adjacent to MW-3 and MW-15, respectively. A fourth deep monitoring well is recommended to be placed northeast of MW-14, resulting in a triangulated deep monitoring network, so that potentiometric surfaces can be contoured for the deep monitoring wells.	Unknown	None	CSM, Site Characterization
2024	Tech Ord, A Division of AMTEC Corporation	SD	8	31-Jul-24	5.1.2	Conceptual Site Model Refinement 5.1.2 Subsurface Soil Sampling	The technical team recommends collection and analysis of subsurface soil samples for RDX, HMX, and perchlorate at 3 to 5 locations within the former OB/OD footprint, from a depth of 8 to 12 feet below ground surface (i.e., vadose soil just above the water table). The data could be used to further refine mass flux of contaminants from soil to groundwater and update the estimated remediation timeframe.	Unknown	None	CSM, Site Characterization

Fiscal Year	Site Name	State	Region	Optimization Report Date	Rec. Number	Optimization Review Recommendation Name	Brief Recommendation Description	Rec. Status	Rec. Status Notes	General Rec. Category
2024	Tech Ord, A Division of AMTEC Corporation	SD	8	31-Jul-24	5.1.3	Conceptual Site Model Refinement 5.1.3 Remove Metals from Sampling Program	Given metal concentrations consistently below SSLs the technical team recommends removing metals from the sampling program. Based on review of site documents the optimization team does not believe any additional constituents or compounds need to be sampled for at this time.	Unknown	None	Monitoring
2025	Kraton Polymers US LLC	OH	5	31-Oct-25	5.1.1	Recommendations for the Former Boiler Slag and Fly Ash Management Area - Improve Monitoring of Arsenic and Redox Conditions	Dissolved oxygen and redox potential should be continuously monitored at MW-51 and MW-52 to track shifts between reducing and oxidizing conditions.	Unknown	None	Monitoring
2025	Kraton Polymers US LLC	OH	5	31-Oct-25	5.1.1	Recommendations for the Former Boiler Slag and Fly Ash Management Area - Improve Monitoring of Arsenic and Redox Conditions	Further analysis is needed to evaluate whether slag pond closure unintentionally enhanced arsenic release due to oxygen depletion.	Unknown	None	Monitoring
2025	Kraton Polymers US LLC	OH	5	31-Oct-25	5.1.1	Recommendations for the Former Boiler Slag and Fly Ash Management Area - Improve Monitoring of Arsenic and Redox Conditions	Additional sampling could be conducted downgradient to determine if reducing conditions extend beyond MW-51 and MW-52.	Unknown	None	Monitoring
2025	Kraton Polymers US LLC	OH	5	31-Oct-25	5.1.1	Recommendations for the Former Boiler Slag and Fly Ash Management Area - Improve Monitoring of Arsenic and Redox Conditions	Arsenic speciation is important to understand the nature of arsenic mobilization. It is suggested to include this as part of the regular arsenic monitoring	Unknown	None	Monitoring
2025	Kraton Polymers US LLC	OH	5	31-Oct-25	5.1.2	Recommendations for the Former Boiler Slag and Fly Ash Management Area - Reevaluate Groundwater Flow Assumptions	Data show that groundwater flow in the area is southwest, contradicting the assumption that oxygenated water from MW-53 will reach MW-51 and MW-52. A Site-wide groundwater flow model would help refine understanding of hydraulic conditions and arsenic transport pathways	Unknown	None	CSM, Site Characterization
2025	Kraton Polymers US LLC	OH	5	31-Oct-25	5.1.3	Recommendations for the Former Boiler Slag and Fly Ash Management Area - Continue MNA	Given current data limitations, MNA remains the most viable remediation approach at this time. However, improved groundwater modeling and downgradient monitoring are necessary to ensure long-term effectiveness of MNA.	Unknown	None	Monitoring
2025	Kraton Polymers US LLC	OH	5	31-Oct-25	5.2.1	Recommendations for the Diethyl Ether Plume - Long-Term Contaminant Trend Analysis	Continue statistical evaluations (e.g., Mann-Kendall trend analysis) to assess whether DE concentrations are declining over time, but suggest including alternative statistical models (e.g., LOESS regression, autoregressive moving average models) to	Unknown	None	Monitoring

Fiscal Year	Site Name	State	Region	Optimization Report Date	Rec. Number	Optimization Review Recommendation Name	Brief Recommendation Description	Rec. Status	Rec. Status Notes	General Rec. Category
							predict future DE concentrations and confirm plume stability			
2025	Kraton Polymers US LLC	OH	5	31-Oct-25	5.2.2	Recommendations for the Diethyl Ether Plume - Redox Condition & Biodegradation Monitoring	Measure dissolved oxygen, redox potential, nitrate, sulfate, and methane to confirm conditions favorable for DE degradation.	Unknown	None	Monitoring
2025	Kraton Polymers US LLC	OH	5	31-Oct-25	5.2.2	Recommendations for the Diethyl Ether Plume - Redox Condition & Biodegradation Monitoring	Identify if microbial communities capable of degrading DE, such as anaerobic bacteria, exist at the Site or can be added to facilitate biodegradation pathways	Unknown	None	Monitoring
2025	Kraton Polymers US LLC	OH	5	31-Oct-25	5.2.3	Recommendations for the Diethyl Ether Plume - Groundwater Flow & Plume Stability Assessment	Conduct hydraulic gradient evaluations to confirm groundwater flow direction and ensure plume containment.	Unknown	None	Monitoring
2025	Kraton Polymers US LLC	OH	5	31-Oct-25	5.2.4	Recommendations for the Diethyl Ether Plume - Expanded Monitoring Well Network	Evaluate whether the current monitoring well network adequately captures DE plume migration.	Unknown	None	Monitoring
2025	Kraton Polymers US LLC	OH	5	31-Oct-25	5.2.4	Recommendations for the Diethyl Ether Plume - Expanded Monitoring Well Network	Consider additional downgradient wells to confirm no offsite migration	Unknown	None	Monitoring
2025	Kraton Polymers US LLC	OH	5	31-Oct-25	5.2.4	Recommendations for the Diethyl Ether Plume - Expanded Monitoring Well Network	Evaluate the possibility of grabbing samples from the area between MW-46A and MW-40 to confirm source location and plume center of mass.	Unknown	None	Monitoring
2025	Kraton Polymers US LLC	OH	5	31-Oct-25	5.3.1	Recommendations for the Former Ineos Nova Facility – Feasibility Study of Biological Amendment Addition	MNA is the current remedial alternative; however, an evaluation could be considered to study the feasibility of adding biological amendments near the source to activate and accelerate biodegradation of ethylbenzene.	Unknown	None	Monitoring
2025	Lanxess	AR	6	27-Jun-25	6.1	Groundwater Performance Monitoring	Improve groundwater performance monitoring through the following recommendations: • Provide updated data on the plume extent evaluation provided in 2022 (WSP 2022). • Conduct plume extent evaluation on separate subareas corresponding to the primary source areas (RRLA/COPT/North Fence Line/Northeast, IOB and North/South Landfills, and Former Tail Brine Pond/Spray Dryer Pond Area) • Consider tracking mass removal on a per well basis to help with optimization of the GWE system. • Conduct Mann-Kendall statistical analyses and trend plots for key groundwater monitoring locations on an annual basis.	Unknown	None	Monitoring

Fiscal Year	Site Name	State	Region	Optimization Report Date	Rec. Number	Optimization Review Recommendation Name	Brief Recommendation Description	Rec. Status	Rec. Status Notes	General Rec. Category
							• Implement modifications to the groundwater monitoring program after addressing data gaps, refining the conceptual site model and completing the 3D variable density groundwater flow model (see also recommendation#2). • Reassess groundwater monitoring program following implementation of density corrections of water levels and completion of the 3D variable density groundwater flow model under development.			
2025	Lanxess	AR	6	27-Jun-25	6.2	Site Characterization	The technical team recommends the following: • Complete the 3D Leapfrog model and data visualization tool and 3D variable density groundwater flow model under development by LANXESS (Geosyntec 2025). • Consider use of surface EM geophysical survey to assess the extent of chloride/bromide in the subsurface. These data can be a cost effective method for evaluating well placement. • Assess whether there is sufficient data on current soil concentrations in the primary source areas to evaluate and select alternative remedial technologies. Information on the nature and extent of soil impacts was not available for this evaluation and it is uncertain if this is necessary. • Fill data gaps to characterize COC concentrations or distributions in the Channel Clay and upper Cook Mountain Formation.	Unknown	None	CSM, Site Characterization
2025	Lanxess	AR	6	27-Jun-25	6.3	Groundwater Recovery System	The technical team recommends the Site complete and utilize the 3D variable density groundwater flow model under development (Geosyntec 2025) along an updated CSM based on Recommendation #2 for improved site characterization to optimize the groundwater recovery system. Additional groundwater recovery wells and or French drains may be necessary to achieve the remedial action objectives based on the	Unknown	None	Remedy

Fiscal Year	Site Name	State	Region	Optimization Report Date	Rec. Number	Optimization Review Recommendation Name	Brief Recommendation Description	Rec. Status	Rec. Status Notes	General Rec. Category
							results of these studies. It is also recommended that LANXESS develop a robust operation, maintenance and monitoring program to ensure the recovery wells can be operated with sufficient uptime to ensure plume capture and reduction in mass. Additional studies are recommended to develop processes and regular maintenance procedures to manage the formation and buildup of scale in the wells, pipelines, and pumps that is currently impeding the performance of the recovery system.			
2025	Lanxess	AR	6	27-Jun-25	6.4.1	Supplemental Groundwater Remediation	Plumes and concentrations remain elevated in many areas across the Site. The technical team recommends the Site evaluate implementation of supplemental corrective actions with the goal of eliminating the need for active remediation in a reasonable time frame.	Unknown	None	Remedy
2025	Lanxess	AR	6	27-Jun-25	6.4.2	Organic COCs (EDB, EDC, benzene, etc.)	The technical team recommends the Site evaluate additional corrective actions targeted at reducing primary and secondary source areas for organic COCs. In situ thermal treatment, biological treatment, and MNA are recommended as considerations for a comprehensive remedial action program.	Unknown	None	Remedy
2025	Lanxess	AR	6	27-Jun-25	6.4.3	Inorganic COCs (Chloride and Bromide)	Based on the existing site conditions, the technical team recommends the GWE system be optimized as discussed under Recommendations #1, #2 and #3 to remove the highest concentrations and prevent further spread of the plumes and provide protection of surface water and groundwater resources (i.e. drinking water, irrigation).	Unknown	None	Remedy
2025	Lanxess	AR	6	27-Jun-25	6.5	Use of No-Purge Samplers	There is insufficient analyses presented in the available documentation reviewed to understand whether the objectives of the groundwater monitoring program, and in particular the purpose of the Perimeter and Intermediate wells, would continue to be achieved as originally designed. The	Unknown	None	Monitoring

Fiscal Year	Site Name	State	Region	Optimization Report Date	Rec. Number	Optimization Review Recommendation Name	Brief Recommendation Description	Rec. Status	Rec. Status Notes	General Rec. Category
							technical team recommends: • A comprehensive analysis of side-by-side samples be completed, for the entire network as well as individual sample locations, to clarify how the objectives of the groundwater monitoring program would continue to be achieved as originally designed. • Comparison of side-by-side samples be reported using RPDs for each chemical and monitoring well and evaluate RPDs against QAPP-specified precision measures, if available. • For wells that indicate systematic biases between the sampling results reported by different methods over the years, investigate underlying reasons and determine if no-purge sampling would provide accurate information to achieve monitoring program objectives. • Add a contingency plan that describes, if and how, anomalous no-purge sample results will be verified with alternate methods. • Additional concurrent sampling may need to be conducted for a sustained period of time (e.g., over 4 sampling events) to demonstrate following installation of planned delineation wells in 2025.			
2025	Lanxess	AR	6	27-Jun-25	6.6	Site-specific mechanisms for scaling in wells	Site-specific, in-depth evaluation of mechanisms to control scaling in the current remediation system are recommended.	Unknown	None	Remedy
2025	Lanxess	AR	6	27-Jun-25	6.7	Recommendations toward CA725 and CA750 Compliance	Based on the current site conditions, contaminant distribution, data gaps and uncertainties, it is recommended that EPA review/revise the 2003 CA725 and CA750 determination status code from “YE” to “IN”. Additionally, the optimization team recommends updating the receptor well survey to identify public and private wells surrounding the site.	Unknown	None	RCRA EIs

Table A.3. Status of Meeting RCRA Environmental Indicators

Fiscal Year	Site	City	State	Region	Site Type	Report Final Date	Human Exposures Under Control (CA725)		Migration of Contaminated Groundwater Under Control (CA750)		Remedy Construction (CA550)		Performance Standards Attained (CA999)		Ready for Anticipated Use (CA800)	
							Before Opt.	After Opt.	Before Opt.	After Opt.	Before Opt.	After Opt.	Before Opt.	After Opt.	Before Opt.	After Opt.
2020	Alto Tronics	Burlington	MA	1	Metals Manufacturing	8-May-20	NO	UNK	NO	UNK	NR	NR	NO	NO	NO	NO
2020	ArcelorMittal Indiana Harbor East	East Chicago	IN	5	Metals Manufacturing	22-May-20	YE	UNK	NO	UNK	NR	NR	UNK	UNK	NO	NO
2020	Calumet Montana Refining LLC (CMR)	Great Falls	MT	8	Petroleum Refinery	8-Apr-20	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2020	Former Flying J Petroleum, Inc.	Cut Bank	MT	8	Petroleum Refinery	8-Apr-20	IN	IN	IN	NO	NR	NR	NO	NO	NO	NO
2021	Former Beech Aircraft Corporation Site (Raytheon)	Boulder	CO	8	Aerospace	30-Jul-21	YE	YE	NO	YE	RC	RC	NO	NO	NO	NO
2021	Koppers Inc (North Little Rock Facility)	North Little Rock	AR	6	Wood Treating	30-Jul-21	YE	YE	IN	IN	YE	RC	NO	NO	YE	YE
2022	Exide	Baton Rouge	LA	6	Refinery	25-Apr-23	YE	YE	YE	YE	RC	RC	YE	YE	YE	YE
2022	GE Aircraft Engines (aka GE Aviation Facility)	Evendale	OH	5	Aerospace	16-Sep-22	YE	UNK	IN	UNK	UNK	UNK	UNK	UNK	UNK	UNK
2022	Suncor Energy (USA) Inc - Commerce City Refinery	Commerce City	CO	8	Petroleum Refinery	11-Jul-22	NO	NO	NO	NO	NO	NR	NO	NO	NO	NO
2023	Katzson Brothers	Denver	CO	8	Dry Cleaner	13-Jun-23	NO	NO	NO	NO	NO	NR	NO	NO	NO	NO
2023	Standard Wood Preservers Inc Shreveport	Shreveport	LA	6	Wood Treating	13-Sep-23	UNK	UNK	UNK	UNK	UNK	UNK	UNK	UNK	UNK	UNK
2024	Dow Chemical CO (Dalton Plant)	Dalton	GA	4	Chemical Manufacturing	19-Mar-24	IN	YE	NO	NO	RC	RC	NO	NO	NO	NO

Fiscal Year	Site	City	State	Region	Site Type	Report Final Date	Human Exposures Under Control (CA725)		Migration of Contaminated Groundwater Under Control (CA750)		Remedy Construction (CA550)		Performance Standards Attained (CA999)		Ready for Anticipated Use (CA800)	
							Before Opt.	After Opt.	Before Opt.	After Opt.	Before Opt.	After Opt.	Before Opt.	After Opt.	Before Opt.	After Opt.
2024	Solvay	Butte	MT	8	Chemical Manufacturing		YE	IN	IN	IN	NR	NR	NO	NO	NO	NO
2024	Stimson Lumber	Newport	WA	10	Wood Treating	27-Jun-25	YE	YE	YE	YE	RC	RC	NO	NO	NO	NO
2024	Tech Ord, A Division of AMTEC Corporation	Clear Lake	SD	8	Chemical Manufacturing	31-Jul-24	YE	YE	NO	YE	NO	NR	NO	NO	NO	NO
2025	Kraton Polymers US LLC	Belpre	OH	5	Chemical Manufacturing	31-Oct-25	YE	YE	YE	YE	YE	YE	NO	NO	YE	YE
2025	Lanxess	El Dorado	AR	6	Chemical Manufacturing	27-Jun-25	YE	IN	YE	IN	RC	RC	NO	NO	YE	YE

Event code definitions: For all criteria, UNK means unknown status; information was either not clearly indicated in the facility’s optimization review report, or in EPA’s RCRA optimization status tracking documentation (i.e., the fiscal year 2024 achievements workbook).

Human Exposures Under Control (CA725)	Migration of Contaminated Groundwater Under Control (CA750)	Remedy Construction (CA550)	Performance Standards Attained (CA999)	Ready for Anticipated Use (CA800)
IN - More information needed NO - Not Under Control YE - Under Control	IN - Groundwater Releases Controlled Determination - More information needed NO - Unacceptable Migration of Groundwater is Observed or Expected YE - Migration of Contaminated GW is Under Control	NR - No Remedy Constructed RC - Remedy Constructed NO or YES– Recorded when ‘No” or “Yes” was included in the Remedy Construction column without a NR or RC in the EPA fiscal year 2024 achievements workbook.	NF - Corrective Action Process Terminated - No Further Action RM - Corrective Action Process Terminated - Remedial Activities Completed NO – Recorded when ‘No” was included in the Performance Standards column without a NF or RM in the EPA fiscal year 2024 achievements workbook.	NO - Not Ready for Anticipated Use YE - Ready for Anticipated Use - Yes