

US EPA ARCHIVE DOCUMENT

STATEMENT OF BASIS

DuPont Facility Natural Area and Buffer Zone East Chicago, Indiana

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Figure. LAND USE AND BOUNDARY OF THE NATURAL AREA AND BUFFER ZONE

List of Acronyms

| | |
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| ACE | - U.S. Army Corps of Engineers |
| AOC | - Area of Contamination |
| BERA | - baseline ecological risk assessment |
| CFR | - Code of Federal Regulations |
| CMS | - Corrective Measures Study |
| EPA | - U.S. Environmental Protection Agency |
| FWS | - U.S. Fish and Wildlife Service |
| IDEM | - Indiana Department of Environmental Management |
| IDNR | - Indiana Department of Natural Resources |
| IRM | - Interim Remedial Measures |
| mg/kg | - milligrams per kilogram or ppm |
| MNA | - monitored natural attenuation |
| OM&M | - operation, maintenance and monitoring |
| ppb | - part per billion |
| ppm | - part per million |
| RBRC | - risk-based reference concentration |
| RCRA | - Resource Conservation and Recovery Act |
| RFI | - RCRA Facility Investigation |
| SB | - Statement of Basis |
| TNC | - The Nature Conservancy |
| TRV | - toxicity reference value |
| ug/l | - micrograms per liter or ppb |

Statement of Basis for the Proposed Remedy at the DuPont Facility Natural Area and Buffer Zone Located in East Chicago, Indiana

INTRODUCTION

This Statement of Basis (SB) presents the proposed remedy to address contaminated soil, surface water, sediment, and groundwater in the Natural Area and Buffer Zone located in the eastern portion of the DuPont facility in East Chicago, Indiana (*see figure for land use at DuPont and boundary of Natural Area and Buffer Zone*).

The Natural Area is a 172-acre undeveloped tract of original lakeplain/dunes land with alternating dry sand ridges and wet organic swales (*see photo below*). It is home to many rare, threatened or endangered plant and wildlife species. The Buffer Zone is a 23-acre area at the western boundary of the Natural Area contaminated by historical industrial activities. The Grand Calumet River lies to the south of the Natural Area and Buffer Zone, and the former DuPont industrial area is to the west (*see figure*).



The entire DuPont facility is approximately 440 acres. The eastern portion contains the 172-acre Natural Area and adjacent 23-acre Buffer Zone subject to this SB. The western portion of the facility contains a solid waste landfill, the former industrial property available for light industry redevelopment, open and/or filled land, and leased industrial property (*see figure*).

DuPont established the 172-acre Natural Area by transferring a conservation easement to the Indiana Department of Natural Resources (IDNR) in accordance with a federal consent decree involving the restoration of the Grand Calumet River. With funding from DuPont and other sources, the IDNR and The Nature Conservancy (TNC) are restoring the Natural Area to provide valuable habitat for native plants and wildlife, including endangered species such as the Karner blue butterfly. Nine “patches” (areas containing plants and conditions favorable to the Karner blue butterfly) have been restored to meet the minimum requirements for the Karner blue butterfly. Three of these patches are now occupied by the butterfly.

This SB addresses environmental contamination within the Natural Area and adjacent Buffer Zone only. For purposes of this SB, the remedy may also include the use of a portion of the 30-acre solid waste landfill (*see figure*) located adjacent to the Natural Area and Buffer Zone for potential disposal of contaminated soil currently stockpiled on-site. In the future, EPA will follow up with another SB for public comment that fully addresses the remaining acreage of DuPont’s industrial property, its potential redevelopment, and releases of contamination at and from the former industrial area to soil, groundwater, and the Grand Calumet River.

This SB is issued by the EPA as part of its public participation responsibilities under the Resource Conservation and Recovery Act (RCRA). This SB summarizes the investigations and the potential remedial alternatives evaluated for the Natural Area and Buffer Zone. This information can be found in greater detail in plans and reports contained in the RCRA Administrative Record. An Index to the Administrative Record is attached.

EPA encourages the public to review these documents to gain a more comprehensive understanding of the RCRA corrective action activities conducted at the DuPont facility. EPA will select a final remedy after a 30 day public comment period and consideration of all substantive public comments. EPA may modify the proposed remedy or select another remedy based on new information or public comments.

The Administrative Record supporting this proposed remedy is available at the East Chicago Public Library, 1008 W. Chicago Avenue, East Chicago, Indiana 46312 and the U.S. EPA, Region 5 Record Center (7th Floor), 77 West Jackson Boulevard, Chicago, Illinois 60604.

EPA PROPOSED REMEDY

DuPont investigations in 2011 found that releases from their former industrial property had contaminated western portions of the Natural Area being managed by IDNR and TNC. To immediately protect the Natural Area and improve the quality of its unique habitat, EPA and

DuPont met with stakeholders in 2012 to develop a cleanup plan. Stakeholders include IDNR, TNC, Indiana Department of Environmental Management (IDEM), U.S. Fish and Wildlife Service (FWS), and U.S. Army Corps of Engineers (ACE). A cleanup plan was developed that reduced the risks posed to the unique habitat of the Natural Area. To this end, DuPont performed an Interim Remedial Measure (IRM) to remove the highest risk material in a manner that would be least disruptive to the unique habitat and rare, threatened or endangered plant and wildlife species, including the Karner blue butterfly, found in the Natural Area.

The IRM performed in the fall of 2012 by DuPont removed about 77,000 cubic yards of soil that had high concentrations of metals (mostly lead, arsenic and zinc). Twenty acres of the Buffer Zone and a small portion of the Natural Area were cleaned up and the soil stockpiled on the contaminated industrial property. DuPont then brought in and placed about 15,000 cubic yards of clean soil in portions of the excavated areas to properly grade the land and promote surface drainage.

Because of its unique habitat and the native plant and animal species found in the Natural Area, DuPont entered into a management agreement with IDNR and TNC to support their efforts to improve and restore the area as a habitat, and to conduct long-term monitoring consistent with the long-term stewardship of the 172-acre conservation easement granted to IDNR. The risk to workers, visitors, and trespassers from the contaminated soils in the Natural Area is very low. To protect rare, threatened or endangered plant and wildlife species, and restore and maintain their habitat, and to be consistent with the recorded conservation easement, EPA proposes the following remedy for public comment to address contaminated soil, surface water, sediment, and groundwater in the Natural Area and Buffer Zone.

- *Soil, Surface Water, and Sediment - A combination of treatment and disposal, monitoring, and no immediate action consistent with the Conservation Easement and continued protection of rare, threatened or endangered plant and wildlife species.*

Dispose of approximately 77,000 cubic yards of IRM excavated soil/sediment stockpiled on-site within an Area of Contamination (AOC) in or near the existing on-site solid waste landfill. The approximately 5,800 cubic yards of IRM soil identified as hazardous waste that exhibits the toxicity characteristic for lead will be treated in the AOC and rendered non-hazardous before placement into the landfill. The treated waste may be required to meet IDEM restricted waste sites waste criteria found at 329 IAC 10-9-4. The landfill design, closure, and post-closure requirements may be subject to IDEM Article 10 Solid Waste Land Disposal Facilities requirements.

DuPont will perform monitoring of plant communities, surface water, and soil/sediment in the Natural Area, Buffer Zone, and former industrial property consistent with the long-term monitoring plan provided in the DuPont July 2013 Natural Area Evaluation, Risk Assessment, and Monitoring Plan, as modified by EPA. Modifications include coverage for all major swales and long-term groundwater monitoring of the Natural Area and Buffer Zone to ensure that water quality standards are being met and to assess the

relationship between groundwater elevations and quality with surface water and soil/sediment present in the swales. Baseline soil and sediment conditions were established during confirmation sampling which was conducted following completion of the remedial measures for each area as documented in the *2013 Interim Remedial Measures, Buffer Zone Area Completion Report*. This baseline and subsequent five year monitoring program for soil, sediment, and water quality, will be evaluated to determine whether conditions are constant relative to baseline conditions or if significant changes are occurring compared to baseline conditions due to runoff, soil erosion, or groundwater migration.

DuPont will prepare an assessment report which will indicate whether statistically significant differences in water quality parameters are observed in the monitoring stations over the five year monitoring period. Monitoring beyond 2018 will continue at sampling locations if a significant trend in increasing concentrations is determined for a given monitoring parameter. Additional soil and sediment data will also be collected in the vicinity of areas showing increased trends to determine potential contaminant sources. If no significantly increasing trend is observed, then the monitoring will cease after five years.

In consideration of the rare, threatened or endangered plant and wildlife species present at the site and the active habitat restoration performed by IDNR and TNC, there are no immediate actions planned to further address the soil/sediment and surface water in the Natural Area and Buffer Zone that do not meet cleanup goals. However, if monitoring or new information indicates that habitat at or near the Natural Area continues to be contaminated by runoff, soil erosion, and/or groundwater migration, DuPont will collect additional data to determine the potential contaminant sources and will identify and implement additional soil/sediment or groundwater remedial activities to protect the environment provided these additional activities do not detrimentally impact the rare, threatened or endangered plant and wildlife species present and their sensitive habitat.

- *Groundwater - Monitoring and no immediate action consistent with the Conservation Easement and protection of rare, threatened or endangered plant and wildlife species.*

Perform monitoring of plant communities, surface water, and soil/sediment in the Natural Area, Buffer Zone, and former industrial property consistent with the long-term monitoring plan provided in the DuPont July 2013 Natural Area Evaluation, Risk Assessment, and Monitoring Plan, as modified by EPA. Modifications include coverage for all major swales and long-term groundwater monitoring of the Natural Area and Buffer Zone to ensure that water quality standards are being met and to assess the relationship between groundwater elevations and quality with surface water present in swales.

If the monitoring program or any new information shows that contaminated groundwater migration continues to impact areas at or near the Natural Area, DuPont will identify and implement additional remedial activities that control groundwater contaminant migration sufficiently to be protective of the environment and rare, threatened or endangered plant and wildlife species, and their sensitive habitat.

- *Voluntary Habitat Restoration.*

DuPont voluntarily agrees to provide funding through at least 2017 to the TNC for continued habitat restoration of the Natural Area and where appropriate, the Buffer Zone. Additional restoration is also currently being performed in about 12 acres of the Natural Area as part of the Great Lakes Legacy Act sediment remediation project for the Grand Calumet River.

- *Institutional Controls - Record an Enforceable Environmental Covenant to restrict site activities.*

DuPont will record an EPA-approved environmental covenant with the Lake County Recorder of Deeds to restrict future land use, access, groundwater use, and excavations considering the landfill boundaries and identified metals contamination in environmental media, and will provide that the State or EPA may enforce the covenant.

In addition, DuPont has installed and will maintain a six-foot high chain-link permanent fence at the western boundary of the Buffer Zone. The purpose of the fence is to separate the area being restored by TNC workers from that portion of the former industrial property where access is restricted and land use will remain industrial.

The Buffer Zone was remediated by the IRM and has demonstrated to not pose an unacceptable risk to people, plants, and/or wildlife using criteria established in the risk assessments. DuPont may add the Buffer Zone or a portion of the area to the Natural Area conservation easement.

- *Financial Assurance - Provide funds to complete the remedy including long-term OM&M.*

The total estimated cost of EPA's proposed remedy is approximately \$8 million. DuPont is required to provide financial assurance to ensure that the proposed remedy can be implemented over its expected lifetime of 30 years. DuPont will provide an updated cost estimate for implementation of the final remedy to EPA for approval pursuant to 40 CFR §§ 264.142 and 264.144 including the construction and long-term operation, maintenance, and monitoring (OM&M). Upon EPA approval of the updated cost estimate, DuPont will provide financial assurance using the option(s) allowed for at 40 CFR §§ 264.143 and 264.145.

FACILITY BACKGROUND

The DuPont facility is located at 5215 Kennedy Avenue in East Chicago, Lake County in Indiana. The Natural Area and Buffer Zone subject to this SB comprise the 195-acre eastern portion of the facility. An industrial area along Gary and Cline Avenues roughly forms the eastern and northern boundary, Grand Calumet River the southern boundary, and the former DuPont manufacturing area the western boundary (*see figure*). Land use near the Natural Area and Buffer Zone is mostly industrial with a residential area (Riley Park community of East Chicago) to the northwest.

The IDNR Division of Natural Preserves holds a conservation easement on the 172-acre Natural Area. DuPont transferred a conservation easement of the Natural Area to IDNR as part of the settlement of the natural resource damage claim with the State and Federal Natural Resource Trustees for the East Branch of the Grand Calumet River. TNC has managed the Natural Area since 1999 and DuPont has agreed to voluntarily fund the restoration work through 2017.

On June 17, 1997, DuPont signed a RCRA Corrective Action Administrative Order on Consent (Order) with EPA to conduct a RCRA Facility Investigation (RFI) to determine the nature and extent of any releases of hazardous waste and/or hazardous constituents at or from the facility and a Corrective Measures Study (CMS) to identify and evaluate alternatives for the corrective action necessary to prevent or mitigate their migration. The Order also provides that DuPont may initiate IRM to control immediate threats to human health and the environment and/or minimize the spread of contaminants prior to implementing a final remedy.

DuPont sample results from the Buffer Zone and Natural Area in 2011 identified immediate risks to the Natural Area environment. DuPont proposed an IRM cleanup plan to immediately address these unacceptable environmental risks. IDEM, IDNR, TNC, FWS, and ACE reviewed and supported the proposed plans. In February 2012, DuPont submitted a technical memorandum to EPA detailing the risk reduction associated with the proposed IRM activities. EPA provided comments and the final IRM plans were approved and implemented in August 2012. As part of the IRM, DuPont removed 77,000 cubic yards of contaminated soils from 20 acres of Buffer Zone and the Natural Area. The IRM is supported by the Administrative Record. An Index to the Administrative Record is attached to this SB.

With EPA concurrence, DuPont undertook the IRM to protect the Natural Area while the long-term corrective measures for the industrial property at the facility continued to be evaluated and developed. A CMS for the entire facility is being prepared by DuPont for submittal in 2014. A SB for the entire DuPont facility will be prepared by EPA upon review of the CMS.

RCRA Facility Investigation Results

An RFI was conducted to fully characterize the nature and extent of contamination at the Natural Area and Buffer Zone. DuPont analyzed soils for metal contamination (i.e., aluminum, antimony, arsenic, barium, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, titanium, vanadium, and zinc). Cadmium, lead, and zinc were used as the main indicators of contamination due to their prevalence at the site and the identified exceedances of the risk-based reference concentrations (RBRC) for these metals. The RBRC were developed as cleanup goals to protect small mammals and birds in the environment at the site and vary from 0.91 to 1.82 mg/kg for cadmium, 36 to 145 mg/kg for lead, and 117 to 574 mg/kg for zinc in surface soil. Meeting the RBRC would reduce adverse effects to small mammals and birds such as the shrew, mouse, sparrow, and robin.

The RFI found that cadmium, lead, and zinc exceeded their RBRC for all four small species. Average metal concentrations in surface soil were 5.66 mg/kg for cadmium, 274 mg/kg for lead, and 1,480 mg/kg for zinc. However, these average metal concentrations in soil did not exceed the RBRC developed for larger species such as groundhog, deer, fox, goose, and hawk.

For surface water in the eight swales in the Natural Area, zinc and manganese levels in two swales exceed the toxicity reference values (TRV) developed as cleanup goals for amphibians. Of the seven swales in the Buffer Zone adjacent to the former industrial property, arsenic and zinc exceeded TRVs in one area and manganese for another.

Metals concentrations were analyzed in leafs and roots of various grasses, sedge, horsetail, and goldenrod on dune/ridge and reed, bulrush, plantain, sedge, pepper, and grass in the swale. There is generally a low transfer of metals from soil to plant tissue except for zinc in the dune/ridge habitat. The investigations also concluded that there was no direct correlation between elevated soil metals concentrations and habitat quality on either the ridge or swale. The abundance of plant species could be best explained by soil moisture and active habitat management by TNC. There was a marginal relationship between soil zinc concentrations on ridge habitat and species abundance (i.e., there may be some reduction in the number of plant species on soils with higher zinc concentrations).

SUMMARY OF FACILITY RISKS

Groundwater

Description: A groundwater divide is present beneath the middle of the former DuPont industrial property along an east-west line. Groundwater north of the divide flows toward the Riley Park residential area of East Chicago. Groundwater south of the divide flows south to the Grand Calumet River with some eastward migration to the Natural Area. Contaminated groundwater flowing to the Natural Area may intermittently intersect the shallow water table in the swales and emerge as surface water.

Major site contaminants such as arsenic and zinc (lead was not detected) are present in groundwater beneath the Natural Area and have their highest concentrations in the western portion closest to the former industrial property and immediately downgradient of site contaminant source areas. For the five monitoring wells installed in the Natural Area, arsenic concentrations ranged from 7 to 193 ug/l and zinc concentrations ranged from non-detect to 24,000 ug/l.

Human Health Risk: The long-term cleanup goal for groundwater is based on the maximum contaminant levels for drinking water. Throughout the western-half of the Natural Area, the cleanup goal for arsenic of 10 ug/l is exceeded. The cleanup goal for zinc of 5,000 ug/l is exceeded in the western edge near the solid waste landfill. These levels of arsenic and zinc appear to be associated with the migration of site contaminants to the east from the industrial area. Groundwater at the DuPont facility is not currently used for drinking water or industrial use.

The cleanup goal is based upon potential exposure to trespassers and workers within the Natural Area. Sampling shows that the risk from exposure to all metals associated with dermal contact and ingestion of surface water in swales within the Natural Area and Buffer Zone that could mix with contaminated groundwater was low and acceptable for workers and trespassers.

Ecological Risk: The high arsenic and zinc concentrations in groundwater could contribute to potentially adverse effects for amphibians contacting surface water in swales (see surface water discussion below). The short-term cleanup goal for arsenic in groundwater discharging to surface water bodies is the Indiana chronic water quality standard for waters within the Great Lakes system of 148 ug/l. The highest values of arsenic in groundwater were 193 ug/l which exceed the cleanup goal. This slight exceedance may pose an unacceptable risk in a small portion of the Natural Area and Buffer Zone. Since nearby contaminated soils were removed in the Buffer Zone to protect the Natural Area, improvements in groundwater quality could occur in the future.

Surface Water

Description: Surface water accumulates intermittently in swales within the Natural Area. Limited surface water data from the western portion of five swales was collected prior to the IRM performed in 2012. Six wet areas in the Buffer Zone were also sampled and evaluated.

Human Health Risk: The short-term cleanup goal is based upon potential exposure to trespassers and workers within the Natural Area. Sampling shows that the risk from exposure to all metals associated with dermal contact and ingestion of surface water in swales within the Natural Area and Buffer Zone that could mix with contaminated groundwater was low and acceptable for workers and trespassers.

Ecological Risk: Metal contaminant levels in surface water were compared to TRV developed as cleanup goals that if exceeded could adversely affect amphibian species such as toads, frogs, and salamanders. TRV for chronic exposure to manganese and zinc levels were slightly exceeded in

two of the Natural Area swales. Two swale areas in the Buffer Zone had exceedances of manganese in one and arsenic and zinc in another. These levels of arsenic and zinc appear to be associated with the migration of site contaminants to the east from the industrial area. These exceedances may pose an unacceptable risk in a small portion of the Natural Area and Buffer Zone. Since nearby contaminated soils were removed from the Buffer Zone to protect the Natural Area, improvements in surface water quality could occur in the future.

Soil/Sediment

Human Health Risk: The human health risk assessment determined that there are no unacceptable cancer and non-cancer risks associated with exposure to metal concentrations in surface soil/sediment within the Natural Area and Buffer Zone for workers and trespassers.

Ecological Risk: Risk associated with exposure to metals in surface soil/sediment within the Natural Area for nine bird and mammal species was evaluated in the baseline ecological risk assessment (BERA). For highly mobile species such as the red fox, white-tailed deer, red-tailed hawk, and Canada goose, no risk of adverse effects from exposure to surface soil/sediment was found. For small foraging range species such as the deer mouse, short-tailed shrew, American robin, and song sparrow, soil/sediment concentrations of lead, zinc, and cadmium exceeded RBRC for these species. These risks are increased if data from the Buffer Zone is included in the evaluation where average metals concentrations are higher and metals such as antimony, chromium, and copper also exceed RBRC concentrations for these species. Metals concentrations in soil/sediment within some areas of the Natural Area may pose a risk to small birds and mammals.

SCOPE OF CORRECTIVE ACTION

Corrective measures are necessary at the DuPont facility to address potential risks associated with metals contamination present in groundwater, surface water, soil and sediment in the Natural Area and Buffer Zone. The BERA determined that cleanup goals were not met and that the elevated metal contaminants pose potential adverse effects on the growth and survival of mammals, birds, and amphibians. The effects include the inability to survive and reproduce due to elevated levels of arsenic in groundwater, elevated levels of lead, zinc, cadmium, antimony, chromium, and copper in soil, and elevated levels of manganese, zinc, and arsenic in surface water.

The immediate cleanup objective is to properly dispose of stockpiled IRM soils. Other immediate cleanup objectives are to limit site access to those workers conducting the ongoing restoration activities and to control trespassers. These objectives require an enforceable environmental covenant to manage site use as part of the conservation easement. A fence has been constructed to restrict restoration workers' access to that portion of the Buffer Zone which is for industrial use only.

Short and long-term cleanup objectives are to monitor the remedy to ensure that it is effective in minimizing exposure to metals concentrations that may pose an unacceptable risk and to achieve cleanup goals consistent with the protection of rare, threatened or endangered plant and wildlife species present in the Natural Area and Buffer Zone soils, surface water, and sediment; achieve water quality standards for groundwater discharging to swales and the Grand Calumet River; and the beneficial restoration of groundwater.

SUMMARY OF POTENTIAL REMEDY ALTERNATIVES

The potential remedy alternatives evaluated by DuPont to address soil, surface water, sediment, and groundwater are presented below. These alternatives are discussed in the Natural Area Evaluation, Risk Assessment and Monitoring Plan dated July 22, 2013, and the Technical Memorandum dated September 11, 2013.

Contaminated Soil Removal: In 2012, DuPont excavated about 77,000 cubic yards of soils contaminated with metals impacting the Natural Area and Buffer Zone, as approved by EPA. The excavated area was contoured, seeded, and restored for habitat under the guidance of IDNR and TNC.

Contaminated Soil Disposal: Contaminated soil may be managed either by:

- 1) On-site treatment and disposal in an AOC within the footprint of the solid waste landfill located in the east-central portion of the former industrial property and adjacent to the Natural Area and Buffer Zone (*see figure*);
- 2) On-site treatment of the hazardous soil in an AOC and off-site disposal of all contaminated soil at a permitted off-site solid waste facility; or
- 3) Disposal of all contaminated soil off-site in permitted hazardous waste and solid waste facilities.

Monitored Natural Attenuation (MNA): The protection of small species from metals contamination would be addressed by MNA since active remedial actions would disrupt valuable habitat and detrimentally impact rare, threatened or endangered species, including the Karner blue butterfly. MNA allows natural processes to address the contamination and achieve remediation objectives within a reasonable time frame, to be documented by facility monitoring.

It is important to note that the remedy alternative proposed by DuPont for the Natural Area is not entirely consistent with the MNA concept and EPA guidance for MNA (OSWER Directive 9200.4-17P). For example, the potential remedy alternative in itself may not effectively reduce the dissolved concentrations and toxic forms of the metal contaminants in soil and groundwater, and it does not directly address remediation objectives for contaminated soil at certain locations on the dry sand ridges. Future remediation of the highly contaminated former industrial property may be required before MNA can be considered an effective remedy component for the Natural Area and Buffer Zone.

Habitat Restoration: DuPont will voluntarily fund TNC through 2017 to support habitat improvements in the excavated area and throughout the Natural Area and Buffer Zone. TNC will control invasive plant species and establish a diverse native plant population.

Access Controls: A fence has been constructed to restrict access to the former industrial property and contaminated soil that may pose an unacceptable risk to people and wildlife.

Monitoring: Long-term monitoring will be performed to evaluate the effectiveness of the remedy and habitat improvement actions. Monitoring would consist of soil and water sampling, and plant community characterization.

Cost: DuPont estimates the cost of these remedy alternatives over an operation, maintenance and monitoring (OM&M) period of 30 years to range from \$7.6 to \$9.8 million. The exact cost is dependent on the disposal method for the contaminated soil. Financial assurance will be provided for all remedy and OM&M costs.

EVALUATION OF THE POTENTIAL REMEDY ALTERNATIVES AND THE EPA PROPOSED REMEDY

Threshold criteria for evaluating remedy alternatives include protection of human health and the environment, attainment of media cleanup standards, controlling the sources of releases, and complying with applicable standards for waste management. Alternatives that successfully meet the threshold criteria are then evaluated against balancing criteria. Balancing criteria include long-term reliability and effectiveness, reduction in the toxicity, mobility or volume of wastes, short-term effectiveness, implementability, and cost.

Contaminated Soil Removal: Soil removal has already occurred at areas with high metals contamination in the Buffer Zone, and to a much lesser extent, the Natural Area. The purpose of the removal is to protect the Natural Area environment from the migration of contaminants from the former industrial area. Media cleanup standards were attained and the sources of releases controlled. Contaminated soil is temporarily stockpiled in an AOC. No further action to remediate these contaminated soils would have resulted in the failure to attain the threshold criteria.

Contaminated Soil Disposal: All three disposal alternatives effectively meet the threshold criteria. Any on-site disposal would be engineered in a manner as to meet the required IDEM standards for land disposal. Off-site disposal would be at a permitted facility subject to state and federal standards.

Implementability may be easier for off-site rather than on-site disposal since the remedy alternative requires only placement of the soil in trucks for off-site transportation as opposed to engineered landfilling. However the current on-site landfill may require closure under IDEM

regulations and the additional contaminated soil placed into the fill area may aid in properly closing and constructing final contours for the area. Potential spills/accidents would also be avoided by not trucking the soil off-site. No hazardous wastes would be placed in the on-site landfill.

Cost for on-site disposal is about \$2 million less than the off-site alternatives.

MNA: As an alternative to MNA, active removal or covering of soil in this valuable dune-and-swale habitat is not protective of the environment. Rare, threatened or endangered plant and wildlife species would be destroyed. Media cleanup standards would be met but at the expense of habitat and species destruction.

Habitat Restoration: Restoration of the habitat by TNC is essential in protecting the environment and minimizing invasive species that can take over the wetlands. Without human intervention, species such as phragmites (common reed) would dominate the swale habitat.

Access Controls: No access controls would allow trespassers and workers to enter property that may pose a risk to their health. A fence has been constructed to restrict restoration workers' access to that portion of the Buffer Zone which is for industrial use only.

Monitoring: Environmental monitoring is essential to determine the long-term reliability and effectiveness of soil removal and MNA. It will be used to determine if other remedies may be necessary to further protect human health and the environment.

The following discussion profiles the performance of the EPA proposed remedy against the threshold and balancing criteria for evaluating a remedy.

1. **Protect Human Health and the Environment.** The overall protection of human health and the environment at the Natural Area and Buffer Zone are expected to be effectively addressed by the IRM that removed contaminated soil and sediment in 2012, and the long-term monitoring to assess its effectiveness. Contingencies are in place to perform additional remediation activities if the IRM is found not to be entirely effective for protecting the Natural Area. An enforceable environmental covenant to restrict land use and access is an effective method to protect human health and the environment when combined with IRM and monitoring activities.
2. **Attain Media Cleanup Standards.** Potential contaminant source areas were addressed by selective removal of contaminated soil and sediment during the IRM. Removal of contaminant mass is a quick and effective corrective measure to minimize the risks to human health and the environment. Cleanup goals have been met in most of the Natural Area for surface soil, surface water, and sediment. Groundwater will be monitored to see if cleanup goals are achieved with time.

A risk management decision has been made that attainment of all cleanup goals of soil in the Natural Area would detrimentally impact rare, threatened or endangered plant and wildlife

species given the disruptive/destructive nature of excavation and capping. Further, biological indices were not significantly reduced in areas with elevated metals concentrations and there is relatively low transfer of metals from soil into plants. Monitoring of the IRM will be performed to see if all media cleanup goals are achieved over time.

3. **Control the Sources of Releases.** Select removal of contaminated soil and sediment in the Buffer Zone will help control future releases to the Natural Area. Consolidation of contaminated soil and sediment in a landfill may be subject to IDEM solid waste closure/post-closure requirements which will eliminate the exposures and potential releases of metals from excavated IRM soils. These actions provide an effective source control program to ensure the long-term effectiveness and protectiveness of the remedy.

4. **Comply with Any Applicable Standards for Management of Wastes.** Representative samples of waste generated during implementation of the IRM were properly characterized for hazardousness, separated, and stockpiled. These wastes will be treated within the AOC and rendered non-hazardous before on-site disposal. IRM soils will be disposed of at or in the vicinity of the on-site solid waste landfill area and may be subject to IDEM solid waste closure/post-closure requirements.

5. **Long-term Reliability and Effectiveness.** Reliability of the proposed remedy is evaluated through OM&M requirements, demonstrated effectiveness of the IRM, and achievement of cleanup goals of surface water, sediment, and soil in most areas. Soil removal/disposal is a simple proven technology and the attainment of most cleanup goals was assessed during IRM confirmation sampling. Proper disposal of the IRM soils in the on-site landfill area will be assessed based on appropriate engineering properties for disposal sites and solid waste landfill engineering design. The IRM disposal area may be subject to IDEM closure and post-closure care requirements for solid waste which will ensure long-term reliability and effectiveness. Inspections will be conducted and necessary actions will be performed to ensure the reliability and effectiveness of the landfill cap.

6. **Reduction in the Toxicity, Mobility, or Volume of Wastes.** Removal and proper disposal of about 77,000 cubic yards of soil contaminated with metals will reduce the volume and toxicity of available metals at the DuPont facility and help minimize the uncontrolled migration of site contaminants to surface water, sediment, and soil in the Natural Area and Buffer Zone. Monitoring will assess the reduction in mobility of residual contamination to surface water, sediment, and soil in the Natural Area and Buffer Zone.

7. **Short-term Effectiveness.** DuPont will develop an OM&M program to ensure the remedy is safe. Corrective measure activities proposed by DuPont and associated with contaminated media at the facility will include a health and safety plan to protect workers. On-site disposal will minimize threats to the local community from off-site truck traffic and spills. Air monitoring will be performed during implementation to ensure any risks to dust exposure are low to workers and off-site residential areas.

8. **Implementability.** IRM soils have been excavated and are stockpiled on-site near the solid waste landfill. Disposal will be performed under AOC guidance. IDEM solid waste disposal requirements for closure and post-closure will be followed. If necessary, state and federal permits will be obtained for remediation of wetlands as during the IRM activities. Institutional controls in the form of an EPA-approved enforceable environmental covenant will be placed on the property to restrict land use and excavation activities, and a fence will be constructed to restrict access. Restoration of the Natural Area will be consistent with work performed since 1999 by TNC and IDNR.

9. **Cost.** The total estimated cost of the potential remedy alternative considered by DuPont to address site contamination ranges from \$7.6 to \$9.8 million. The IRM performed in 2012 to protect the Natural Area cost \$1.78 million. The estimated cost of the EPA proposed remedy is \$8 million. Additional costs include a more robust groundwater and surface water monitoring program, contingencies for additional sampling, and if necessary, remediation work in select Natural Area swales based on the results of the monitoring program. This slightly more costly remedy alternative is necessary to adequately protect human health and the environment.

Based on information currently available, the EPA proposed remedy provides the best balance with respect to the standards described above. EPA believes that the proposed remedy is protective of human health and the environment, and will effectively control human and environmental exposure to contaminants in soil, surface water, sediment, and groundwater. All applicable standards regarding surface water protection, worker protection, and onsite/offsite waste management will be addressed and complied with during implementation of the remedy.

PUBLIC PARTICIPATION

EPA seeks input from the local community on its proposed remedy to address contaminated soil, surface water, sediment, and groundwater at the Natural Area and Buffer Zone portion of the DuPont facility. There will be a 30 day comment period for the public to participate in selecting the final remedy. If enough interest is shown, EPA will schedule a public meeting to answer questions and accept comments. The Administrative Record supporting this SB is available online at <http://www.epa.gov/Region5/waste/permits/actions.htm> and at the following locations:

East Chicago Public Library
1008 W. Chicago Avenue
East Chicago, Indiana 46312

and

U.S. EPA, Region 5
RCRA Records Center
77 West Jackson Boulevard, 7th Floor
Chicago, Illinois 60604-3590
(312) 886-0902
Hours: Mon-Fri, 9:00 a.m. - 4:00 p.m.

After consideration of public comments on the proposed remedy, EPA will select a final remedy and document its selection in a Final Decision and Response to Comments. In addition, EPA will summarize public comments and provide responses. The Final Decision and Response to Comments will be drafted at the conclusion of the public comment period and incorporated into the Administrative Record.

To request information on the public comment period for the proposed remedy at the DuPont facility, please contact:

Mr. Rafael Gonzalez
Community Relations Coordinator
U.S. Environmental Protection Agency, Region 5
77 West Jackson Boulevard
Land and Chemicals Division, LP-9J
Chicago, Illinois 60604-3590
(312) 886-4188
E-mail: gonzalez.rafaelp@epa.gov

To send written comments or request technical information, please contact:

Ms. Jennifer Dodds
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