



## Answers to Recent Community Questions

### Introduction

On October 12, 2011, USEPA conducted a Public Availability Session and Open House to provide a forum for the local community to ask questions and provide feedback to USEPA concerning the Pines Area of Investigation. This update provides further information in response to many of the questions that were asked during the event, and provides information to community members who did not attend the meeting.

### Questions and Answers about the Investigation Process

#### How was the extent of the Pines Area of Investigation determined?

USEPA established the extent of the Pines Area of Investigation. The extent was depicted on a map in an Administrative Order on Consent (AOC) between USEPA and the Respondents, Northern Indiana Public Service Company (NIPSCO) and Brown Inc. (Brown). The Pines Area of Investigation encircles the general area where the constituents boron and/or molybdenum were detected near or above screening levels in groundwater in the vicinity of the Town of Pines at that time (circa 2004), and included a buffer area.

#### What is the investigation process – how are the steps of the process determined?

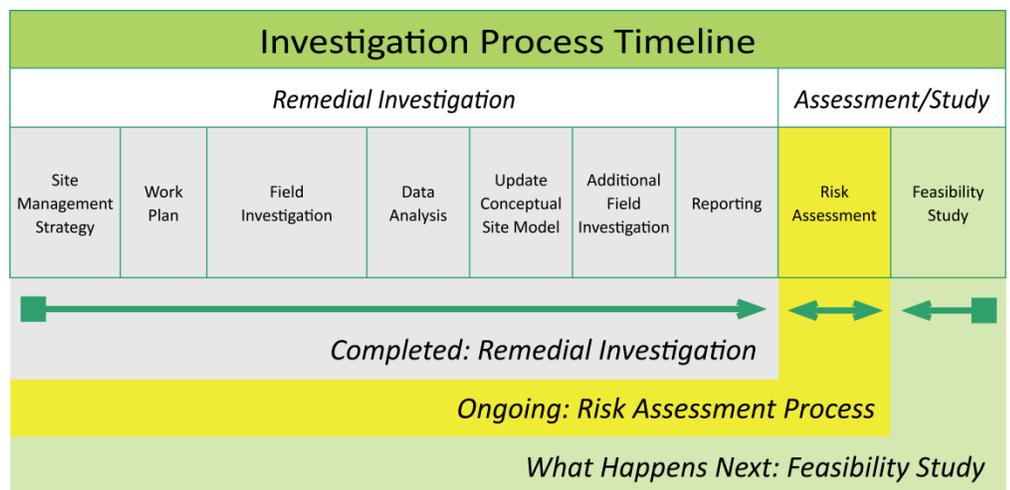
The investigation being conducted in the Pines Area of Investigation follows a federal law called the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), but commonly referred to as “Superfund.” The AOC for the Pines Area of Investigation

requires that the investigation follow this law. While this process may seem complicated at times (especially because it includes multiple steps), it is a comprehensive process for fully investigating the nature and extent of constituents that have been released at a site. This same investigation process has been used at hundreds of Superfund sites across the country for more than 30 years.

The figure on this page shows a simplified version of the process (simplified from a USEPA map provided at the October 2011 public meeting). Each step is briefly described below. USEPA reviews and approves each step before the next begins. For the Pines Area of Investigation, the Indiana Department of Environmental Management (IDEM) is actively involved in the review process, as are other Agency partners, including the U.S. Fish and Wildlife Service, U.S. Geological Survey (USGS), the Agency for Toxic Substances and Disease Registry (ATSDR) and the National Park Service. The P.I.N.E.S. is also provided the opportunity to review documents.

The **Remedial Investigation (RI)** is the step in the process where environmental samples (e.g., soil, groundwater, etc.) are collected and analyzed. The RI is a flexible process tailored to the specific circumstances of a location. The RI follows a Work Plan approved by USEPA. For the Pines Area of Investigation, the RI included determining where constituents derived from coal combustion by-products were present in the soil, groundwater, and other media and evaluating where and how these constituents may be migrating. Information and data were collected, evaluated, and pieced together much like the pieces of a puzzle, to give a complete picture of conditions at the Pines Area of Investigation.

The next step of the process is conducting the **Human Health Risk Assessment and the Ecological Risk Assessment**. These assessments are based on the results of the RI. They are conducted to assess the potential current and future risk to human health and the environment associated with potential exposure to constituents derived from coal combustion by-products.



The results of the Risk Assessments are used to determine the need for and scope of a **Feasibility Study (FS)** (which is the next step of the process). In the FS, the results of the RI and Risk Assessments are considered to determine whether remedial actions are needed, and if needed, what those actions could be. These decisions are made by USEPA based on several CERCLA criteria, including protection of human health and the environment, compliance with regulatory requirements, short and long-term effectiveness, and cost factors.

### **If investigations are following the CERCLA process, isn't the Pines Area of Investigation a "Superfund" site?**

No. The Pines Area of Investigation is not listed on the National Priorities List (NPL) (which is the list of official Superfund sites); therefore, it is not a "Superfund" site. It is, however, being investigated in the same way as a Superfund site would be (i.e., following CERCLA). Such sites are often called "Superfund Alternative" sites.

### **Why is the investigation of the Pines Area of Investigation taking so long?**

The investigation of the Pines Area of Investigation is tracking similar to other sites following the CERCLA process, which can take 15 years or longer. There were some steps of the process that took extra time, such as:

- Homeowners have been very generous and helpful in allowing access to their properties for sampling. However, the process for identifying property owners and then obtaining agreements from them to access their property to collect samples took almost two years.
- USEPA has several other State and federal agencies as well as the Technical Assistance Plan (TAP) group reviewing and commenting on site documents, which is constructive for the

Superfund process, but adds to the time needed for review of documents.

However, there have also been several aspects of the project that have allowed it to move more quickly:

- The Remedial Investigation was carefully designed to provide a comprehensive data set of environmental information in one phase of investigation; quite often several phases of investigation are needed at Superfund sites.
- Agency reviews have been conducted in a very timely manner.

Thus, the investigation might appear to be taking a long time, but this project's timeline is really not exceptional for Superfund.

### **Questions about the distribution of bottled water and the Municipal Water Service Extension**

#### **Who does and who does not have bottled water and why?**

To answer this question, it is important to recall what USEPA required of Brown and NIPSCO in the two AOCs.

The first AOC, referred to as **AOC I**, was signed in January 2003. Under this AOC, municipal water service was extended to 130 residences in two particular areas of the Town of Pines. These areas were selected by USEPA to include residences in locations where well testing had indicated some levels of boron and/or molybdenum above screening levels in effect at the time, and a "buffer zone" for these areas, which was included as a precautionary measure. Bottled water was provided to the residents scheduled to receive municipal water and was discontinued once the water connections were made. This work was completed in December 2003.

In early 2003, Brown and NIPSCO approached USEPA about extending the municipal water service to a larger area, including approximately 140 additional homes. This extension is

documented in the Amendment to AOC I, signed in April 2004. The water service to approximately 140 additional homes was installed from June 2004 to December 2005. **As a result of this work, approximately 270 homes in the Town of Pines are now connected to municipal water.** The Amendment to AOC I also specified that bottled water was to be offered to this (extended) area until the water line extension was complete. Upon completion of the water line extension, the delivery of bottled water to these residences (now connected to municipal water) was discontinued.

The Amendment to AOC I also specified that bottled water be offered to all other residences in the Pines Area of Investigation<sup>1</sup> that were outside the area served by the municipal water. Offering bottled water outside of the water service area was a precautionary measure until the results of the investigation under a second order, known as AOC II, were known. Bottled water continues to be supplied to those eligible residences that have requested the service.

A second order, referred to as **AOC II**, specified that NIPSCO and Brown complete an RI/FS for the Area of Investigation.

### **I live south on Old Chicago Road; why don't I get bottled water anymore?**

During the investigation, the USGS conducted a separate study to identify the potential sources of boron in groundwater in Beverly Shores and nearby areas. The USGS determined that there are naturally occurring levels of boron in the deep confined aquifer in and around the Pines Area of Investigation (i.e., boron that is not related to coal combustion by-products). The RI determined that the shallow aquifer is not present in the

---

<sup>1</sup> Note that bottled water was offered to all eligible residences; some of these residents elected not to accept the offer.

southern portion of the Pines Area of Investigation. This means that private wells in this area (south of County Rd 1675 N) are drawing groundwater from the deeper aquifer, which has naturally occurring boron and molybdenum. Thus the boron or molybdenum present in private wells in this area are not related to coal combustion by-products. USEPA notified the residents in this area, and allowed Brown and NIPSCO to discontinue providing bottled water there.

### What else did the USGS study find?

The USGS study also looked at Beverly Shores and an area just west of the Pines Area of Investigation. The results of this study were presented at a public meeting on April 19, 2005. The study showed the Pines School well and another nearby well were also drawing water from this deeper aquifer, and thus not impacted by coal combustion by-products. A number of wells in Beverly Shores were also determined to be tapping the deeper aquifer.

### If I've been offered bottled water, does it mean my water is bad?

Under the Amendment to AOC I, USEPA required that bottled water be offered to residences within the Pines Area of Investigation until the investigation is complete. USEPA did not require this because the water quality was known to be bad, but as a precaution until USEPA was able to understand whether and to what extent constituents derived from coal combustion by-products have impacted groundwater. The RI has shown that there are many parts of the Pines Area of Investigation where constituents derived from coal combustion by-products are not present in groundwater, or are not present at a significant level, and that water quality for the constituents measured in the RI meets applicable standards. It is reasonable to assume that USEPA will soon notify these

residents of this and allow Brown and NIPSCO to discontinue providing bottled water to these areas.

### Why is my water discolored, and why does it leave stains?

There are many possible reasons unrelated to coal combustion by-products for water to be unpleasant. One of the most common is natural levels of iron and manganese which are frequently present in groundwater. The Purdue Extension Service can help a homeowner interpret water quality information

(<http://www.ces.purdue.edu/extmedia/WQ/WQ-5.html>). For iron and manganese, the Extension Service provides the following information:

*Iron originates in soils and rocks, occurs naturally in water and is needed in human and animal diets. Iron in Indiana ground water spans a typical range from 0.1 to 3.0 ppm. At high concentrations (more than 0.3 ppm) iron will discolor (reddish-orange; brown-black) household fixtures, laundry and give an objectionable taste and odor to water. However, even at concentrations far over 0.3 ppm few adverse health effects have been reported. Bacteria which feed on iron can create an objectionable odor in the water and discharge a clear, oil-like slime, typically noticed in toilet tanks.*

*Manganese ranges from 0.02 to 1.0 ppm in Indiana ground water. At levels greater than 0.05 ppm manganese tends to fall out of solution and form black flakes. These flakes will deposit themselves in the same way iron stains and can clog pipes.*

These naturally occurring levels of iron and manganese can discolor household items including silverware, laundry, and jewelry, and can clog filters and well points. The presence of boron and/or molybdenum in groundwater is unlikely to impart a taste or color to the water or cause these kinds of problems.

In addition to high levels of iron and manganese, the RI completed by

Brown and NIPSCO revealed evidence of other sources of impacts to groundwater in the area that could make water unpleasant, including:

- Septic system discharges (see Pines Update No. 15);
- Use of road salt in the area; and
- A landfill located off Ardendale Road and south of South Railroad Avenue (Pines Landfill owned by Waste Management).

### Questions about Yard 520

#### Why isn't Yard 520 included in the investigation?

Yard 520 is a Restricted Waste Facility permitted by Indiana Department of Environmental Management (IDEM), thus operation and closure of this Facility is regulated by IDEM. USEPA acknowledges that the Facility is being regulated under a State program, thus it defers regulation to IDEM.

Yard 520 has been certified closed under IDEM-approved closure plans. A final cover was constructed over the Facility, which consists of a minimum of 2 feet of compacted clay (to minimize rainwater infiltration) and 6 inches of topsoil, which is planted with durable grasses. IDEM also requires that the closed Facility be monitored under an approved post-closure monitoring program. This monitoring program is required every 6 months, and includes:

- Inspecting the cover to be sure it remains intact,
- Collecting groundwater samples from 23 monitoring wells, and
- Collecting surface water samples from 6 locations.

All samples are analyzed for metals (including boron and molybdenum) and inorganics (e.g., chloride and sulfate).

IDEM conducts inspections of all permitted facilities throughout Indiana. Yard 520 has been inspected by IDEM on 7 occasions between December 2009 and the present.

Even though IDEM has regulatory responsibility for Yard 520 (including closure), impacts to the environment beyond its limits are being evaluated as part of the RI/FS for the Pines Area of Investigation, and IDEM is an active participant.

### **What has been done about the seep on the west side of Yard 520?**

In response to the appearance of a localized intermittent seep on the west side of Yard 520, which was first observed in December 2009, IDEM has required an Assessment Program. The purpose of this program is to determine the cause of the seep(s) so that appropriate actions can be taken.

The Assessment Program includes:

- Installing 3 piezometers along the west slope of the Type II (North) Area of Yard 520 to measure water levels below the cover,
- Measuring water levels in these piezometers monthly, and
- Inspecting the cover area monthly to determine if seepage is occurring.

Also, if a seep is identified during an inspection, additional clay cover can be added to the area, along with top soil and seed to promote vegetative cover.

Seeps are of potential concern not necessarily due to potential risk (that is, exposure to the liquid in the seep) but more typically related to the integrity of the cover.

### **Did you collect samples from the seep area – what are the results?**

USEPA requested and oversaw the collection of a water sample from the seep in April 2010. The sample was analyzed for metals and inorganics. The data were provided to USEPA.

The chemical analysis of the seep sample shows that it does not resemble water that has been in contact with coal combustion by-products. In particular, the boron concentration was low (below human

health screening levels) while constituents not related to coal combustion by-products, such as aluminum and carbonate, were elevated.

Also, the “seep area” was inspected in October 2011 by representatives from USEPA, IDEM, Brown, Weaver Boos (the engineer for Brown) and AECOM (the consulting firm managing the RI/FS). **No seep activity was identified.** However, several environmental samples were collected and analyzed for metals and inorganics:

- A sediment sample from the drainage ditch downstream of the previous seep area,
- A surface water sample at the same location, and
- A second surface water sample further downstream in the ditch, on the west side of Birch Street.

The results of this sampling will be submitted to USEPA in the near future.

### **Questions about the Remedial Investigation**

#### **Can USEPA rely on data collected by NIPSCO and Brown?**

As for many investigations under CERCLA, NIPSCO and Brown are required to conduct the RI in accordance with specific procedures and under USEPA oversight. In this case, a detailed Work Plan describing how the data would be collected, analyzed, validated and managed was submitted to and approved by USEPA. Further, the AOC requires that all data collection and analysis procedures follow USEPA-approved Standard Operating Procedures and Test Protocols. NIPSCO and Brown have followed the approved Work Plan for the investigation, and USEPA has deemed the data and RI Report acceptable.

### **Why haven't data been collected after 2007 – how can the RI still be accurate?**

AOC II and the approved Work Plan do not call for data to be collected after completing the field investigation. However, the Respondents continued collecting data since 2007. Five rounds of groundwater and surface water sampling have been conducted since then, totaling 25 groundwater samples and 20 surface water samples.

These data are used to track the extent of elevated boron in groundwater and show that the extent of the boron is not expanding northward, and in some wells concentrations have decreased.

### **Why don't the RI results show a large area of groundwater impact?**

The original 130 residences that were connected to municipal water were located in two areas where groundwater was found to have elevated concentrations of boron and/or molybdenum. These constituents were not elevated in groundwater in the remainder of the Pines Area of Investigation at that time. The purpose of the RI was to determine whether there were additional areas with elevated concentrations. In fact, the RI showed the coal combustion by-product impacts to groundwater are largely limited to the two initially identified areas, and the area immediately around Yard 520.

The extent of coal combustion by-product-derived constituents in groundwater is documented in the RI Report:

- The primary constituents related to coal combustion by-products in groundwater include boron, molybdenum, sulfate, calcium, magnesium, and strontium. Arsenic appears to migrate from coal combustion by-products to groundwater, at least at Yard 520, but it is not transported any significant distance with the

groundwater. Iron and manganese may also have the potential to migrate from coal combustion by-products to groundwater, but their mobility in groundwater is largely controlled by geochemical conditions below the ground surface (i.e., whether oxygen is or is not available), and these constituents are also present in areas where groundwater has not been affected by coal combustion by-products.

- Concentrations of constituents related to coal combustion by-products are elevated at and downgradient from Yard 520. In the east part of the Pines Area of Investigation, elevated concentrations are present in areas where coal combustion by-products appear to have been used as fill over larger areas, and downgradient from these areas toward the East Branch of Brown Ditch. Where smaller volumes of coal combustion by-products have been used for fill, such as only for roadbase, concentrations of constituents related to coal combustion by-products are not typically present in groundwater at concentrations of significance.
- Coal combustion by-product-derived constituents in groundwater do not extend northward beneath the Indiana Dunes National Lakeshore at levels of significance.
- In the area near the intersection of South Railroad Avenue and Ardentale, coal combustion by-products have been used in residential yards and driveways, and by Porter County as road sub-base. Groundwater there might be impacted by coal combustion by-products but the levels are too low to be able to say definitely, and are well below human-health risk-based screening levels and much lower than drinking water standards.

- Groundwater beneath Yard 520 migrates to the south and east into Brown Ditch, but groundwater does not migrate beneath Brown Ditch to reach the other side. Therefore, impacts from Yard 520 do not extend to the south or east of Brown Ditch.

The RI also documents that groundwater beneath the Pines Area of Investigation shows evidence of other sources of impacts, including septic system discharges, and road salt. Also, to the southwest of Yard 520 and the West Branch of Brown Ditch, groundwater appears to be impacted by a landfill located off Ardentale Road (Pines Landfill owned by Waste Management).

### **Were private wells tested?**

A set of private wells outside the area of municipal water service was sampled several times over the course of the RI. All results from these wells are below federal drinking water standards for coal combustion by-product related constituents. Based on their locations, and the results from the monitoring wells that were installed to investigate groundwater, the results would not prevent the use of these wells for drinking water purposes. However, there are other sources of constituents in groundwater within the Pines Area of Investigation that are not related to coal combustion by-products – these constituents are not part of this investigation. If you find your well water to be unappealing, it is most likely due to some of the other factors mentioned here. There are commercially available treatment methods that can address these conditions.

### **The RI shows impacts to Brown Ditch, which discharges to Lake Michigan, has Michigan City drinking water been impacted?**

The RI shows impacts of coal combustion by-product-derived constituents to Brown Ditch, but this does not mean that Michigan City

drinking water has been impacted. Concentrations of boron were above screening levels in certain samples in the West, East, and Main Branches of Brown Ditch. On the West Branch, some of these samples also have molybdenum concentrations above a screening level. These elevated concentrations are most likely due to the contribution of groundwater containing coal combustion by-product-derived constituents to the ditches.

However, further downstream in Brown Ditch as it moves through Indiana Dunes National Lakeshore, concentrations of these constituents decrease, and they will decrease even more when Brown Ditch joins with Kintzele Ditch. Therefore, coal combustion by-product related constituents are not being transported into Lake Michigan at levels of significance.

### **Questions about the Risk Assessment**

#### **Why did USEPA increase the boron number when this project started?**

While USEPA was conducting its initial investigation in the Town of Pines, USEPA's National Center for Environmental Assessment was independently reviewing new scientific studies relating to the toxicity of boron. Because of the way the new studies were designed, they were able to more accurately evaluate the potential effects of boron than previous studies. A final updated toxicity value was published in August 2004. AOC II for the Pines Area of Investigation was finalized in the spring of that same year. Based on this updated value, the drinking water screening level for boron was raised from 900 ug/L to 7,300 ug/L. If the current screening level was used to evaluate the data that EPA and IDEM collected, only a very few samples would have results greater than the current 7,300 ug/L screening level. More detail about boron is provided

---

in Pines Update No. 5 available at [www.pinesupdate.com](http://www.pinesupdate.com). USEPA regularly revisits and updates toxicity information as additional scientific studies become available. During the course of this investigation, several other toxicity values have changed. The most current values are used in the Human Health Risk Assessment and the Ecological Risk Assessment.

### **What is wrong with the Gamma Survey Report submitted to USEPA by P.I.N.E.S.?**

USEPA did a careful review of the Gamma Survey Report submitted by P.I.N.E.S. to USEPA and found many serious flaws that prevent it from providing meaningful data. Among the flaws noted was the improper calibration of the instrument used (the

instrument was calibrated to a standard that is not relevant to the investigation). Even given the improper calibration of the instrument used, the range of readings from locations identified as background is not very different from the range of readings from the locations designated in the investigation.

USEPA's review indicates that radionuclides are common and present in soils everywhere. Thus detection of radioactivity in an area is not surprising.

The Gamma Survey Report from P.I.N.E.S. also questions the presence of radionuclides in groundwater. The RI included radionuclide testing of groundwater, and the results were shown to be below federal drinking water standards.

### **Why not conduct the gamma survey using correct methods?**

A gamma survey, even if using correct methods, is at best a very crude screening tool. There is no need to do a gamma survey because the Remedial Investigation has already included a detailed radionuclide analysis of samples of coal combustion by-products. These results are evaluated in detailed risk assessments following USEPA protocols.

### **What is the status of the Risk Assessments?**

As of December 2011, the Risk Assessments have been submitted to USEPA for review. Upon receipt of comments, the Risk Assessment Reports will be finalized.

---

### ***Pines Update #20, December 2011***

Communications Coordinator  
720 W. US Hwy 20  
Michigan City, IN 46360