

**Ringwood Mines/Landfill Site**  
Ringwood, New Jersey

**2013 Summary Report - Paint Waste  
Investigation and Removal Actions**

Ford Motor Company  
May 28, 2013

## **BACKGROUND: Paint waste investigation and removal activities conducted to date have been thorough and complete.**

Ford Motor Company, in coordination with the U.S. Environmental Protection Agency (USEPA), the New Jersey Department of Environmental Protection (NJDEP), the Borough of Ringwood, the Community Advisory Group, and others, has systematically evaluated the Ringwood Mines/Landfill Site to identify and remove paint waste from the site. This paper presents an updated overview of historical and current conditions, focusing on the methodology and effectiveness of paint waste investigation and removal activities completed to date. The most recent paint waste removal activities have resulted in the removal and offsite disposal of nearly all known surficial paint sludge, thereby permanently eliminating potential human or ecological exposure to these materials. Ford remains an active environmental steward at the site and will investigate and remove any paint waste deposits that may be identified outside the primary disposal areas in the future.

### ***Identification and removal of paint waste has been thorough and systematic***

- Potential paint waste disposal areas have been identified through a multi-step approach based on historical records; aerial maps; topographic maps; and information assembled from federal, state, and local stakeholders (e.g., USEPA, NJDEP, Borough of Ringwood officials, local residents, Community Advisory Group, and others).
- With regulatory oversight, crews trained in the identification of paint waste, drums, drum remnants, and soil conditions indicative of waste fill materials have systematically surveyed the Areas of Concern and potential secondary disposal areas. During survey work, crews collected and recorded data about locations of paint waste deposits and made other observations about the general conditions in the survey area, including noting when other waste materials (e.g., refuse) were collocated with paint waste.
- To date, crews have walked and recorded their observations along 93,000 linear feet (17 miles) of survey lines set up across the known and potential paint waste disposal areas. Crews stopped at 4,610 locations along the survey lines and collected detailed information, including samples of the subsurface, to identify current conditions and note if paint waste was present—96 percent of the locations had no evidence of paint waste (ARCADIS, 2005).
- In consultation with USEPA and NJDEP, crews completed additional investigation at 79 locations where paint waste was suspected based on potential anomalies discovered during historical research, mapping, and survey work. To be thorough, including investigation of conditions at depth, test pits were completed at these locations to see if paint waste was present below the ground surface. Paint waste deposits were found in 2 of the 79 test pits (ARCADIS, 2008a).
- Following the extensive survey and investigation work, paint waste deposits were assembled into 15 removal areas. Ford and its contractors then removed more than 47,000 tons of paint waste, soil, and other waste materials from the 15 removal areas and the three Areas of Concern (Peter's Mine Pit [PMP] Area, Cannon Mine Pit [CMP] Area, and O'Connor Disposal Area [OCDA]).

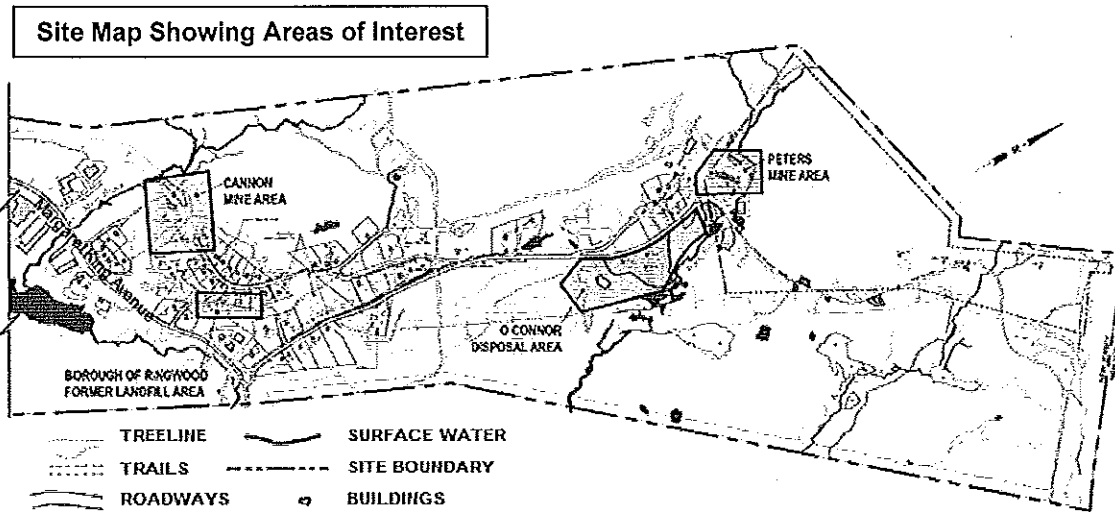
- As voluntary remedial measures conducted by Ford, the completed removal actions had one clear objective: achieve a high level of scientific confidence that all residual waste material (e.g., paint residue, paint sludge, paint waste) outside the three Areas of Concern is identified and removed, no matter how large or small a volume encountered.
- Excavation activities have been thorough, with field crews confirming that nearly all paint waste was removed. Confirmation test pits were excavated around removal areas to confirm additional deposits would not be missed. Post excavation soil samples were collected in accordance with NJDEP requirements to verify that concentrations of constituents of concern were below NJDEP criteria for residential contact and protection of groundwater. Once USEPA and NJDEP agreed that excavation activities in a removal area were complete, the excavation was backfilled with clean fill and the area restored.

***Ford is committed to removing any additional paint waste that may be reported***

- Ford has and will continue to encourage stakeholders to contact Ford if they find a suspected deposit of paint waste. Ford and its contractors have been and will continue to be responsive to reports of suspected paint waste outside the Areas of Concern, and Ford has voluntarily expanded the scope of work at the site on several occasions to ensure that investigation and removal activities are comprehensive.
- Ford will voluntarily continue to address paint waste deposits outside the Areas of Concern. The Record of Decision issued by USEPA will reinforce this commitment with the inclusion of provisions requiring Ford to remove and dispose offsite any additional paint waste discovered outside the Areas of Concern that may be identified in the future.

## Overview

In 2004, Ford Motor Company began voluntary and comprehensive site-wide investigation and removal of paint waste deposits at the Ringwood Mines/Landfill Site. The work was designed to supplement previous removal actions completed in the 1990s, and resulted in the successful removal and offsite disposal of more than 47,000 tons of paint waste, impacted soil, and other waste materials successfully removed and disposed of offsite. Ford is committed to addressing any additional site-related paint waste that may be identified now or in the future, and is currently preparing a work plan for USEPA approval to remove a small paint waste deposit recently discovered south of Margaret King Avenue.



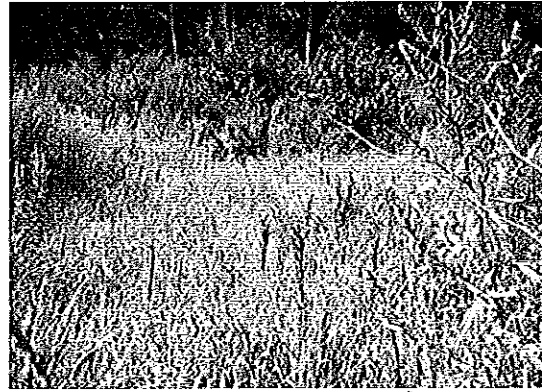
From 1967 to 1971, Ford contracted O'Connor Trucking and Haulage Company to transport waste from the former Ford Motor Plant in Mahwah to legally dispose of it in three areas at the site: the PMP Area, the Cannon Mine Pit (CMP) Area, and the OCDA. Apparently Ford wastes, including paint waste, were inappropriately disposed of by O'Connor in other, secondary locations; deposits in these secondary locations are the focus of the supplemental removal actions. All known deposits outside the primary disposal areas have been removed or will soon be removed according to the work plan currently in development.

Through review of available information, Ford and its contractors mapped all areas that may have served as secondary disposal areas either through direct disposal or through subsequent relocation of fill materials that may have contained paint waste. These areas were subject to a thorough methodology to identify paint waste deposits, including desk-top reviews of historical records, aerial maps, and topographic maps to locate areas that were known as or had the potential to serve as paint waste disposal areas. Visual survey by field crews were then conducted to record actual conditions and observations of paint waste along 17 miles (93,000 feet) of survey lines. Detailed data were collected at 4,610 locations, with paint waste observed at just 4 percent of the 4,610 locations (ARCADIS, 2005).

Following the visual survey, Ford worked closely with the NJDEP and USEPA to identify additional areas where fill materials may have been placed during the period of interest (1967 to 1971). At each of these locations, test pits were excavated to bedrock or the maximum reach of the excavation equipment. Paint waste was identified at 2 of the 79 locations (ARCADIS, 2008a). Ford also completed supplemental investigation work at the PMP Area, CMP Area, and the OCDA, including the completion of additional test pits, advancement of soil borings, collection and analysis of samples, and geophysical survey work to define the limits of paint waste deposits.

The investigation led to the identification of 15 removal areas mapped during the visual survey. Paint waste deposits in these 15 areas, and where identified within the PMP Area and OCDA, were excavated and disposed offsite under the oversight of USEPA.

Excavation activities were thorough, with the completion of additional confirmation test pits positioned around each removal area. Post excavation samples were also collected from the walls and floors of the excavations for laboratory analysis. When laboratory results confirmed that concentrations of constituents of concern were below applicable criteria — and USEPA concluded excavation was complete — the removal areas were backfilled with clean fill and restored as native habitat. Post excavation samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, and polychlorinated biphenyls (PCBs) (ARCADIS, 2004).



Portion of removal area SR-3 following excavation, backfilling with clean soil, and restoration with native plants

Ford remains committed to ongoing environmental stewardship at the site, and should any additional paint waste be found outside the primary disposal areas in the future (such as the paint waste deposit recently discovered south of Margaret King Avenue), Ford will promptly assess and remove the paint waste.

#### ***What is Paint Waste?***

Automobile assembly operations at the former Mahwah plant involved painting automobiles and automobile parts in paint booths. The over-spray waste from the painting operations was mixed with water and solvents and collected for disposal in a sludge pit. Often the water was separated from the paint materials, leaving behind just paint materials. These materials, generally referred to as paint sludge, were transported and disposed of by O'Connor Trucking from 1967 to 1971 according to the regulatory requirements and accepted practices at the time.



Historical surficial paint waste is typically observed as a solid mass that resembles asphalt and often exhibits a weathered-gray color. Shown here (circled) among rocks and other debris is a small piece of paint waste that was removed and disposed of during the removal actions.

At the time the paint waste was collected and disposed, it was a semi-solid material. Over time, the material hardened into a solid, inert mass resembling lava or possibly slate. In larger deposits, the interior of the paint waste deposits may have remained in a semi-liquid form for a period of time with a hardened “crust” on the outside. Today, the hardened and sometimes pliable paint waste is typically found as chips, fragments, or chunks mixed with soil at the site (ARCADIS, 2008a).

Paint waste contains petroleum-related VOCs and SVOCs, along with marker metals of antimony, arsenic, barium, chromium, and lead. During the history of investigation and monitoring of groundwater at the site, none of these constituents have been detected consistently in surface water or monitoring wells at concentrations that pose a significant human health or ecological risk or that would define a large-scale groundwater plume. For example, benzene (a minor component in paint waste) is the only constituent

(detected at low concentrations) found consistently to define a small localized impacted area within the PMP Area; most detections of constituents in groundwater, surface water, and soil have been sporadic and infrequent. Laboratory testing and evaluation of the physical and chemical properties of paint waste confirms that lead, arsenic, and other constituents of concern do not readily leach into soil or groundwater (ARCADIS, 2008c; 2008d). Indeed, during soil sampling for the supplemental paint waste removal actions, VOCs and SVOCs were detected in only a limited number of samples from around the removal areas, indicating that leaching or mobility of constituents from paint waste into the environment is limited, if any.

### ***History of the Site and Paint Waste Disposal***

The Ringwood Mines/Landfill Site is a historic iron mining site that operated from the 1700s until at least the early 1930s. In 1942, the U.S. Government purchased the Upper Ringwood Area (approximately 870 acres), and invested heavily in the mines to prepare them for potential use in World War II.

Activities conducted by the U.S. Government's lessee, the Alan Wood Steel Company, from 1942 until 1945 included the reconstruction of a number of mine-related structures; refurbishment of the mines' water supply system; dewatering of the mines; excavation and onsite disposal of over 100,000 cubic yards of waste rock and mine tailings (pulverized and small pieces of mined rock and mineral materials discarded after separation from iron ore during the mining process); re-opening, enlarging, reconditioning, and extending of the original mine levels; production and processing of some ore; and related activities. The U.S. Government sold the mines in 1947 to a private party, but the property reverted to the U.S. Government one year later after the private party filed for bankruptcy. As a result of this long history of mining operations, large volumes of mine tailings were disposed of onsite and then re-worked or scattered across the site. These U.S. Government mine tailings became commingled in some places with paint waste and municipal refuse disposed of at the site.

In 1958, the U.S. Government sold the property to Pittsburgh Pacific Company, and in 1965 Pittsburgh Pacific Company sold the property to the Ringwood Realty Corporation, a former subsidiary of Ford. Shortly after their purchase of the property, Ringwood Realty contracted O'Connor to dispose of paper, cardboard, wood, metal, plastic scrap, general trash, paint waste, scrap drums, car parts, and other non-liquid plant wastes from Ford's former Mahwah assembly plant. The agreement ran from 1967 until 1971, with O'Connor contracted to properly dispose of Ford wastes at three locations on the Ringwood Site: the PMP Area, the CMP Area, and the OCDA. O'Connor's disposal activities during this time were approved by state and local officials.

In November 1970, Ringwood Realty donated 290 acres of the site to the Ringwood Solid Waste Management Authority (RSWMA) and RSWMA accepted waste from O'Connor/Ford until Ford terminated its contract with O'Connor in 1971. By November 1971, Ringwood Realty had sold all but 145 acres of the site, and by December 1973 Ringwood Realty no longer owned any portion of the site.

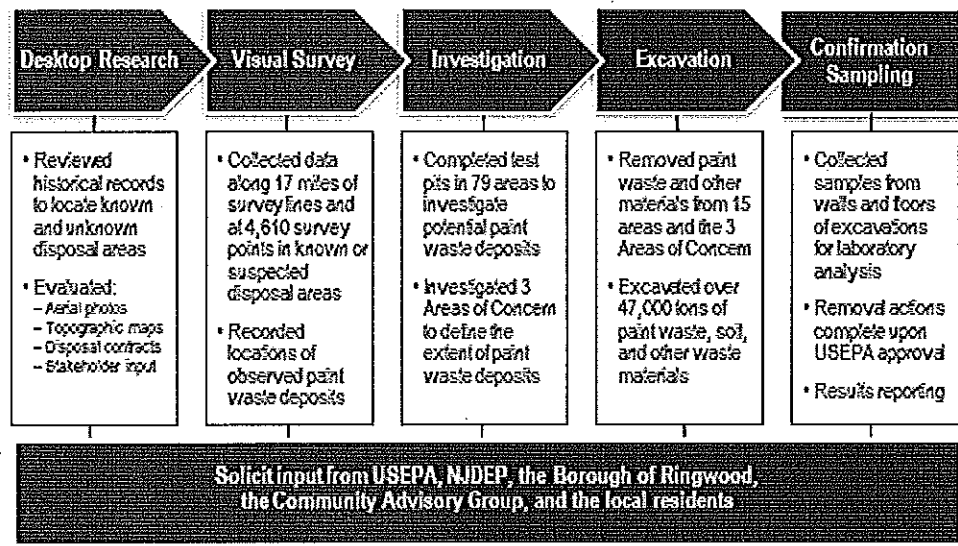
While O'Connor was contracted to properly dispose of waste in the PMP Area, CMP Area, and OCDA, there is evidence that waste was disposed in other areas such as depressions adjacent to roadways, and in forested and unforested areas readily accessible by O'Connor's dump trucks. Further, some of the waste, including paint waste, was likely relocated by construction crews and others when fill material was transferred to other locations for use in construction or to fill low spots.

### ***History of Paint Waste Investigation and Removal Actions***

Environmental investigation began after the site was added to the National Priorities List in 1983. Between 1984 and 1988, Ford and its contractors completed several investigations to characterize conditions, identify potential hazards, assess risks to human health and the environment, and develop remedial options. The remedial investigation activities designed to characterize the site were approved

by USEPA and included completing test pits; advancing borings; installing monitoring wells; and collecting soil, sediment, surface water, and groundwater samples for laboratory analyses.

Ford began paint waste removal activities with the removal of 11,300 tons of solidified paint waste in 1987 and 1988 from four areas identified during the early investigation work. In the 1990s, Ford removed approximately 660 additional tons of paint waste during three separate removal actions in 1990 to 1991, 1995, and 1997 to 1998. Beginning in 2004, Ford entered into an additional phase of investigation and cleanup work to supplement the work already completed. The flow chart below provides an overview of the investigation and removal process, which is described in greater detail in the following subsections.



In collaboration with USEPA, NJDEP, the Borough of Ringwood, the Community Advisory Group, and others, Ford developed a detailed screening process to identify and then visually search non-residential areas of the site that may have received Ford wastes. ARCADIS and the USEPA have also routinely requested information from residents regarding the locations of any known deposits of paint waste.

As a result of this supplemental investigation, Ford has completed additional removal actions—conducted voluntarily by Ford outside the scope of the current Administrative Order—that resulted in the removal and off-site disposal of an additional 47,000 tons of paint waste, impacted soil, and other waste materials from the site.

### Review of Historical Information and Maps

Ford and its contractors used a scientifically sound multi-step effort to identify and evaluate known and unknown areas of the site that served or may have served as disposal areas for Ford wastes. The following informed the identification of areas for visual inspection and subsequent removal:

- **Historical research** confirmed the extent of the area used by O'Connor per the agreement with Ringwood Realty. Maps included with the agreement verify that O'Connor was contracted to dispose Ford wastes in the PMP Area, CMP Area, and OCDA. The boundaries of these disposal areas as defined in the agreement were mapped for inclusion in the visual survey.
- **Review of aerial photographs** identified areas of the site outside of the three primary disposal areas (i.e., PMP Area, CMP Area, and OCDA) that may have been suitable for disposal of Ford wastes. These areas were mapped for inclusion in the visual survey and included disturbed areas, paved and

unpaved roads, level areas adjacent to roads, ravines adjacent to roads, and other surface depressions.

- **Review of topographic maps** identified areas of the site where historical filling may have occurred in low-lying areas. Areas where the elevation changed greater than 1 foot between 1961 and 1974 were mapped for inclusion in the visual survey.
- **Community input** gathered during public meetings attended by residents, the Borough of Ringwood officials, and attorneys representing residents was used to map other areas of suspected paint waste not covered by other research and target these areas for evaluation during the comprehensive field reconnaissance survey conducted by ARCADIS within suspected disposal areas. Ford has remained open to similar input and is committed to prompt removal of paint waste deposits outside the primary disposal areas that may be found in the future.

Using this process (described in more detail in the *Results of the Reconnaissance Survey Report* [Recon Report; ARCADIS, 2005]), all non-residential areas that could have reasonably been used by O'Connor for paint waste disposal were targeted in the visual survey. Note that residential areas (and areas being used by the residences as extensions of personal property) were not surveyed during this process because USEPA is leading the investigation and removal of paint waste in those areas. The approach encompassed the entire site, and the first portions to be considered were those identified during the desktop review as inaccessible by a dump truck and therefore impossible or improbable to access for disposal purposes between 1967 and 1971. For example, areas screened out for no further investigation included areas without access roads suitable for truck traffic and areas adjacent to access roads that were at a higher elevation than the access road and thus could not have been accessed or used for disposal. In addition, much of the site is mountainous or hilly with steep terrain, has physical or topographic obstructions, and has dense trees and vegetation that would not have allowed access by O'Connor's trucks. When taken together, it was reasonable to conclude that areas inaccessible to a dump truck (such as that used during disposal activities in 1967 to 1971) would not contain paint waste deposits; these areas physically could not have received paint waste via O'Connor trucks.

#### Completion of Systematic Visual Survey

Like the gathering of information to identify potential disposal areas, the visual survey itself was a systematic process to assure that the survey was thorough and no paint waste was overlooked. Indeed, Ford had one clear objective for the paint waste investigation and removal activities: achieve a high level of scientific confidence that all paint waste material (e.g., paint residue, paint sludge, paint waste) is identified and removed, no matter how large or small a volume was encountered.

The survey areas were divided based on natural or human-made boundaries and site features into several smaller areas, or units, and given a unique number to aid in management of collected data. Survey lines were established every 50 feet across these units with individual survey points, or nodes, placed every 25 feet along the survey lines. The survey lines and nodes were mapped and the coordinates recorded and downloaded to portable GPS (Global Positioning System) units so survey crews would have accurate information about their location relative to the survey lines and nodes.

Crews of two people trained to recognize suspect terrain such as hummocky ground, fill piles or depressions, paint waste, drums, drum remnants, and soil conditions indicative of waste fill materials walked each survey line (total of 17 miles), recording their observations as they walked from one node to the next and collecting detailed information at each node. Crews investigated conditions 1 to 2 ft bgs at each node by collecting soil samples with a stainless steel probe. If the probe could not be advanced because of some obstruction, several additional attempts were made immediately around the node. The

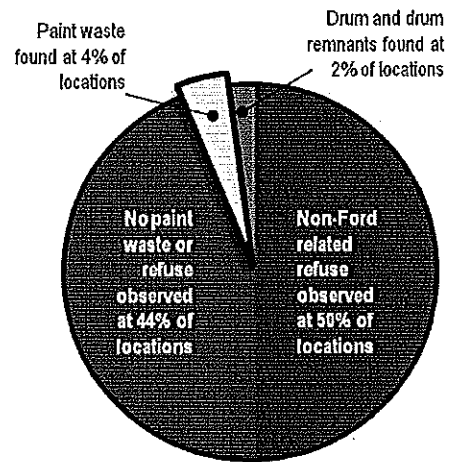


probe was also advanced in three to five additional locations within a 25-foot radius of each node to provide additional information about subsurface conditions.

Crews recorded these observations in field log books, and the confirmed observations of paint waste, drums, or refuse at the nodes or along the survey lines were recorded using the GPS. Information gathered during the survey was reviewed frequently to verify its quality and whether it was sufficient to achieve the objectives of the survey. If there were questions about the recorded information as to its integrity, usability, or conclusiveness, crews returned to survey nodes to collect additional information.

### Results of the Visual Survey Reconnaissance

Approximately 20 percent (97 acres) of the site had the potential to be disposal areas used by O'Connor based on historical records and physical characteristics (e.g., proximity to roads, topography, and other characteristics). These areas were surveyed with the field crews walking and observing conditions along 17 miles of survey line and collecting detailed data at 4,610 survey nodes. Of the 4,610 nodes surveyed, paint waste was found at 4 percent of the nodes; 96 percent of locations had no evidence of paint waste. Drum or drum remnants were observed in 2% of survey nodes and many of the nodes that had drums or drum waste also had paint waste. More than 50 percent of the survey nodes had evidence of non-Ford-related waste, such as junked automobiles, tires, construction materials, municipal refuse, and U.S. Government mine waste/tailings (ARCADIS, 2005). Nodes with paint waste in proximity to each other were grouped together and designated as removal areas. The figure on the following page summarizes the results.



Crews completed detailed evaluations at 4,610 survey nodes along 17 miles of survey lines. Paint waste was found at just 4% of all locations and voluntarily removed and disposed of off-site.

# Results of Detailed Historical Research, Mapping Analysis, and Visual Survey



Survey crews completed a detailed visual survey to locate and characterized remaining paint waste deposits. Detailed data were collected at 4,610 locations.

Borough of Ringwood Recycling Center  
Peters Mine Pit Area



Municipal waste (junked cars, tires, white goods, household trash, and debris) were observed across a large area of the site. Locations noted by red dots.

Survey areas such as these without nodes were not accessible because of steep terrain or inaccessibility.

O'Connor Disposal Area

Cannon Mine Pit Area

Borough of Ringwood Landfill Area

**Legend**

Surveyed areas

- Survey nodes with no paint waste or refuse
- Survey nodes with paint waste
- Survey nodes with refuse



## **Test Pit Investigation**

Ford worked with NJDEP and USEPA to select areas for additional investigation based on evidence of potential anomalies noted during the survey, topographic evidence of potential fill areas, and information received from residents or other sources regarding potential disposal areas. As described in the *Report on Supplemental Investigation of Non-Residential Areas at the Ringwood Site* (ARCADIS, 2008a), a total of 79 such areas were selected for completion of test pits to investigate potential paint waste deposits. Similar to the visual survey, the test pit excavation teams were trained to recognize paint waste, drums, drum remnants, and soil conditions indicative of waste materials; and all test pit locations were mapped using GPS. Test pits were completed to a depth that either fully penetrated the fill material, or encountered native soils, continuous mine tails, bedrock, the water table, or the maximum reach of the excavating equipment. Crews inspected the fill material and debris removed from the test pits for paint waste (chips, fragments, or chunks) or drum remnants.

Paint waste was found in 2 of the 79 test pits, and drum remnants were not discovered in any of the test pits (ARCADIS, 2008a). Like the other areas identified during the visual survey, these two areas were designated as requiring removal. Crews made similar observations about the prevalence of other non-Ford-related materials as those noted in the visual survey; 57 percent of the test pits contained some type of trash, debris, municipal, or household waste (some of that waste extended 15 ft bgs).

## **Supplemental Investigation in Primary Disposal Areas**

Focused supplemental investigation activities were completed in the historical primary disposal areas, which are the PMP Area, CMP Area, and the OCDA. These supplemental activities included completion of test pits, advancement of soil borings, sampling of various media (soil, groundwater, surface water), and survey work to characterize the geology. This investigation work helped establish the spatial extent of these three primary disposal areas, as well as the limits of paint waste confined within the PMP Area and the OCDA; no paint waste was identified within the CMP Area.

## **Excavation and Offsite Disposal of Paint Waste**

Armed with a comprehensive database of information on the locations of paint waste, Ford worked under the oversight of USEPA to remove paint waste from 15 areas (13 identified in the visual survey and 2 residential areas identified by USEPA). In addition, targeted removal activities were conducted within fill materials in the PMP Area and the OCDA to removal visually identified paint waste from these areas.

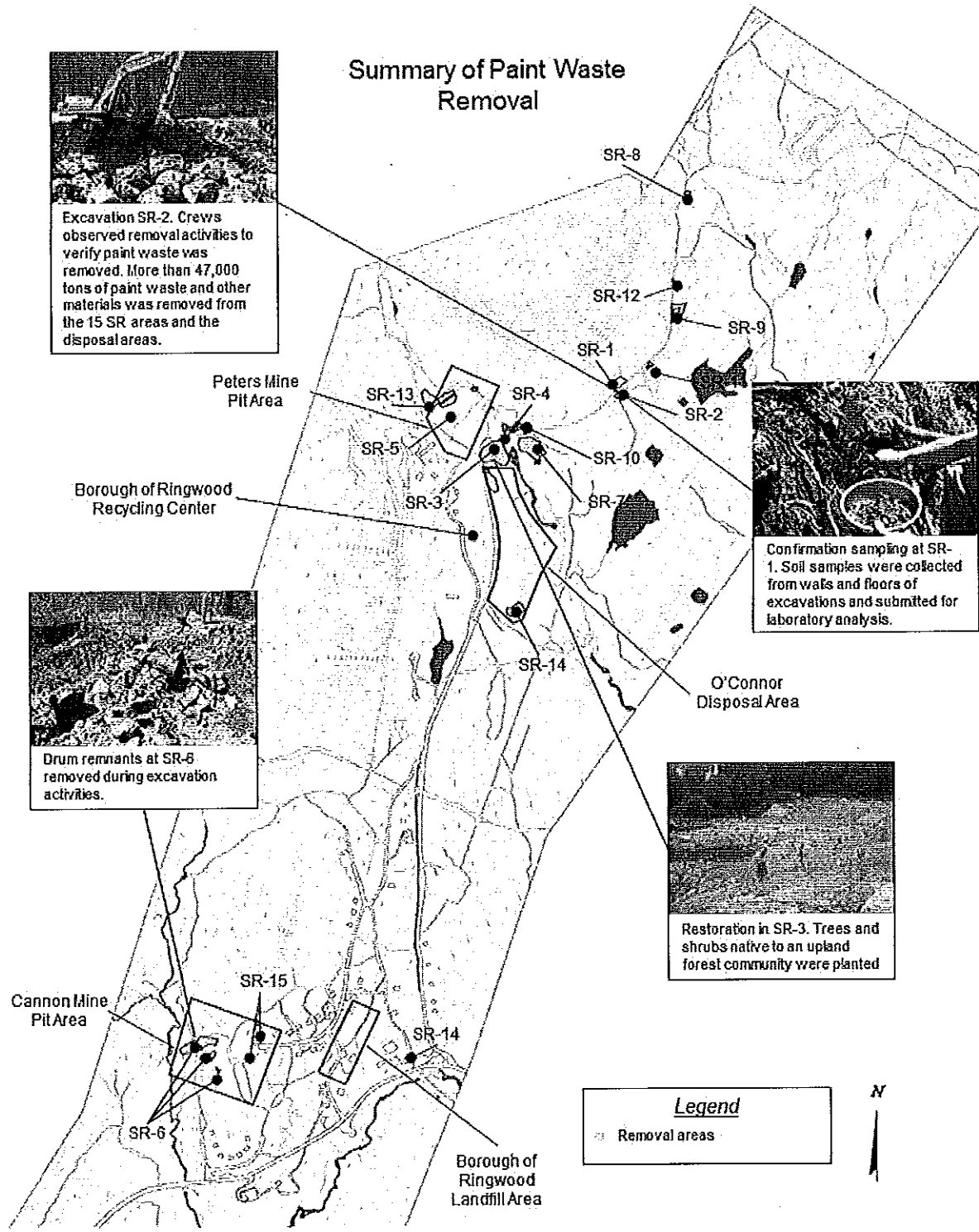
Using procedures established in the *Paint Sludge and Drum Removal Work Plan* (ARCADIS, 2004), Ford and its contractors conducted removal operations, under USEPA oversight and approval, from 2004 through 2012 in the areas where paint waste deposits were observed. Prior to backfilling the excavations, field crews examined the excavations to verify that all paint waste was removed and collected confirmatory soil samples for laboratory analysis. Soil samples were collected from the walls and the floors of the excavations following rules for confirmation sampling set by NJDEP and were submitted to a NJDEP-certified laboratory for analysis of VOCs, SVOCs, metals, and PCBs. Once analytical results confirmed that the concentrations of these constituents were within NJDEP standards, Ford and its contractors requested USEPA approval to backfill the excavations. All the data and activities are documented in a series of completion reports prepared to summarize results of the removal actions (ARCADIS, 2006a, 2006b, 2007a, 2007b, 2007c, 2008b, 2008e, 2010a, 2010b, 2010c, 2012, 2013a, 2013b).

After USEPA approval, the excavations were backfilled with clean soil brought from an offsite source and restored through planting of native species and restoration of habitat. The table below and the figure on the following page summarize the removal activities.

### Paint Waste Removal and Confirmation Sampling Summary

Area	Location	Date of Removal	Volume Removed (tons)	Number of Confirmation Samples
SR-1/SR-2	Low-lying areas immediately west and east of the edge of Hope Mountain Road	January to June 2005	3,589	SR-1: 10 sidewall, 6 bottom SR-2: 9 sidewall, 8 bottom
SR-3	Northernmost portion of the OCDA in a low-lying area immediately east of Peters Mine Road	November to December 2005; January to March 2010	12,473	22 sidewall 35 bottom
SR-4	West of SR-3 in a low-lying area adjacent to the PMP and Park Brook	February 2006 and February 2010	1,474	12 sidewall 11 bottom
SR-5	North of the access road surrounding the PMP area	January 2011	Included with PMP Area	None collected; this area is part of the PMP Area.
SR-6	West of Van Dunk Lane at the top and on the side of a steeply wooded hill located northwest of the CMP Area	October 2007 to April 2008; March 2011	10,000 120	23 sidewall 69 bottom; 4 sidewall 3 bottom
SR-7	Low-lying area immediately east of Hope Mountain Road	April 2006 to January 2007; January to March 2010	10,950	39 samples
SR-8	Along Hope Mountain Road, approximately 2 miles north of PMP	March to June 2006	475	7 sidewall 8 bottom
SR-9	Along Hope Mountain Road, approximately ½ mile north of PMP	March to February 2007	3,000	25 sidewall 18 bottom
SR-10	Along Hope Mountain Road, approximately 400 feet north of PMP	March to July 2007	825	10 sidewall 8 bottom
SR-11	Along Hope Mountain Road, approximately ½ mile north of PMP	March to May 2007	900	13 sidewall 10 bottom
SR-12	Near utility pole along Hope Mountain Road between SR-9 and SR-8	June 2007	1.5	2 bottom
SR-13	Northwest and adjacent to the PMP Area	April 2011 to March 2012	3,350	34 sidewall 15 bottom
SR-14	Adjacent to the Ringwood Department of Public Works Garage on Margaret King Avenue	September to October 2012	150	4 sidewall 4 bottom
SR-15	Borough of Ringwood property along southwestern boundary with 38 Van Dunk Lane	October 2012	350	14 sidewall 7 bottom
PMP Area	See figure on page 12	January to February 2011	400	None collected
OCDA	See figure on page 12	January to April 2011	2,100	None collected

## Summary of Paint Waste Removal



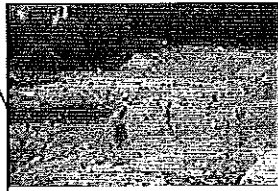
Excavation SR-2. Crews observed removal activities to verify paint waste was removed. More than 47,000 tons of paint waste and other materials was removed from the 15 SR areas and the disposal areas.



Confirmation sampling at SR-1. Soil samples were collected from walls and floors of excavations and submitted for laboratory analysis.



Drum remnants at SR-5 removed during excavation activities.



Restoration in SR-3. Trees and shrubs native to an upland forest community were planted.

**Legend**  
 ■ Removal areas



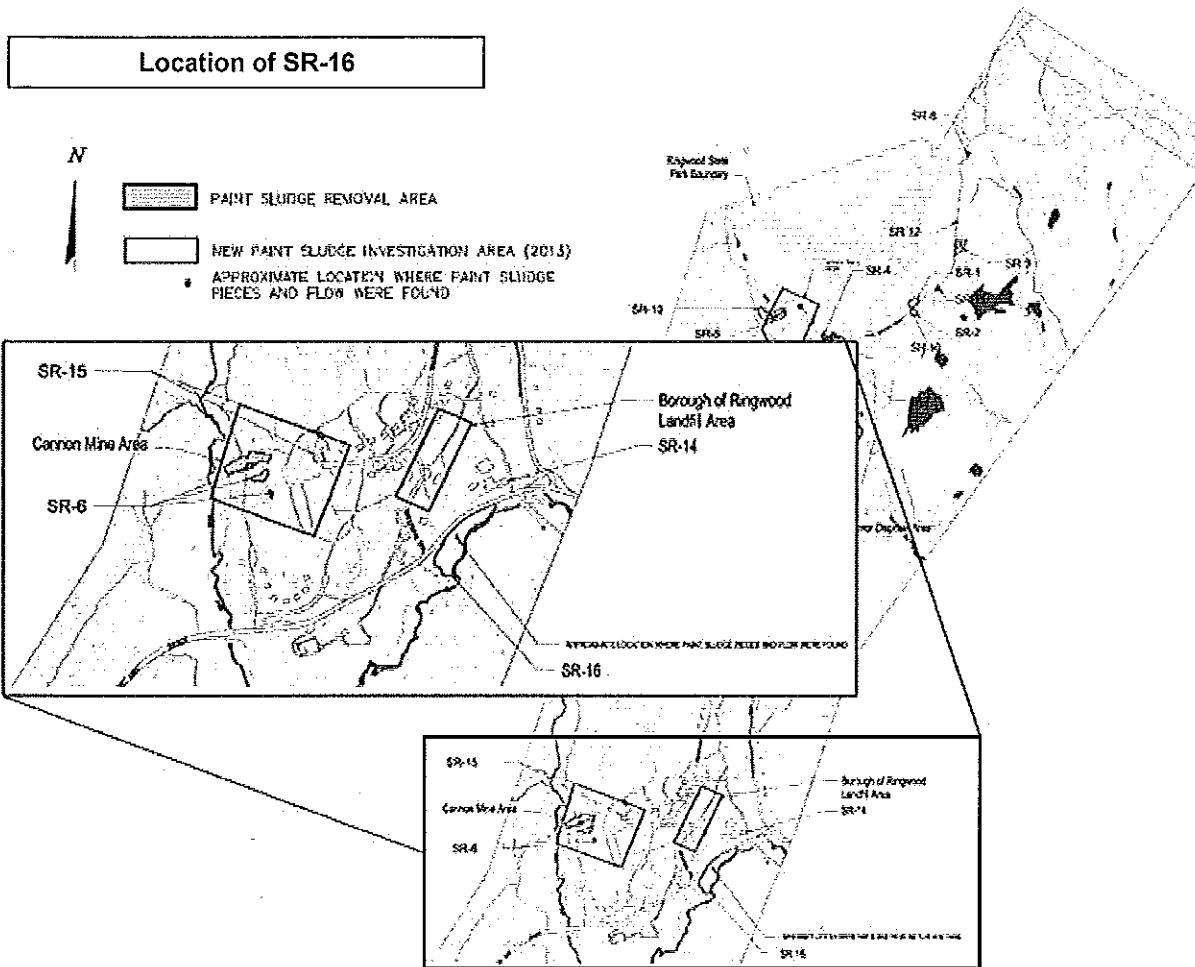
## Summary and Next Steps

The identification and removal of paint waste from the Ringwood Mines/Landfill Site has been both systematic and thorough, resulting in the removal and offsite disposal of more than 47,000 tons of paint waste, impacted soil, and other waste materials between 2004 and 2012. The multi-step survey and investigation to identify locations known or suspected to have served as paint waste disposal areas included review of historical records, aerial maps, and topographic maps; gathering input from USEPA, NJDEP, local government officials, the community, and other groups; and systematically surveying potential disposal areas to make observations and collect data to characterize and precisely locate paint waste deposits.

Paint waste was observed at just 4 percent of the 4,610 locations set up along 17 miles of survey lines. Crews stopped at each of the 4,610 locations to record detailed information, and to collect and examine soil samples from the subsurface in search of potential paint waste deposits. Further, paint waste was observed in only 2 of the 79 test pit locations excavated to investigate areas suspected as possible paint waste disposal areas. Crews also completed supplemental investigation activities in the three primary disposal areas (PMP Area, CMP Area, and OCDA) to define the extent of paint waste in those areas.

As voluntary remedial measures conducted by Ford, the removal actions had one clear objective: achieve a high level of scientific confidence that all paint waste outside the three primary disposal areas is identified and removed, no matter how large or small a volume encountered. Ford and its contractors worked under the oversight of USEPA to complete paint waste removal activities in all areas outside the three Areas of Concern where paint waste was observed during the survey. In addition, subsequent targeted removal actions conducted within the PMP Area and the OCDA removed approximately 2,500 tons of paint waste from these areas. Crews visually verified that all paint waste was removed from identified areas and disposed offsite, and also collected soil samples for laboratory analysis to verify that concentrations of constituents of concern were within applicable NJDEP standards. Following excavation, removal areas were backfilled and restored to native habitat.

Ford is currently working with USEPA to develop a work plan to investigate and remove a paint waste deposit located south of Margaret King Avenue referred to as SR-16 (location shown in figure on the following page). SR-16 and the rest of the portion of the site south of Margaret King Avenue will be investigated using the same step-wise process used in previous investigations. Historical research will be conducted to identify areas that may have been used for disposal of paint waste. These areas will then be subject to a detailed field survey to identify paint waste deposits. The SR-16 deposit and any additional paint waste deposits identified during the survey will be removed using the same techniques successfully used to date.



Ford remains committed to addressing all paint waste deposits in the event that more are identified in the future, and Ford has in the past and will continue to work with USEPA to solicit information from stakeholders and others to identify suspected paint waste deposits. Should suspected paint waste be found outside the primary disposal areas, Ford will assess and remove the paint waste, as it is doing now at a location recently identified south of Margaret King Avenue. Ford does this work voluntarily as an active environmental steward of the site, but this ongoing commitment will also be documented in the Record of Decision.

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- ARCADIS. 2008d. Statistical Data Evaluation of Mine Tailings/Background Soil Investigation, Ringwood Mines/Landfill Superfund Site, Ringwood, New Jersey. December 8.
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- ARCADIS. 2010a. Request to Backfill and Restore Mine Tailings Removal Area SR-4. Ringwood Mines/Landfill Site, Ringwood, New Jersey. Letter addressed to Joseph A. Gowers, Project Manager, Southern New Jersey Remediation Section, USEPA Region II. March 30.
- ARCADIS. 2010b. Request to Backfill Mine Tailings Removal Area SR-3. Ringwood Mines/Landfill Site, Ringwood, New Jersey. Letter addressed to Joseph A. Gowers, Project Manager, Southern New Jersey Remediation Section, USEPA Region II. March 31.



ARCADIS. 2010c. Mine Tailings Removal Area SR-7. Ringwood Mines/Landfill Site, Ringwood, New Jersey. Letter addressed to Joseph A. Gowers, Project Manager, Southern New Jersey Remediation Section, USEPA Region II. April 1.

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