

Cabot Carbon/Koppers
Northwest 23rd Avenue and Main Street
Gainesville, Florida
County: Alachua
District: Northeast
Site Lead: EPA
Placed on National Priorities List: September 1, 1983
ERIC ID # 3780

Site Description and History

The Cabot Carbon Corporation (Cabot) site is located in Gainesville near the intersection of Northwest 23rd Avenue and North Main Street in Township 09S, Range 20E, Section 29 at 29° 40' 41.4100" N, 82° 19' 36.0026" W. A facility for the destructive distillation of pine stumps existed on this 49-acre site from 1945 to 1965. During Cabot's operation, approximately 6,000 gallons of crude wood oil and pitch were generated daily. Process wastewater containing residual pine tar was discharged to unlined surface impoundments, and the accumulated tar was periodically scraped out and sold. The real property was subsequently sold to a local developer who drained the ponds and allowed phenolic contents to flow offsite through an adjacent 50-acre wetland and into a storm water ditch connecting with Springstead and Hogtown Creeks. Hogtown Creek traverses through the City of Gainesville and terminates at Haile Sink, some 14 miles away. The environmental damage to Hogtown creek following this incident was detectable for five miles downstream.

In the mid-1970s, the property was sold again to another developer who built the existing shopping complex onsite. During construction, the remaining pine tar sludges were mixed into the topsoil on the property. A storm water retention pond was built over the location of the former waste impoundments. Shortly thereafter, a dark-stained, malodorous phenolic leachate began to appear in ditch water along North Main Street.

The Koppers Corporation (Koppers) site is a former wood treating facility located on 82 acres immediately west of the former Cabot property. The facility operated from 1916 until December 2009, initially using creosote for the preserving of wood utility poles and timbers. Pentachlorophenol (PCP) and copper-chromium-arsenic (CCA) processes were later added, with CCA used exclusively after 1992. Two onsite lagoons were used to manage discharge of process waters. Based on aerial photos, the former North Lagoon was active from approximately 1956 until the 1970s and the former South Lagoon from 1943 or earlier until 1976. Both were closed, covered and graded. The more recently used CCA process was self-contained and did not generate wastewater. Investigations performed by Koppers in the 1980s revealed soil and groundwater contamination onsite. In March 2010, Beazer East, Inc. (Beazer) purchased the property from Koppers to facilitate Superfund remediation. Koppers plant decommissioning activities, demolition and offsite disposal of above ground structures including the CCA tanks and related equipment, and interim storm water control measures were completed in March 2011. Final site closure will be completed as part of the Superfund remedial action.

In 1985, the Department of Transportation (DOT) proposed to widen a portion of North Main Street, adjacent to the site, estimating that 4,800 cubic yards of contaminated muck were unsuitable for roadbed material and needed to be removed. The Florida Department of Environmental

Regulation (FDER, now DEP) identified feasible alternatives for disposal of the muck in its March 1986 "Assessment of Management Alternatives for North Main Street Muck – Gainesville, Florida." In January 1991, DOT presented a conceptual road-widening plan to EPA and DEP. The agencies reiterated that road widening could be implemented with proper precautions. DOT performed additional soil sampling adjacent to and beneath North Main Street in 1992 to determine the extent of contaminated muck requiring excavation during road construction and support the road design. DOT completed the widening of North Main Street adjacent to the site in September 1994. Excavated soils were transported to an out-of-state facility for treatment and disposal.

Threat

Soil contamination: Soil contamination has been confirmed at the former Koppers facility at concentrations above levels protective of both commercial/industrial and residential use. Contaminants include arsenic, chromium, PCP, polynuclear aromatic hydrocarbons (PAHs) and dioxin. Exposed soils on the former Cabot facility are not contaminated above levels protective for commercial land use but do exceed State default soil leachability criteria for several site related phenolic compounds, as well as benzene, ethylbenzene, toluene, xylene, naphthalene and acenaphthene.

Offsite soils: Exposure to dioxin contaminated soils on offsite residential properties has been mitigated. Removal of offsite contaminated soils on properties west and south of the former Koppers facility was initiated by Koppers in March 2014 and completed in September 2014, as documented in the July 2015 Remedial Action Completion Report: Off Property Soil Replacement. Approximately 100 offsite properties including the City easement immediately west of the former Koppers facility were remediated, based on the results of soil samples collected in rights-of-way as well as on private properties from 2009 until remedy implementation in 2014. Residential properties were remediated based primarily on the State's residential SCTL of 7 ng/kg for dioxin. Limited exceedances of arsenic and/or carcinogenic polynuclear aromatic hydrocarbons (carcinogenic PAHs) in surface soils immediately west of the Koppers property boundary were also addressed by the removal. Following excavation and backfill with clean soil to a depth of 1-foot bls, properties were restored with grass and landscaping based on restoration plans developed cooperatively with each property owner.

Soil sampling as part of an area-wide background study in Gainesville has shown elevated soil concentrations. The DEP does not have any information that links these background sample results to the Koppers site. The ACHD and DEP issued notices to owners/residents of sampled properties and those located near ROW sample locations, advising that they avoid contact with contaminated soils.

Groundwater contamination: Groundwater contamination in the surficial, Hawthorn and Floridan aquifers at the former Koppers facility has been confirmed. Groundwater contamination on and down gradient of the former Cabot facility has also been confirmed in both the surficial aquifer and underlying Hawthorn. Contaminants include those associated with the wood preserving industry (PCP, creosote-related compounds as well as naphthalene, copper, chromium, and arsenic) and with the naval stores industry (terpenes, phenols) and benzene. The downward migration of contaminants poses a threat to the underlying Floridan aquifer, the primary source of

area drinking water. Ongoing monitoring of onsite Floridan aquifer monitoring wells since 2004 has confirmed the presence of organic compounds, including naphthalene, at levels exceeding State groundwater criteria. May 2009 sampling results confirmed naphthalene at 120 µg/L and 36 µg/L (versus 14 µg/L State criteria) in two Floridan aquifer monitoring wells located at the north and east facility property boundaries, respectively. Two recovery wells have been installed and pumping is ongoing to address Floridan groundwater contamination at the northwest and eastern property boundaries. Monitoring of the existing array of offsite Floridan “sentinel” monitoring wells located approximately 800 feet north of the former Koppers facility property has not shown concentrations above State groundwater criteria for site related organic compounds, indicating that the Floridan aquifer contamination is limited to the vicinity of the site. An additional Floridan monitoring well installed in 2015 northeast of Koppers facility property confirmed naphthalene above the State criterion (14 µg/l) at depths up to 205 ft. bls. Arsenic was detected at 15 µg/L (versus the 10 µg/L groundwater standard) in a new sentinel well installed and sampled in May 2010. Subsequent sampling results confirmed that arsenic had declined to 1.2 µg/L and remains below the State groundwater criteria. The Murphree well field is approximately 2.5 miles northeast of the site.

The potential for migration of groundwater contamination to nearby private wells remains a concern. A survey of private wells in the area of the site was completed in 2003. Groundwater sampling of nearby private wells in February 2004 detected contamination in one private irrigation well located immediately west of Koppers where benzene and naphthalene were observed at 1.7 and 15.3 µg/L respectively, above the State’s 1.0 µg/L and 14 µg/L criteria. Subsequent sampling in April 2004 did not detect any exceedances. As instructed by the Water Management District, the unpermitted private well was plugged and abandoned in November 2004, to prevent exposure and a potential conduit for contaminant migration. Monitoring of nearby private potable wells by the Alachua County Health Department (ACHD) has confirmed that offsite private potable wells meet drinking water standards.

Storm water/Surface water: The potential exists for environmental damage from offsite migration and discharge of contaminated groundwater or storm water into the ditch north of the Cabot Carbon/Koppers site leading to Springstead Creek. Following a 1983 treatability study completed in cooperation with the University of Florida, FDER used State funds to construct a leachate collection system in the Main Street ditch located immediately east of the site as an interim remedial measure (IRM). The IRM system was operated by FDER from 1985 until 1991, when the Cabot Carbon Corporation took over operation. Cabot Carbon Corporation installed the current groundwater interceptor trench in 1995 as part of the Superfund cleanup and to prevent discharge of contaminated water into Springstead Creek. Intercepted groundwater is sent to the Kanapaha Sewage Treatment Plant.

The onsite Koppers ditch conveys storm water offsite and ultimately to Springstead Creek. Excavation of contaminated sediments in the onsite storm water ditch was completed by the Koppers facility in 2009 to address the DEP storm water permit exceedances for arsenic and copper. However, storm water monitoring and Alachua County Environmental Protection Department (ACEPD) surface water sampling results in 2010 confirmed exceedances of surface water criteria for arsenic and PAHs. After Koppers closed the facility in 2010, Beazer submitted an application for a DEP storm water permit. In November 2010, under a consent order with DEP,

Beazer implemented site improvements including grading, construction of berms and swales and site seeding/sodding to improve the quality of storm water discharge. DEP held a public meeting in March 2011 to present the draft storm water permit and solicit public comment. The interim permit was issued to Beazer in June 2011 and requires monitoring of facility specific constituents to determine compliance with storm water regulations and identify corrective actions, where necessary. The permit will remain in place until the Superfund remedy is implemented. Monitoring is ongoing.

Creek Sediments: Exposure to contaminated sediments in Springstead and Hogtown Creeks has been a concern. Offsite sediment sampling was completed in early 2009 by the ACEPD through funding by EPA to determine if contaminated sediments have been transported offsite and pose a public health risk. The results indicated that there were sediments in Springstead and Hogtown Creeks with several PAH compounds at concentrations above the State sediment quality guidelines for the protection of sediment dwelling organisms. While not directly comparable, dioxin was also observed above the State unrestricted use soil criteria of 7 parts per trillion (ppt), at 4 sediment locations, with concentrations up to 41 ppt. Carcinogenic PAHs were detected above the State unrestricted use soil criteria of 0.1 mg/kg at 10 sediment locations, with levels up to 3.13 mg/kg. DEP issued written notices of offsite contamination to property owners near confirmed locations of sediment contamination. DEP with the assistance of ACEPD has posted warning signs at locations along the creeks.

In 2011 Cabot implemented a tar removal plan in Springstead and Hogtown Creeks based on the ACEPD studies and supplemental verification surveys. The sediment removal focused on accessible tar deposits with removal to a “visibly clean” endpoint. In May 2016, Cabot conducted additional sediment sampling including a visual survey at 25 locations to characterize any remaining PAH concentrations in creek sediments and determine if any residual tar deposits that could not be accessed during the previous removal had been reworked by surface water such that potential exposure was possible. Tar deposits were observed in 2 areas, at depths of 5 to 24 inches below the creek bottom. Sampling confirmed 2 locations where deeper sediments are above the Probable Effects Concentration (PEC) for total PAHs (23 mg/kg), for the protection of sediment dwelling organisms. At other sample locations, total PAH concentrations are below the PEC. Sediment at 2 locations contained carcinogenic PAHs above the DEP-recommended a maximum interim sediment criterion of 1.0 mg/kg based on direct contact under a recreational land use scenario. Dioxin was not sampled as part of the assessment. The 2011 AROD requires periodic sediment monitoring to confirm the effectiveness of monitored natural reduction until sediment cleanup goals are met.

Dust: Public concern with potential offsite exposure to dust that may contain site-related contamination has also been expressed historically. Offsite soil contamination is believed to be primarily due to historic windblown dust from the Koppers facility property. During the 2009 DEP facility inspections, no permit violations for dust emissions were observed, indicating that the recent modifications to Koppers facility operations including seeding and watering of more barren areas appeared to have addressed the issue. Site improvements since decommissioning of the facility in 2011 including recontouring and sodding related to storm water improvements further reduced dust generation at the former facility.

In July 2011, DOH, with input from a work group consisting of Federal, State, County and community representatives, provided an Indoor Dust Sampling Work Plan to EPA which contained recommendations for assessing contaminant dust levels and the potential for residents' exposure to site related indoor dust. EPA implemented dust sampling in 17 homes in the Stephen Foster neighborhood (SFN) west of the site and in 13 homes in two background residential areas in May 2012. Based on review of the data, EPA issued letters to residents in December 2012 indicating that dust levels measured in homes west of the site do not pose a health risk. The May 2013 EPA Indoor Dust Study Data Report documented that dust levels measured in SFN homes are below EPA's recommended indoor dust criterion of 190 ppt dioxin and do not exceed any applicable EPA health-based benchmarks for Koppers site-related compounds. DOH issued a draft health report in May 2013 with similar conclusions.

Response Strategy and Status (December 2020)

A complaint against Cabot Carbon Corporation and Raymond Tassinari was filed by FDER in July 1983, for violation of Florida Statutes and FDER rules. Although the Department requested civil penalties, injunctive relief and cost recovery, in June 1984, the court struck all motions except cost recovery. In 1987, the court ruled that a cost recovery hearing would not be implemented until completion of the Remedial Investigation/Feasibility Study (RI/FS). DEP completed cost recovery against the responsible parties in 1995, recovering the majority of its incurred costs.

In December 1984, FDER entered into a Superfund Cooperative Agreement with EPA to conduct a RI/FS. The FDER contractor, IT Corporation, completed the RI fieldwork and provided a RI report to the Department that included recommendations for additional assessment. No additional assessment was completed under this contract. In April 1987, FDER held an informational meeting in Gainesville to present results in the draft RI report and answer questions. The final RI report was received in June 1987. Completion of the RI coincided with the expiration of the EPA-FDER Cooperative Agreement. FDER turned over the lead management role to EPA in November 1987.

The EPA entered into a Consent Order with Cabot Carbon Corporation (Cabot), and Beazer, Inc. (formerly Koppers), requiring the responsible parties to perform the FS, including additional RI fieldwork. The final RI Addendum was issued in November 1989. The Risk Assessment was approved in February 1990. The final FS was approved in June 1990.

The RI confirmed that groundwater in the surficial aquifer, onsite soils at the Koppers' facility, and sediments and surface water in the North Main Street ditch and Springstead Creek contain elevated levels of site-related contaminants including arsenic, chromium, phenol, PCP, naphthalene, polynuclear aromatic hydrocarbons (PAHs) and benzene. The risk assessment concluded that contaminant levels did not pose a health risk under current industrial/commercial land use practices, based on existing data at that time. While surface water in the North Main Street ditch did exceed the 1 µg/L surface water standard for phenol for the protection of surface water organisms, contaminant levels observed in ditch sediments and surface water did not pose a public health threat.

Following the August 1990 public meeting, the EPA signed the Record of Decision (ROD) documenting the selected site remedy. The selected remedy specified treatment of Koppers' contaminated soils by a combination of soil washing, bioremediation, and solidification/stabilization; and surficial aquifer groundwater recovery and treatment at both the Koppers and former Cabot facilities, with discharge to the local publicly owned treatment works (POTW). Soil cleanup criteria were selected based on future residential use and the protection of groundwater. Groundwater cleanup goals were health-based and assumed potential use as a drinking water source. Additional soil sampling was also required in a suspected lagoon area immediately west of North Main Street ("Northeast Lagoon") along with plugging of former Cabot production wells.

In March 1991, Cabot signed a Consent Order with EPA, agreeing to perform remedial design and cleanup. Beazer, Inc. agreed to perform remedial design and cleanup at the Koppers site in response to the EPA's administrative unilateral order.

Cabot performed additional soil sampling in the suspected former lagoon area west of North Main Street in 1992, and confirmed that previously unidentified soils immediately northeast of the former facility contained elevated levels of PAHs and naphthalene requiring remediation. Removal of these contaminated soils was incorporated into Cabot's final groundwater remedial design and approved by EPA in December 1993. DOT excavated and disposed of contaminated soil beneath and east of North Main Street during road construction. Construction of the Cabot groundwater interceptor trench began in January 1995, following completion of the DOT road widening and included removal of the remaining accessible contaminated soils west of the North Main Street ditch. Installation of the Cabot surficial aquifer remedial system along North Main Street was completed in May 1995. Cabot conducted additional groundwater sampling to evaluate the effectiveness of the system in early 2009. No modifications to the Cabot surficial recovery system were proposed. System operation and maintenance (O&M) is ongoing.

Using Sanborn Fire Insurance maps, Cabot performed additional fieldwork in the former clock tower area in 1998 and located the three Floridan aquifer wells utilized during former Cabot Carbon facility operations. The former supply wells were plugged and abandoned in 2000.

Construction of the Koppers surficial aquifer groundwater recovery and pretreatment system was completed in November 1994. Beazer conducted an evaluation of the Koppers surficial groundwater remedial system in December 2006, followed by more widespread sampling of surficial aquifer monitoring wells in 2007. Based on those results, in 2009, Beazer expanded the Koppers groundwater recovery system to include deep trenches for collection of onsite surficial groundwater and dense non-aqueous phase liquid (DNAPL) contamination. Operation and maintenance of the Koppers surficial aquifer remedial system is ongoing.

Sampling to support design of the 1990 selected Superfund remedy indicated that a much larger volume of soil contamination might exist at the Koppers facility along with DNAPL contamination in the surficial aquifer. Additional DNAPL assessment and re-evaluation of the site remedy was conducted by Beazer and documented in the September 1999 Revised Supplemental FS. The EPA provided a separate FS Addendum with further evaluation of cleanup alternatives in April 2001.

In May 2001, the EPA held a public meeting to present the Agency's proposed plan for an amended soil remedy. The proposed remedy consisted of an impermeable cap and underground slurry wall to contain contaminated soil and the underlying DNAPL creosote contamination in the surficial aquifer. The Gainesville Commission formally opposed the proposed containment remedy, citing concerns that the underlying Hawthorn clays were not adequate to prevent contaminant migration into the underlying Hawthorn formation and Floridan aquifer. DEP expressed similar concerns and indicated that offsite soil sampling should also be completed to determine if site-related contamination, including dioxin, was present in the adjacent neighborhood.

The EPA instructed Beazer to conduct additional fieldwork at the Koppers site to determine the continuity of the underlying Hawthorn clays, the extent of contamination, and the feasibility of the proposed containment remedy. Assessment activities from 2001 to 2010 included: a) installation and monitoring of additional onsite wells in the surficial aquifer, upper and lower Hawthorn formation and upper Floridan Aquifer; b) DNAPL assessment in or near the 4 onsite source areas; c) completion of a private well survey and sampling of offsite private potable wells west and north of the site; d) installation of offsite Hawthorn monitoring wells east and west of the Koppers property; e) additional onsite soil sampling and; f) offsite soil sampling north, south, east and west of the Koppers property. As of January 2010, 38 Hawthorn and 33 Floridan Aquifer monitoring wells including 19 multi-level Floridan wells and 4 offsite "sentinel" Floridan wells had been installed at the Koppers site. Three additional Floridan monitoring wells and a Floridan recovery well were installed in the northwest part of the Koppers property along with 2 more offsite Floridan sentinel wells in May 2010. A Floridan recovery well was subsequently installed at the eastern Koppers property boundary to mitigate offsite groundwater contaminant migration.

Data presented in the 2002 through 2004 Field Investigation Reports, the 2006 through 2010 Floridan Aquifer Well Installations reports, the March 2008 Supplemental Hawthorn Group Investigation report and ongoing groundwater monitoring results confirmed that contaminants including phenolic compounds and creosote related compounds (PAHs and naphthalene) have migrated from the surficial aquifer into the underlying Hawthorn formation and upper Floridan aquifer, at depths up to approximately 285 feet below land surface (bls). Organic compounds have been detected in Koppers onsite upper Floridan aquifer monitoring wells at concentrations above State groundwater criteria, with naphthalene observed at concentrations up to 2,600 µg/L in an onsite Floridan monitoring well near the former North Lagoon source area. Sampling of monitoring wells installed in the Hawthorn formation east of the Koppers property has confirmed offsite migration of groundwater contamination in the Upper and Lower Hawthorn including phenolic compounds and naphthalene. Two Hawthorn monitoring wells north of the former Cabot facility property also showed significant concentrations of phenolic compounds above State groundwater standards as well as terpenes.

Separate groundwater models developed by Beazer and Gainesville Regional Utility's (GRU) consultants have estimated a broad range of possible timeframes whereby the Floridan groundwater contamination might reach the Murphree well field. Monitoring of the 6 offsite Floridan Aquifer "sentinel" monitoring wells located north of the Koppers facility is ongoing to ensure that if groundwater contaminant migration occurs, it is detected and addressed before it threatens the well field.

In 2004, Beazer provided an evaluation of possible interim actions including an interim soil removal, to address contaminant sources. Additional onsite soil sampling results were reported in October 2007 to support an update of the risk assessment and soil cleanup criteria and selection of a final soil/source remedy. The results showed widespread onsite dioxin contamination in soils above State commercial/industrial use criteria as well as arsenic and some PAHs. DEP and local agencies recommended offsite soil sampling.

In early 2009, offsite soil sampling in a City easement and ROWs in the residential neighborhood west of the Koppers facility was initiated. Sampling on residential properties west of the former facility as well as offsite to the south, east and north was conducted from 2010 through 2012 to determine the offsite extent of soil contamination. Results indicated that the top 6 inches of soil contained primarily dioxin, with lesser carcinogenic PAHs and/or arsenic, at concentrations above the State cleanup target levels for unrestricted use on residential properties west of the former facility, as well as ROW properties immediately south, east and north of the former facility.

A Feasibility Study (FS) report was completed in May 2010 to support EPA's selection of a final remedy to address contaminated groundwater in the surficial aquifer, Hawthorn Group and Floridan aquifers, DNAPL sources and onsite soil contamination at the Koppers site and offsite soil contamination. Several field pilot studies to support evaluation of remedial technologies were conducted including enhanced DNAPL recovery, onsite in situ biogeochemical stabilization (ISGS) pilot testing to address DNAPL, and solidification/stabilization of soil contamination to address leaching in source areas. FS review comments were provided to the EPA by DEP and local stakeholders. A revised final Risk Assessment Report to support selection of the onsite soil cleanup goals for the Koppers site was submitted by Beazer in May 2010. The probabilistic portions of the risk assessment were not approved by EPA nor supported by DEP. An offsite soil risk assessment was also submitted by Beazer in October 2010 and included proposed alternative soil cleanup criteria for residential properties. Beazer's proposed alternative soil criteria were not supported by either EPA or DEP. Beazer also proposed alternative sediment quality criteria based on a comparison of data from Koppers sites located outside of Florida. The proposed sediment criteria were higher than both EPA and DEP guidelines and were not approved.

The EPA issued a proposed plan in July 2010 identifying the proposed final soil, DNAPL, groundwater and sediment remedies for the Cabot Carbon/Koppers site, including offsite contaminated soil and sediment. The closing date for submittal of comments was October 15, 2010. The Amended Record of Decision, identifying the final site remedy, was signed by EPA in February 2011. DEP issued its concurrence in June 2011.

The final remedy for the former Koppers facility consists of a containment/treatment remedy including a cap and slurry wall enclosing the source areas in the surficial and Upper Hawthorn, and DNAPL treatment within the source areas by ISGS and in situ solidification/stabilization (ISSS). Onsite soils outside of the containment area with concentrations above leachability based SCTLs will be excavated and relocated within the cap/slurry wall. Excavated areas will be restored with clean fill to ensure that the top two feet of soil cover outside the containment area meets residential SCTLs. Groundwater contamination will be addressed by the existing surficial aquifer recovery and treatment systems as well as in situ treatment, hydraulic containment and monitored natural attenuation in the other affected aquifers. Groundwater recovery and treatment will be conducted in the Floridan Aquifer in areas where monitoring indicates that groundwater

contamination is migrating and above groundwater cleanup goals at the former Koppers facility property boundary. Groundwater contamination in the Hawthorn will be addressed by in situ treatment and natural attenuation monitoring. Groundwater cleanup goals are based on the State GCTLs and federal MCLs. Groundwater remedies will continue until the contaminant plumes in all aquifers are stable or shrinking and groundwater does not exceed cleanup goals beyond the Koppers property boundary. Offsite contaminated soils will be addressed by excavation and consolidation onsite in the containment area or by engineering controls such as a cover with appropriate institutional controls. State soil cleanup target levels for commercial or residential use will be applied to individual offsite properties based on the current use. Institutional controls will be required where soil or groundwater is allowed to remain permanently above unrestricted use criteria. Contaminated sediments in Springstead and Hogtown creek with concentrations above State sediment quality criteria, EPA screening criteria or recreation-based cleanup target levels will be excavated and consolidated onsite. Until natural processes reduce sediment concentrations to SCTLs for unrestricted use, warning signs along the creek as well as notice letters to residents of adjoining properties will be used to advise the public to avoid exposure to contaminated sediments.

The final remedy for the Cabot Carbon portion of the Superfund site includes continued surficial aquifer groundwater recovery and treatment along with installation of Hawthorn monitoring wells and in situ groundwater treatment if monitoring data indicates that Hawthorn groundwater contains contaminants attributable to former Cabot Carbon facility operations.

A consent decree was executed in federal court on July 9, 2013 requiring Beazer, Inc. to complete the Koppers site related Superfund remedial design and remedial action. Cabot Corporation (Cabot) will conduct the Cabot Carbon site related remedy through the existing unilateral order.

Cabot and its contractor, Weston, mobilized to the site in late January 2011 and completed an interim sediment removal action in April 2011. Sediments containing visual tarry materials in Springstead and Hogtown creeks were excavated and disposed of offsite at a permitted disposal facility. Excavated areas were based on the 2009/2010 sediment quality data and field reconnaissance conducted by ACEPD.

In 2011, Beazer completed assessment of areas on the Koppers facility where historic aerial photos suggested possible buried drums or other features which could act as continued sources of groundwater contamination. No buried drums were found. A Drum Burial Assessment Report was submitted in June 2011.

In September 2012, Cabot completed a preliminary soil gas survey with the collection of 12 subsurface soil gas samples at locations immediately outside of commercial buildings on the former Cabot facility property. The May 2013 Soil Investigation Report concluded that the volatile organic compounds detected in vapors beneath the site do not pose a health risk, based on a comparison to EPA vapor screening levels and use of the EPA model to evaluate the potential indoor vapor levels.

An offsite soil removal pilot project was implemented by Beazer in November 2013 on a parcel located immediately west of the former Koppers facility and included restoration and re-

landscaping. A data summary report was submitted by Beazer in November 2013 including dioxin fingerprinting analysis to support recommendations for final delineation of offsite soil contamination and design of the offsite soil removals. Additional soil sampling was conducted in response to comments to identify final offsite properties west and south of the former Koppers facility requiring remediation. The full-scale offsite soil removal remedy began in March 2014, starting with contaminated properties located west of Koppers. Between March and November 2014, soil removal and restoration activities including re-landscaping were completed on approximately 100 properties. A follow-up inspection was conducted by EPA, DEP, and local government and Beazer representatives on November 18, 2014. Documentation of the soil removal was provided in the July 2015 construction completion report.

In May 2011, Beazer began design of the In Situ Geochemical Stabilization (ISGS) remedy to address DNAPL in the former process area at Koppers with submittal of a work plan for an ISGS field pilot in the Upper Hawthorn in the former process area, as required by the EPA Amended ROD. A revised work plan was submitted in February 2012, in response to review comments that focused primarily on source characterization and ISGS performance criteria. DNAPL source area characterization was completed in the fall of 2012 and included almost 100 borings to depths of approximately 75 feet bls. DNAPL recovery wells were installed and rates of recovery are being monitored. A data summary report was submitted in December 2013 followed by performance of a focused ISGS pilot test within the former process area in March 2014 to support final design of the full scale ISGS pilot study. Results of the focused pilot were provided in the February 2015 Draft final ISGS Design for the Process Area. A revised Design was submitted in April 2015 in response to comments and was approved by EPA. The Underground Injection Control (UIC) permit allowing injection of sodium permanganate to remediate DNAPL was updated by Beazer and approved by DEP in June 2015. In situ source treatment in the former Koppers process area using ISGS was completed in September 2015. The construction completion report was provided in March 2016 entitled, "Phase II Field Implementation of In-Situ Geochemical Stabilization Remediation for the Former Process Area". The final December 2016 "Phase II Performance Monitoring of ISGS Remediation for Former Process Area" report documenting the first 12 months of performance monitoring subsequent to ISGS treatment, recommended hot spot treatment in 12 areas to improve ISGS distribution in those areas and further reduce DNAPL recovery rates. The supplemental ISGS injections were completed in March 2017. Assessment of DNAPL in the South Lagoon area was completed in June 2017 to identify the area requiring ISGS treatment. The final ISGS Design was completed in February 2018. ISGS treatment was performed in the South Lagoon area in May and June 2018. Performance monitoring of DNAPL recovery rates is ongoing.

Assessment of offsite Hawthorn groundwater contamination and potential source areas associated with the former Cabot operations was initiated by Cabot subsequent to the EPA 2011 Amended ROD. Cabot installed Hawthorn monitoring wells north/northeast of the former Cabot wastewater lagoons in October 2011. Results confirm Cabot related contamination in both the Upper and Lower Hawthorn Formation. Additional assessment, completed in May 2013, included groundwater and soil sampling in the surficial and Hawthorn in the former Cabot lagoon area and down gradient to the north/northeast. Resulting data was presented to EPA, DEP and stakeholders in September 2013 and confirmed down gradient groundwater contamination including phenolic compounds and ketones in the Upper Hawthorn along with evidence of residual pine tars in the

surficial aquifer in the footprint of the former lagoons. In October 2013, Cabot provided recommendations for additional soil borings with groundwater sampling in the Upper Hawthorn to delineate the down gradient extent of contamination. Field work was completed 2014 and based on the resulting soil and groundwater data, a work plan was submitted in October 2014 that proposed the installation of additional Hawthorn monitoring wells. as well as a Floridan aquifer monitoring well. additional pairs of Upper and Lower Hawthorn monitoring wells were installed to delineate the extent of Cabot related contaminants in that aquifer. A multi-screened Floridan aquifer monitoring well was also installed north of the former Cabot Carbon facility property, to determine if contaminants are present down gradient in that aquifer.

Cabot initiated additional field work in April 2015. Installation of 6 Upper Hawthorn, 7 Lower Hawthorn and 1 Floridan monitoring well(s) was completed. Results of the 2015 groundwater assessment activities along with a discussion of potential in situ treatment technologies was presented in a November 2015 Technical Memorandum. Sampling results confirmed that the groundwater in the Hawthorn Group formation down gradient of the former Cabot lagoon area is contaminated with phenolic compounds, benzene, ketones, and naphthalene. The new Floridan monitoring well sample results confirmed the presence of naphthalene at 170 µg/L in the upper Floridan groundwater. Sampling was conducted by EPA Athens in March and July 2016, which included the installation of 6 temporary wells and sampling of 14 existing wells at the Cabot site to supplement and corroborate existing data. DEP and local stakeholders recommended an additional down gradient Floridan Aquifer monitoring well, and additional soil and groundwater sampling in the former Cabot Process and Storage Area to determine if other groundwater contaminant sources are present .

Results of the Cabot source sampling, groundwater assessment and bench scale testing were provided in the Draft May 2016 Feasibility Study (FS) report along with the evaluation of in situ treatment alternatives to address Cabot related sources and groundwater contamination in the Hawthorn formation. In response to review comments from EPA, DEP and local stakeholders, a revised FS was submitted in January 2017. The revised FS recommended a combination containment remedy consisting of a cap and slurry wall and a down gradient groundwater recovery and treatment system to address contaminated groundwater outside of the containment unit. Evaluation and optimization of the existing surficial aquifer remedy was also proposed.

Schedule

Additional recent or ongoing site-related activities are described below.

- Operation and maintenance (O&M) of both the Koppers and Cabot Carbon surficial aquifer groundwater remediation systems is ongoing.
- At the former Koppers facility, ongoing groundwater recovery includes two onsite and two offsite Floridan wells. The Floridan recovery wells are located in the northwest area of the Koppers property and along the eastern Koppers property boundary. They are designed to capture onsite groundwater contamination and prevent offsite contaminant migration.

- At Cabot, installation of Hawthorne recovery wells and initiation of groundwater recovery is scheduled for 2022 outside the area encompassed by an impervious slurry wall installed in 2021. This Cabot containment area will be capped.
- Regularly scheduled groundwater monitoring of surficial, Hawthorn and Floridan aquifers is ongoing at Cabot and Koppers to evaluate the effectiveness of the Superfund remedy. To date, sampling of offsite Floridan aquifer wells north of the former Koppers facility indicates that site-related groundwater contamination has not migrated to these sentinel wells. An offsite Floridan monitoring well north of the Cabot property was installed and sampled in 2015. Analytical results indicated naphthalene above the State criterion. Subsequent monitoring has shown contamination to be below regulatory limits in this well. Koppers post ISGS treatment monitoring was completed to document effectiveness in the process area and south lagoon. This included monitoring of DNAPL recovery rates in Temporary Injection Points (TIPs) and Hawthorn recovery wells, along with process area saturated soil sampling. Groundwater monitoring for compliance with State Underground Injection Control (UIC) requirements was also conducted. There has been a documented decline in the rates of DNAPL recovery as a result of ISGS treatment. Subsequent to Koppers ISGS performance monitoring, additional ISGS injections were completed near the process area, and injections were completed in 2021 at the other two source areas, the north lagoon and drip track.
- Koppers saturated soil sampling to define the location of the impervious slurry wall has been completed and the wall is scheduled for installation in 2022. This wall will enclose the four source areas and this containment area will be capped.