RECORD OF DECISION

WESTPOINT HOMES SITE

Oconee County, South Carolina

Prepared by

South Carolina Department of Health and Environmental Control

Bureau of Land and Waste Management

October 2022

RECORD OF DECISION
WESTPOINT HOMES SITE

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

Part I - THE DECLARATION

1.0 Site Name and Location

The WestPoint Homes Site (Site) is located in Seneca, South Carolina (Oconee County) in a light industrial area. The physical address of the Site is 679 Edinburgh Way, Seneca, SC, 29678. The Site consists of approximately 16 acres of the original 191.7-acre parcel. The site location is illustrated on Figure 1.

2.0 Statement of Basis and Purpose

This Decision Document presents the Final Selected Remedy for the WestPoint Homes Site. This remedy was selected by the South Carolina Department of Health and Environmental Control (Department) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and to the extent practicable the National Contingency Plan (NCP). The decision is based on the Administrative Record for the Site.

3.0 Assessment of the Site

The response action selected in this Record of Decision (ROD) is necessary to protect the public health and welfare or the environment from actual or threatened releases of hazardous substances into the environment.

4.0 Description of the Selected Remedy

The Department has identified Anaerobic BioChem Plus (ABC+) as the selected remedy for the Site. This alternative involves a hybrid between two in situ treatment alternatives, enhanced reductive dechlorination (ERD) and zero valent iron (ZVI). The "ABC" designation of this commercial product is an acronym for the term "anaerobic biochem", denoting the standard lactate-based ERD formulation. The ERD reaction effectively dechlorinates the target organic contaminant mass by altering its chemical composition and reducing its toxicity. The "+" designation of the ABC+ nomenclature denotes that finely milled ZVI has been included in the treatment formulation as an abiotic treatment component. The presence of ZVI in the treatment mix facilitates the redox reaction responsible for dechlorination of volatile organic compounds (VOCs)

This treatment results in a process that promotes both biological and physio-chemical treatment. This remedial alternative will treat VOC-affected groundwater by injection into the subsurface using direct-push technology. This alternative will substantially reduce contaminant concentrations in the source area.

5.0 Statutory Determinations

The selected remedy attains the mandates of CERCLA 121, and to the extent practicable, the NCP.

This remedy is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to the remedial action, is cost-effective, and utilizes permanent solutions.

The selected remedy also satisfies the statutory preference for treatment as a principal element of the remedy; permanently and significantly reducing the toxicity, mobility, and volume of hazardous substances, pollutants, or contaminants.

6.0 Authorizing Signature

This ROD documents the Department's selected remedy for contaminated groundwater at the WestPoint Homes Site.

_____ 11-10-2022

Henry Porter, Chief Date
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control

PART II - THE DECISION SUMMARY

1.0 Site Name, Location, and Description

The WestPoint Homes (Site) (Figure 1) is located at 679 Edinburg Way, Seneca, Oconee County, South Carolina. The Site originally consisted of approximately 191.7 acres and have been subdivided for redevelopment. The remediation will focus on a 16 acre that has volatile organic compounds (VOCs) contamination in the groundwater above the drinking water standards. The property remains the ongoing focus of property redevelopment activities including construction of various student-related apartment complexes, residential community housing, and multi-use commercial structures. The Site is surrounded by a wooded area, mixed-use apartment housing, and residential housing development.

2.0 Site History and Enforcement Activities

2.1 Site History

The Site was originally a textile production facility in 1951 and owned by the J.P. Stevens Company. In 1989, the facility was acquired by WestPoint Pepperell, later known as WestPoint Stevens. In 1951, the facility was constructed, there have been several plant expansions through the years, with the last expansion in 1990. The Clemson manufacturing complex operations included a greige mill, a dyeing and finishing plant, and a fabricating plant. The plant operations consisted of making cloth fabric from cotton and polyester fibers, dyeing and printing of the cloth, finishing of cloth, and fabricating bedding from the finished cloth fabrics. The Clemson facility was active for more than 50 years and closed in 2006. The manufacture building was demolished in 2008 and 2009 (Figure 2).

During the time of WestPoint Homes' (WPH) ownership, the Site encompassed approximately 384 acres. This property has subsequently been subdivided for ongoing redevelopment (Of this total acreage, the Site encompasses approximately 191.7 acres). Of this total, approximately 16 acres have been determined to be impacted by volatile organic compounds (VOC) contaminated groundwater. Environmental assessment has been conducted at the site from 2005 to 2015. Based on the findings during the initial assessment, WestPoint Home, Inc. agreed to enter in a consent agreement (CA-06-163-W) in order to facilitate the assessment, remediation and/or the long-term completion of the project.

2.2 Previous Investigations

In March of 2005, a phase I environment assessment was prepared that designated several areas of potential environmental concern. In November 2005, a phase II investigation was performed in these areas including the former coal pile storage (used to file the on-site boilers). Groundwater sampling conducted at the Site revealed the presence of tetrachloroethylene (PCE) in groundwater. The sampling analysis identified the presence of ethylbenzene and xylene in the soil and groundwater samples collected adjacent to the former mill building. There used to be an aboveground Varsol tank had been removed from an upgradient location as part of a prior building expansion. Field activities conducted during the period of February through August

2006 investigated these areas, resulting in the installation of numerous groundwater monitoring wells.

During the investigation of the former Varsol AST area VOCs were found in the soil. A removal action was conducted to address the contaminated soil in the former tank area. Approximately 1,811 tons of VOCs affected soil was excavated and transported off-site for disposal. Prior to backfilling the excavation, Oxygen Bio Chem, a bioremediation compound, was placed in the base of the excavation to treat the residual organic contaminants that might be present in the groundwater.

In September 2008, WPH conducted an expanded Site investigation using membrane interface probe (MIP) technology to provide enhanced delineation of the VOC-affected groundwater areas.

In 2009, a MIP study, and additional soil sampling was conducted along the sewer lines and several test pits were excavated. The additional soil sampling along the sewer lines was to further delineate the extent of VOCs in groundwater and find potential VOC source areas. The MIP study helped provided support to the hypothesis that historical release from process sewer lines associated with former WPH facility operations represent the likely source of the VOCs observed with the groundwater.

In August 2013, additional soil samples were collected. The results of this field efforts continued to indicate that the source of VOC contamination occurred in the saturated zone. The underground process sewer lines of the WestPoint Homes site continue to represent the most compelling and logical point of release for these observed CoCs. Within each of the two VOC plume areas.

During the period of April 1 through June 17, 2014, 17 replacement monitoring wells and 36 new monitoring wells were installed to help further delineate horizontal and vertical extent of the VOC plumes. An additional ten monitoring wells were installed in May 2015 to delineate the plume.

2.3 COC's

There are several chemicals of concern at this site, but the main one is tetrachloroethylene (PCE), which is in the four source areas located in the footprint of the old manufacturing building. The concertation's of PCE in the groundwater have decreased from 1,500 ug/L to 280 ug/L in monitoring well RMW-18, which is in the upper VOC plume.

The upgradient and downgradient VOC plumes flow parallel with each other and migrate toward Lake Hartwell; they appear to comingle before discharging into the lake (Figure3). The concentrations of PCE observed in the upgradient plume (as of March 2021) range from below analytical detection limits to 9000 ug/L (a concentration observed in the transition zone at RMW-28B). Other constituents that exceed their Maximum Contaminant Levels (MCLs) within the upgradient plume include benzene (9.4 ug/L at RMW-24 and 6.4 ug/L at RMW-26), 1,2-Dichloroethene (cis-1,2-DCE) (ranging from less than detection to 2600 ug/L at RMW-20A), trichloroethylene (TCE) (ranging from less than detection to 120 ug/L at RMW-27), and vinyl chloride (ranging from less than detection to 16 ug/L at RMW-20A).

The concentrations of PCE observed in the downgradient VOC plume range from less than the analytical detection limit to an upper bound of 10,000 ug/L (which was observed in the intermediate aquifer zone at RMW-16A). Other constituents that exceed their Maximum Contaminant Levels (MCLs) within the downgradient plume include cis-1,2-DCE (ranging from less than detection to 820 ug/L at RMW-23C), TCE (ranging from less than detection to 14 ug/L at RMW-16), and vinyl chloride (ranging from less than detection to 2.6 ug/L at RMW-23C).

2.4 Pilot Study

WPH conducted pilot study for Anaerobic BioChem Plus (ABC+) between June 2016 and March 2017. WPH tested the ABC+ treatment formulation involving a combination of Redox Tech's standard Enhanced Reductive Dechlorination (ERD) treatment formulation (ABC) supplemented with finely milled zero valent iron (ZVI) particles. The pilot study was conducted at two locations; one injection area near the head of the Upgradient VOC plume, and the other area located near the head of the Downgradient VOC plume. This was significant because it indicated that the more highly impacted aquifer zones could be treated directly using DPT technology.

In 2019, an expanded ABC+ Pilot study was conducted which included injections at 80 locations with 2-foot vertical spacings (Figure 4). Injection locations were at least 30 feet from the nearest permanent groundwater monitoring well to minimize daylight. Injections were conducted between May 14 and July 10, 2019, and a monitoring event was conducted in March 2021. The pilot study confirmed that this technology was an effective remediation technology.

3.0 Community Participation

Public participation activities prior to the issuance of this ROD included a community meeting, maintenance of a website including site-specific information, and the publication of notices in the local newspaper. All reports and documents that formed the basis for the selection of the response action are contained in the Administrative Record. The Administrative Record is available for review at the Seneca Branch Public Library, on the Department's webpage, and at the Department's Bureau of Land and Waste Management office in Columbia, South Carolina. The notice of the availability of these documents was published in The Journal on June 18, 2022.

On June 21, 2022, a public meeting was held at the Madren Conference Center in Clemson, South Carolina. DHEC sent out notices about the public meeting to all property owners within a half of mile from the site. Representatives of the Department presented the results of recent investigation work, explained the remedial alternatives evaluated in the Focused Feasibility Study, and presented the Department's preferred alternative (the Proposed Plan). This meeting initiated the official public comment period, which concluded on July 21, 2022. There were no formal comments during the comment period, however, some questions were asked during the public meeting which are included in the Responsiveness Summary.

4.0 Scope and Role of Response Action

The proposed action in this Proposed Plan will be the final cleanup action for the Site. The injection of ABC+ into the groundwater will reduce the contamination and risk at the site. The remedial action objectives for this proposed action include reducing the potential of the leaching of contamination from the soil to groundwater and to further mitigate and control the migration of contaminants through groundwater and into surface water pathway. As contamination will remain onsite, a 5-year review will be required once the remedial action is conducted to evaluate the effectiveness of the remedy.

5.0 Site Characteristics

5.1 Overview of Site Characteristics

The Site is currently in the process of redevelopment activities involving construction of student housing and mixed-use residential communities. The property development team has entered into a Non-Responsible Party Contract (Voluntary Cleanup Contract 07-4895-NRP) with SC DHEC. Recognizing the possible environmental and health consequences of conducting residential development activities within the VOC plume areas, the site developer has developed outside the VOC-affected groundwater area.

Within the immediate vicinity of the VOC-affected groundwater area, the Site exhibits approximately 25 feet of topographic relief, extending from the footprint of the former textile manufacturing complex for about 1400 feet (in a southeasterly direction) to the shoreline of Hartwell Lake. The former WPH facility was constructed on a topographic high that generally slopes to the east-southeast, towards Lake Hartwell. The land surface elevation at the former manufacturing building is approximately 685 feet above mean sea level (msl). The elevation of Lake Hartwell at full pool level is 660 feet above msl.

5.2 Geology/Hydrogeology

The Site is located within the Piedmont Physiographic Province of South Carolina and is generally underlain by massive, crystalline bedrock. Bedrock in this area consists of igneous and metamorphic rocks with low permeability and is generally characterized by moderate relief and gently sloping topographic features.

The Wickham Series sandy loam soil association underlies the immediate Site area. The soil is generally deep, well drained, and developed in old alluvium on second bottoms or low terraces along larger streams. According to the Soil Conversation Service (SCS), the surface layer commonly is brown to dark-brown friable sandy loam and the subsoil is red to dark-red clay loam.

Based on the soil boring logs prepared during the installation of Site groundwater monitoring wells, four lithostratigraphic units were identified beneath the site, including the following: a) fill or disturbed material which is predominately silt, clay and sand associated with the former building structures and grading activities; b) saprolite is a highly weathered, disintegrating rock containing a high percentage of silt and clay and retaining evidence of former rock structure and fabric; c) transition zone is somewhat less weathered rock containing a higher percentage of sand and gravel; d) shallow bedrock which predominately occurred as a biotite gneiss, exhibiting an abundance of shallow fractures.

Groundwater beneath the Site generally occurs under unconfined conditions. Groundwater present within each of the three lithostratigraphic units (i.e., saprolite, transition zone, and shallow bedrock) is hydraulically interconnected. Based upon these observations, each of these four units is considered to comprise a single unconfined aquifer beneath the Site.

The calculated hydraulic gradient of the Site water table was observed to range from approximately 0.007 to 0.01 feet/foot, becoming steeper as the groundwater flow approaches Lake Hartwell. Similar conditions were observed within the potentiometric surface of the intermediate zone, where hydraulic gradients also ranged from approximately 0.007 to 0.01 feet/foot. The hydraulic gradients observed within the top of competent rock and shallow bedrock zone wells were generally consistent across the Site, with values ranging from 0.007 to 0.009 feet/foot.

Hydraulic conductivity values were determined through the performance of slug testing procedures at selected monitoring wells located within each zone. Effective porosity values were estimated based on the consistency of the soil materials encountered during well installation. Preliminary estimates for groundwater flow rates range from 25 to 150 ft/year within the shallow saprolite, 25 to 50 ft/year within the intermediate saprolite, 4 to 6 ft/year within the transition zone and shallow bedrock.

Vertical gradients have also been calculated with the VOC-affected groundwater plume areas. Downward flow gradients were observed within the upland areas. These flow gradients gradually shift to upward flow gradients, as groundwater approaches and discharges into Lake Hartwell.

5.3 Nature and Extent of Contamination

Based on the results of prior investigations conducted at the Site, four discrete VOC plumes have been identified and delineated.

The first plume is the upgradient VOC plume and is the largest of the VOC plumes. It is composed primarily of tetrachloroethylene (PCE). This plume is migrating in a southeastwardly direction toward Lake Hartwell. Based on prior investigations conducted in this area, the plume appears to originate near the southern end of the manufacturing building constructed in 1959. Underground process sewer lines associated with the facility were excavated in 2009 along with contaminated soil. Based on performance monitoring results collected in March 2021, substantial diminishment of the upgradient VOC plume has already occurred. Pilot studies were conducted in this area to reduce the concentrations of the VOCs in the groundwater.

The second plume is the downgradient VOC plume, and it is smaller in areal extent than the upgradient VOC plume. It is similarly composed primarily of PCE. This plume appears to originate from a different source area (most likely another process sewer identified at the upper end of the plume) and migrates toward Lake Hartwell. Another potential source (or partial source) for the downgradient VOC plume may be related to some preferential flow pathways that may link the upgradient and downgradient plumes.

The third VOC plume, located near the southwest corner of the former manufacturing building, is centered around the former location of a used-oil underground storage tank (UST) that was closed/removed in 1992. This plume was referred to as the "UST plume" and has dimensions of approximately 200 feet long by 100 feet wide. Five (5) monitoring wells were installed, sampled and have been abandoned. The data showed that five VOCs were detected, but PCE was the only one that exceeded its MCL.

The fourth VOC plume identified at the site is located near the southeastern edge of the former manufacturing building and is centered on around the location of the aboveground Varsol tank that was removed prior to WPH's acquisition of the Site in 1989. The associated VOC plume from this area, referred to as the "Varsol tank plume," measures approximately 100 feet in diameter. The VOCs identified in this area of the facility have consisted primarily of ethylbenzene and xylene. While PCE was detected within this plume area, it was identified at concentrations below its MCL. The Varsol tank plume overlaps and eventually comingles with the northern edge of the upgradient VOC plume. Ethylbenzene and xylene concentrations at RMW-02, which monitors the Varsol tank location, have decreased significantly during the recent two ABC+ pilot studies. Ethylbenzene declined from 17 mg/L in May 2016 to 0.35 mg/L in March 2021, while xylenes declined from 51 mg/L in May 2016 to 1.1 mg/L in March 2021. Neither of these constituents currently exceeds its MCL.

5.3.1 Groundwater Contamination

A groundwater monitoring network (Figure 5) was installed starting in 2014. It consists of shallow and deep (shallow bedrock) monitoring wells. Routine groundwater monitoring is conducted to evaluate groundwater quality. Groundwater sampling has been performed multiple times to date. The groundwater contamination is in located in the shallow, intermediate and deep vadose zones. The primary contaminant is PCE and its breakdown products.

6.0 Current and Potential Future Site and Resource Uses

The Site remains the ongoing focus of property redevelopment activities including construction of various student-related apartment complexes, residential community housing, and multi-use commercial structures have been constructed. Thus, the potentially exposed population at the site would reasonably include Site construction workers and community residents.

The primary concern at the site is contaminants present in groundwater above the maximum contaminant levels (MCL). The VOCs in groundwater present the possibility of two subsequent media pathways to completed or potentially completed exposure routes. They include groundwater migration to surface water and vapor intrusion from groundwater to dwellings constructed on the land surface above the VOC-affected groundwater area. Contamination from operations at the WestPoint Stevens site have been released to soil and groundwater. The latest analytical data indicates volatile organic compounds (VOCs) are present in soil and groundwater above regulatory standards. Site assessments has revealed that the VOC-affected groundwater is present at depths in excess of 20 feet below ground surface and not reasonably accessible to nearby workers and residents.

7.0 Summary of Site Risks

The primary risk to the public and the environment is from direct ingestion or exposure to contaminated groundwater on-site, and potential discharge from groundwater to surface water. Vapor intrusion of contaminants of concern from groundwater to indoor air is also a pathway of concern. Preferred alternatives identified in this Proposal plan and evaluated in the Feasibility

Study are necessary to protect public health and the environment from actual or threatened releases of hazardous substances to the environment.

8.0 Remedial Action Objectives

Remedial action objectives (RAOs) are developed to set goals for protecting human health and the environment. The goals should be as specific as possible but should not unduly limit the range of remedial alternatives that can be developed. The remedial action objectives for the site are to reduce the mass of chemicals of concern in groundwater and to reduce the potential for off-site migration of chemicals of concern in groundwater to adjacent surface water. Accordingly, the following RAOs were developed for the Site:

- Reduce the potential for soil leaching to groundwater.
- Reduce source area groundwater impacts to further mitigate/control impacts to downgradient groundwater and streams.
- Restore groundwater to maximum contaminant levels.
- Reduce the risk of vapor intrusion of contaminants from groundwater to indoor air.

9.0 Remedial Alternatives

Based on information collected during the previous investigations, a Focused Feasibility Study (FFS) was conducted to identify, develop, and evaluate cleanup options and remedial alternatives. The FFS process used the information on the nature and extent of contamination and associated potential human health risks developed during the remedial investigation and associated studies to develop and evaluate potential remedial alternatives and their overall protection of human health and the environment. Each remedial alternative evaluated by the Department is listed below.

- Alternative 1: No Action
- Alternative 2: Monitored Natural Attenuation (MNA)
- Alternative 3: In Situ Chemical Oxidation (ISCO)
- Alternative 4: Enhanced Reductive Dechlorination (ERD)
- Alternative 5: Anaerobic BioChem plus (ABC+ Treatment)

There are existing land use contracts (LUCs) (e.g. groundwater use restriction) on the property. It is assumed that the existing LUCs will remain in place until the groundwater remedial goals (RGs) are achieved. The underlying assumption for all the alternatives discussed and evaluated is that measures will be implemented until the groundwater RGs are achieved.

9.1 Description of Remedial Alternatives

9.1.1 Alternative 1: No Action

The No Action alternative serves as a baseline against which the other remedial alternatives can be compared. Under this alternative, there would be no action taken to prevent exposure to the soil contamination. No institutional controls or active remediation would be implemented under this alternative. There is no cost associated with implementing this alternative.

9.1.2 Alternative 2: Monitoring Natural Attenuation (MNA)

Monitored Natural Attenuation (MNA) is a passive approach that monitors the natural degradation or reduction in contaminant concentrations in groundwater. Groundwater chemistry and contaminants of concern are monitored to continually evaluate and confirm that natural degradation is occurring. A groundwater sampling and analysis plan would be developed to monitor remedy performance. Institutional controls (ICs) would be placed on the property to restrict land use and groundwater use. The existing monitoring well network at the Site would be utilized and maintained to address the monitoring requirements anticipated for an MNA site remedy for 30 years. The estimated total cost for the MNA alternative would be $959,000.

9.1.3 Alternative 3: In-Situ Chemical Oxidation (ISCO)

This in-situ treatment alternative involves treatment of the VOC-affected groundwater by direct injection of a chemical oxidant into the aquifer. When introduced into the subsurface, in-situ Chemical Oxidation (ISCO) treatment media will aggressively oxidize and degrade the contaminants. The estimated total cost includes an eight-year period of targeted ISCO injections, followed by a four-year period of monitoring the groundwater. The estimated total cost for ISCO would be $4,321,000.

9.1.4 Alternative 4: Enhanced Reductive Dechlorination (ERD)

Enhanced reductive dechlorination (ERD) is a biologically based treatment process in which many chlorinated and non-chlorinated hydrocarbons can be degraded by indigenous and bioaugmented soil microbes. This technology focuses on the growth of the anaerobic microbes to optimize the effectiveness of degrading chlorinated ethenes (i.e., PCE and TCE) to end-products of ethane, ethene and carbon dioxide. ERD typically involves the introduction of a prescribed mix of nutrients and treatment additives suitable for optimizing the growth of these highly specialized, microbes into the VOC-affected groundwater. The total estimated cost for ERD was developed by assuming that there would be a thirteen-year period of active ERD injections, followed by a seven-year period of monitoring the groundwater. The estimated total cost of the ERD alternative would be $2,347,000.

9.1.5 Alternative 5: Anaerobic BioChem plus (ABC+)

ABC+ is a hybrid between two in situ treatment alternatives, ERD and zero valent iron (ZVI) treatment. The "ABC" designation of this commercial product is an acronym for the term "anaerobic biochem", denoting a standard lactate-based ERD formulation. The ERD reaction effectively dechlorinates the target organic contaminant mass, altering its chemical composition and reducing its apparent toxicity. The "+" designation of the ABC+ nomenclature denotes that finely milled ZVI has been included in the treatment formulation as an abiotic treatment component. The presence of ZVI in the treatment mix is innovative and useful, as it can also facilitate the redox reaction responsible for physio-chemical dechlorination of VOCs. This innovative treatment strategy results in a treatment process that embraces both biological and physio-chemical treatment attributes. This remedial alternative will address treatment of the VOC-affected groundwater using in situ treatment in much the same manner as has been previously described for ISCO and ERD. The treatment media will be delivered into the

subsurface using direct-push technology. The total estimated cost for implementing Alternative 5 (ABC+) was developed by assuming a seven-year period for the ABC+ treatment injections, followed by an eight-year period of monitoring the groundwater. The estimated total cost of the ABC+ alternative would be $1,793,000.

10.0 Comparative Analysis of Alternatives

A comparative analysis of each alternative was performed and can be observed in the EPA Performance Criteria table included. The alternatives were evaluated in relation to one another for each of the evaluation criteria. The purpose of the analysis is to identify the relative advantages and disadvantages of each alternative. The remedies are ranked by each criteria and this is illustrated in Figure 6.

10.1 Overall Protection of Human Health and the Environment

When evaluating alternatives in terms of overall protection of human health and the environment, consideration is given to the way site-related risks are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

Alternatives ABC+ and enhanced reductive dechlorination received a high score for this criterion because they reduce the potential of exposure to chemical of concerns (CoCs) and control down gradient migration of CoCs. The ABC+ remedy has been successfully pilot tested at the Site and has shown to result in a sustained decrease in contaminant concentration. In-Situ chemical oxidation received a moderate score for providing protection of human health and the environment, but it requires the use of chemical formulations that could present hazards and challenges to handle, inject and monitor. The No Action and MNA alternatives do not provide adequate protection of Human Health and the Environment as they do not control or reduce the groundwater contamination at the Site.

10.2 Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

This evaluation criterion evaluates whether an alternative meets federal and state environmental statutes and regulations that pertain to the site. Each alternative is evaluated with respect to its ability to comply with such requirements.

All the alternatives listed would require a period of natural attenuation for the groundwater downgradient of the treatment area to reach regulatory limits with all of the alternatives received high to moderate scores for meeting the chemical specific ARARs, with the exception of No Action and MNA. The No Action and MNA alternative received the lowest score because regulatory limits would not be achieved in any portion of the plume during implementation.

10.3 Long-term Effectiveness and Permanence

Long-term effectiveness and permanence are one of the criteria used to determine the maximum extent to which permanence and treatment are practicable. Each of the various remedial alternatives can be expected to achieve some level of contaminant reduction and effectiveness, but over widely varying timeframes. The anticipated timeframe for No Action and MNA would

be significantly greater than for the other active treatment alternatives and does not involve an active treatment component which will have a poor long-term effectiveness. No action and MNA ranked low for long-term effectiveness.

Alternatives ISCO, ERD, and ABC+ each have an active treatment component and would provide for long term effectiveness of the contaminated VOC groundwater. These three alternatives rank higher due to each providing active treatment and would provide treatment effectiveness in a shorter timeframe.

10.4 Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment

The degree to which an alternative employs treatment to reduce the harmful effects of contaminants, their ability to move in the environment, and the amount of contamination present is evaluated by this criterion.

ABC+ received the highest score due to it effectively treating the VOC contaminated groundwater in the pilot study. ISCO and ERD were given moderate ratings as they both would reduce contaminant concentrations. The No Action and MNA alternatives received lowest ranking because these remedies do not promote active treatment of contamination.

10.5 Short-Term Effectiveness

The short-term effectiveness evaluation takes into consideration any risk the alternative poses to on-site workers, the surrounding community, or the environment during implementation, as well as the length of time needed to implement the alternative.

ABC+ received the highest score due to it achieving the Site RAOs in a reduced timeframe relative to ERD. ISCO presents the greatest short-term risk or impact to Site workers and nearby residents. Due to the chemical oxidants utilized with ISCO, it is possible that Site workers or nearby residents could experience exposure to the treatment chemicals and therefore it received a lower score. No Action and MNA received low scores due to its inability to protect human health and the environment in the short-term period.

10.6 Implementability

The analysis of implementability considers the technical and administrative feasibility of remedy implementation, as well as the availability of required materials and services needed for implementation.

The equipment and resources necessary to implement all the Remedial Alternatives are readily available from multiple sources. ABC+ received the highest score since many uncertainties were addressed during the pilot study. ISCO and ERD received moderate scores since an underground injection control permit must be obtained, and additional site information will need to be collected to confirm treatment effectiveness and extent. No Action and MNA received the moderate scores due to being able to implement the alternatives in a short period of time.

10.7 Cost

The following table presents the probable range of costs for each alternative:

Alternative	Low Cost (-30%)	Most Likely Cost	High Cost (+50%)
1. No Action	$0	$0	$0
2. Monitored Natural Attenuation	$671,300	$959,000	$1,438,500
3. In-Situ Chemical Oxidation	$3,024,700	$4,321,000	$6,481,500
4. Enhanced Reductive Dechlorination	$1,642,900	$2,347,000	$3,520,500
5. Anaerobic BioChem	$1,255,100	$1,793,000	$2,689,500

10.8 Community Acceptance

Community acceptance of the preferred remedy was evaluated after the public comment period. Public comments are summarized, and responses provided in the Responsiveness Summary Section of the Record of Decision document that present the Department's final alternative selection.

11.0 Selected Remedy

The Department has identified an alternative to address the contamination in both the soil and groundwater at the Site. The selected remedial alternative is Alternative 5, ABC+ Treatment.

11.1 Description of Selected Remedy

The Department has identified Alternative 5, ABC+ Treatment is a hybrid between two in situ treatment alternatives, ERD and ZVI. This alternative is predicated upon the VOC-affected groundwater receiving in-situ treatment, delivered into the subsurface using DPT.

This Alternative was thoroughly evaluated during expanded field application. Two pilot studies were conducted to support selection of this alternative, at this site. These pilot studies demonstrated the reduction of VOC concentrations in the shallow and intermediate aquifer zones. This remedy would be implemented by conducting an initial ABC+ treatment event during the first year, followed by an extended period of performance monitoring to observe and document the extent and influence of the applied treatment. Targeted ABC+ treatment events would subsequently occur during ensuing years (i.e. Years 4 and 7), during which time the residual VOC mass would receive further ABC+ treatment to address residual areas of CoCs. Annual groundwater monitoring would be conducted at the site to ensure the progress of the treatment. This alternative has an estimated 15-year timeframe to achieve remedy completion.

The total estimated net present worth of this alternative combination is approximately $1,793,000. It is the Department's judgment that the Preferred Alternative identified in this Proposed Plan is necessary to protect public health and the environment.

12.0 Statutory Determinations

Based on information currently available, the Department believes the selected remedy meets the mandatory threshold criteria required by the NCP and provides the best balance of trade-offs among the other alternatives. The Department expects the selected remedy to satisfy the following statutory requirements be protective of human health and the environment; comply with applicable or relevant and appropriate requirements; be cost-effective; utilize permanent solutions to the maximum extent practicable; and satisfy the preference for treatment as a principal element of the remedy.

PART III - RESPONSIVENESS SUMMARY

The Department's Proposed Plan was presented to the public at a public meeting, on June 21, 2022. At this meeting, representatives of the Department presented the results of past investigations, explained the remedial alternatives evaluated in the Focused Feasibility Study, presented the Department's preferred alternative, and received comments from the public.

This meeting initiated the official public comment period for interested parties to comment on the Department's Proposed Plan. No requests for an extension of the comment period were received, and therefore, the comment period ended on July 21, 2022.

Based upon oral comments at the public meeting, public response to the Department's preferred alternative was favorable. The Department received no additional written comments following the public meeting. The following is a select number of questions and answers that were brought up during the public meeting. The full question and answer session from the public meeting can be found in Appendix A in the transcript of the Proposed Plan Public Meeting.

WestPoint Homes Public Meeting Transcript

South Carolina Department of Health and
Environmental Control
State of South Carolina
County of Pickens

	)	
	)	Transcript
	)	
In Re: West Point Homes	)	of
Proposed Plan for Site	)	
Remediation	)	Public Meeting
	)	
	)	
	)	

Date: June 21, 2022

Time: 6:34 p.m.

Location: The Madren Conference Center
230 Madren Center Drive
Clemson, South Carolina 29634

Reported by
Sallye D. Nelson

APPEARANCES

DHEC official present:	Kristy Ellenberg Lucas Berresford Kimberly Kuhn
Speakers from the public:	Lisa Clark

PROCEEDINGS

MS. ELLENBERG: Good evening, everybody. We've got such a full house tonight. I appreciate everybody being here. I'm Kristy Ellenburg, and I'm part of DHEC's Environmental Affairs Team. I'm the Director of Collaborative Partnerships and Strategic Initiatives, and I'm also part of our Community Engagement Team. And that's really why I'm here tonight is because this is one of those times that all of those different parts of DHEC Environmental Affairs come together. When we are doing things at Environmental Affairs, we do have regulatory responsibilities and legal responsibilities, we're going to be talking about how that connects to this project in just a moment. We also have our technical scientific expertise. We like to have science be part of our decision-making process, and you're going to see some of that tonight as well. And we also looked at how we engage with communities and stakeholders. And so all three of those pieces are coming together tonight. The purpose of tonight's meeting is to give an update on West Point Homes. I'm going to be introducing some of our staff that are here with me in just a moment to get a little more detail on that. There's going to be a presentation, and then we're going to have the opportunity for any questions or comments or concerns to

be recorded. A common period is opening, and so we want to make sure you know how to make comments even beyond tonight. Tonight's just one opportunity to learn more, share more information, and then see how you can make comments tonight and beyond tonight is the when the comment period opens. So with that I'm going to hand things over to Lucas.

MR. BERRESFORD: Thank you, Kristy. I'm Lucas Berresford. I'm the manager of the State Voluntary Cleanup Program here at DHEC. And we're kind of the exciting point for us, for a project, that we're at the proposed remedy phase or what we call the proposed plan for the West Point Homes site. So the -- the real reason we're here is we'll get to the proposed plan, part of that is soliciting public comment. So this meeting will start, the public comment period that will go for 30 days. I'm going to hand it over to Kim shortly, and she's going to talk about a little bit of the site history, what cleanup alternatives were looked at, and what the preferred cleanup alternative is for the site, and then we'll take any comments or questions that you might have. So question, what is a proposed plan? When DHEC decides on what the final remedy for a site should be, we put it out as a proposed plan instead of a final remedy as part of our process to solicit

public comment, which is an active part of our process. And in the process of selecting that remedy, a bunch of different cleanup alternatives were evaluated and then DHEC selected its preferred alternative, which is summarized in that proposed plan. So the big piece in tonight is not just to hand our -- handle our statutes and things that require us to do it but to gain that public input, to put the information out there to the public and to get feedback. We have a court reporter here, who's recording the presentation and any comments, so they will be part of the record that will get summarized in the decision document at the end of public comment here. And once again, public comment period will run to July 21st, 30 days from now. And after reviewing public comment, DHEC will select the final remedy, and DHEC will accept comments on any of the remedies that are outlines in the proposed plan. And after taking everything into account, DHEC may select the preferred alternative or select another remedy that was evaluated in the process. So at this point I'm going to turn it over to our project manager, Kim Kuhn, to take you through the site history and remedy evaluation.

MS. KUHN: Thank you, Lucas. Hello, everyone. My name is Kim Kuhn, and I've actually worked with DHEC for

eight years now. And I'm the project manager for the home -- West -- West Point Home site. Tonight I am going to talk about the site history, the contamination at the site, also the remedial alternatives that were proposed for the site, and what DHEC preferred as the alternative.

And first, we're going to discuss where West Point Homes site is located. So it's located at 679 Edinburg Way in Seneca, South Carolina, and -- and it's actually in Oconee County. And here's a photo of -- it's two area photos. The first one shows what the site looked like with West Point Homes facility on it, and then the aerial photo to -- to your left -- or right -- sorry, it's my left -- but is the new development that's happening at the site at the moment.

So this property was subdivided for ongoing redevelopment purposes, and the feasibility. The focus feasibility study took up about 191.7 acres, but what we really focused on was 16 acres of it, was determined where the underlying volatile organic compound plume was -- is affecting the groundwater.

And in 1951 the site was originally a major textile production company at the facility, and it was owned by J.P. Stevens Company. And then in 1989 the facility was acquired by West Point Pepperell, and then later know as

West Point Stevens.

The Clemson facility manufacturing complex operations included cloth fabrics, from cotton and polyester fibers, dying and printing of the cloth, finishing the cloth, and fabricating bedding from the finished cloth fabrics. And it was originally built in 1951, and then with it throughout the years there were several additional expansions, and the -- the latest one was in 1990. But the Clemson was active for more than 50 years, but it closed its doors in 2006.

So environmental assessment at the site have been conducted from 2005 to 2015. And during these assessments' tetrachloroethylene, which is also known as PCE, was detected in the groundwater, and then ethylbenzene and xylene were detected in the soil and groundwater samples that were collected adjacent to the former mill building.

And then in 2006 there was a soil excavation was conducted at the varsol above ground storage tank, so they removed the soil in that area. And then this figure right here that I have up just shows the monitoring well network at the site, right where that 16 acres is.

So here's a -- sorry -- here is a figure of the pilot study that was conducted in 2019. As you can see

there's different rows. You have row A through G, that's indicating the area where they did different injections at different depths using direct push technology there. And during for the pilot study, it -- it was an Anaerobic Biochem Plus, which is also known as you'll hear me refer to it as ABC+, but they did it in 2016, 2017, and actually expanded it more in 2019. Here's a picture of -- of when 2019, when the pilot study was being conducted. So you can kind of see where they have the area where they're mixing the chemical, and then the drillers on the side over here injecting and pushing in the ABC+, injecting into the groundwater. Also, here's a photo of the Geoprobe, also delivering the ABC, injecting into the groundwater in at different depths.

Also, here's another figure showing with the pilot study, the one, the figure on the top is showing we always do a baseline groundwater sampling to show what, at that moment, what the contamination looks like at before we do a new pilot study. So you can see the purple or kind of fuchsia, if you want to say, is the highest concentration of PCE, and the yellow is the lowest concentration.

So the bottom figure shows it's two years after the pilot study was conducted, and as you notice, and it was

really only -- only in the upper VOC plume that did it. But you can notice that there's really no fuchsia here. There's no fuchsia at all in -- you notice the orange and the yellow group. So that means that the PCE decreased in the groundwater there.

So the PCE in the groundwater is -- is affected by volatile organic compounds, VOCs contamination. And the primary VOC contamination is tetrachloroethylene, which is PCE. The affected area originated in the northwest portion of the manufacturing building and extends southward down to -- to Lake Hartwell. And this kind of shows you where the area where and -- and it's believed because it's from two former sewer lines that are underneath that caused is the main cause of how we have VO -- a huge VOC clean.

So site risks at the facility, the properties under redevelopment activities with student related apartment complexes that are some are -- are have already been built, and some are going to be built. Residential community housing and multi -- multi-use commercial structures. One of the other site risks could be from the VOC plume that if you build over it, you would have a vapor intrusion. And also, the migration of the groundwater in the VOC to Lake Hartwell. Right now there is a deed restriction in place. So groundwater is

not -- is restricted and cannot be used at the site.

So the cleanup goals at this site is to reducing contamination concentration in the groundwater and also to restore the groundwater back to the maximum contaminant levels, which is safe for the human health and the environment.

So we have four cleanup alternatives that have been proposed in the feasibility study. The two that are in the blue are they're not active remedial alternatives, so no action in monitoring natural attenuation. And the three that are in the green are remedial, they're remedial alternatives that you would use. So you have in situ chemical oxidation, enhanced reductive dechlorination, and anaerobic biochem plus, which we know is ABC+.

So the first alternative is no action. So this is required by the National Contingency Plan as a baseline to compare all the other alternatives to each other. So this site means that it'll be left in place, there's remedial activity, there will be no monitoring of the groundwater. So based on that there's no cost associated with this alternative.

Second one, alternative is the monitoring natural attenuation. Once again, you just the monitoring actually breakdown of the contaminants over time. So

there's no active remediation happening at the site, but we would monitor the groundwater. And usually it'll take approximately about 30 years to monitor it or maybe less, give or take. And then also, you'd have a deed restriction in place, which one is in place right now, so you cannot use the groundwater. So this is an estimated cost around about close to a million dollars.

And then alternative three is in situ chemical oxidation. You would inject a strong, aggressive chemical oxidating using direct push technology, which we saw with the Geoprobe is a way that you would bring the in situ into it, the chemical. And then once again we have put institutional controls, a deed restriction on the property. And when the treatment involves the injection or direct mixing of reactive chemical oxidation into the groundwater or soil for primary purpose of rapid and complete contamination destruction, as well naturally occurring geochemistry for about eight years is predicted how long it would do to use this type of injection. And then you would do about a seven-year time period to do monitoring of the groundwater. So total timeframe for this alternative is about 15 years, which includes injections and monitoring the groundwater. So estimated cost for this one is $4,321,000.

Alternative four that was proposed was enhanced reductive dechlorination, ERD, which I'll refer to as, is a treatment process in which many chlorinated and nonchlorinated hydrocarbons can be naturally broke -- broken down process and enhanced through treatment. Also, there would be a deed restrictions on the property to for not to use, restrict groundwater use. And the total timeframe would be around 20 years, which include injections into the groundwater and also monitoring the groundwater too, which is -- is said to be about 13 years of using this to inject, for injection, and about seven years for monitoring it. So the estimated cost would be about -- it would be $2,347,000.

Alternative five is the Anaerobic Biochem Plus, the ABC+, which we've done the pilot studies with too. It's a hybrid between two in situ treatment alternatives, enhanced reductive dechlorination and zero valent iron, which is also known as Z -- ZVI. And so the ERD effectively dechlorinates the VOC contaminant mass and the ZVI is formulated abiotic -- abiotic treatment. And also once again will have the groundwater uses restricted. So you have the deed restriction. And the total estimated cost for this is about $1,793,000. And so will probably have a seven-year treatment period of putting the injection into the groundwater, and then

eight years of monitoring the groundwater.

So based on this we do, we take the alternatives, and we do an evaluation criteria. And we have eight criteria that we use to evaluate each of the alternatives that were proposed to us. So the first one is overall protection of human health and the environment. Second is the compliance to the state and federal regulations. Third, long-term effectiveness. Four, reduction of toxicity, mobility, and volume through treatment. Short-term effectiveness, implement ability, cost, and community of acceptance. As that's why we're here today, doing this public meeting, so we can get community acceptance for that DHEC will choose. Here is a -- a graph here that what we use is we use the numbers one through five, one is the lowest and five is the highest. So the overall protection of human health and the environment and compliance of that's applicable to federal, state, and local regulations, all of the alternatives have to meet those criteria in order to be accepted. So they all do, but if you notice that no action and MNA are ranked very low. So we can go ahead and get rid of those, they're not even an option anymore. So now we're down to three of the alternatives. And if you notice that based on the ranking that ABC+ is the one that ranked the highest, so

that's why it's one of the reasons you for it, because you can, the implement ability of it, it can be very easily done, short-term effectiveness and cost all helped make it rank higher.

So DHEC's preferred alternative is alternative five, the ABC+. One of the main reasons we went with that, because we had a pilot study that was conducted, and we saw the results and they actually decreased the PCE plume. This is a hybrid between two in situ treatment alternatives, which is enhanced reductive dechlorinated, ERD, and zero valent iron treatment. The VOC effected groundwater will be treated in -- in situ. There's several injection events that will require and will have long-term annual ground monitoring, to see how well the injections are working in the groundwater. This alternative has an estimated about 15-year timeframe to complete it. And like I said before, because of the pilot study, we saw that we -- the reduction in the contamination of groundwater, which makes it very favorable. This alternative to ABC+ will reduce the contamination concentration in the source area. This alternative is best in terms of the overall protection of the human health and the environment, long-term effectiveness, reduction in toxicity, mobility, and volume, and has the shortest active

remediation implementation period, and it does mitigate further groundwater impact. So we'll go have long-term groundwater monitoring will be required, and then once again will have a deed restriction, which there is one already in place. And the cost of this will be about $1,793,000.

So right now with West Point Homes, they already conducted a remedial investigation, and we also we had a feasibility study. So right now we're in the proposed plan state. And in this proposed plan state we have the public comment period, which will evaluate any comments or questions and then this can -- this can influence our decision on deciding on the alternative ABC+. After that we'll select a remedy, and then have a record of decision indicating that DHEC does prefer the ABC+ alternative. Then after that West Point Home will submit a work plan, we'll have a remedial design. And after that's approved, then we'll have remedial action, which will be implementation of the remedial alternative. And after that the operation and maintenance will be pretty much groundwater monitoring from that point on. So we have administrative record. We do have a website for the site that you can find all the records that helped make the decision of deciding for the ABC+, and we also left a copy of it in Seneca

Branch Library. So the comment period is 'til July 21st, 2022. And if you can be made directly to me with email or you can call me on the phone. Otherwise, we're have it up for question and comments.

MS. ELLENBERG: So again, tonight is a great opportunity to have some discussion. Are there some questions or comments from anybody who is here tonight? A lot of avoiding eye contact, I feel like I should make a Ferris Bueller comment, but well... Again, tonight is -- is one opportunity to make comments. That comment period is going to be open until July 21st. Are there any other questions or clarifications? Thanks.

MS. LISA CLARK: Oh, I'm sorry. I'm Lisa Clark. I'm with TRC, I work for West Point Home. I just wanted to ask Lucas and Kim, so once you -- you get the -- the 30-day comment period is over, about how long before you issue the ROD?

MR. BERRESFORD: There's a little variability in that just based on how many comments are received. If there's not any comments received, then usually 30 to 60 days after the closing of the comment period we'll have the record decision prepared and signed.

MS. ELLENBERG: Any other questions? Are there any final -- final comments that y'all have to -- to share?

MS. KUHN: No.

MR. BERRESFORD: Thank everybody for coming out tonight and participating. And feel free to share your comments with us, and we will stick around a little while after the meeting, if anyone wants to talk further.

MS. ELLENBERG: And again, I think this presentation's going to be added to the web page that's referenced on your handouts in here and in the public notice. So if you need to go back to this as a reference, it'll be available on the web page beginning tomorrow.

MR. BERRESFORD: Hopefully.

MS. ELLENBERG: Yes. And thank you everybody and Happy Summer Solstice.

(Whereupon, at 6:56 p.m., the public meeting of the above-entitled matter was concluded.)

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STATE OF SOUTH CAROLINA)
)
COUNTY OF PICKENS)

CERTIFICATE

Be it known that Sallye D. Nelson took the foregoing proceeding and hereby attests:

that I was then and there a notary public in and for the State of South Carolina-at-large and that by virtue thereof I was duly authorized to administer an oath;

that the deponent/witness, if any, was first duly sworn to testify to the truth, the whole truth, and nothing but the truth, concerning the matter in the controversy aforesaid;

that the foregoing transcript represents a true, accurate, and complete transcription of the testimony so given at the time and place aforesaid to the best of my skill and ability;

that I am neither a relative nor an employee of any of the parties hereto, nor of any attorney or counsel employed by the parties hereto, nor interested in the outcome of this action;

that, if a recording of an event was supplied by another party for purposes of transcription and I was not present during that event, the foregoing pages were transcribed to the best of my skill and ability; additionally, any identifications of speakers were provided to me by the party supplying the recording;

that, in the event of a nonappearance by the witness, the foregoing details for the nonappearance are accurate.

In witness thereof, I have hereunto affixed my signature and title.

Sallye D. Nelson

Date: 7/5/2022
Notary public for South Carolina
My commission expires May 5, 2032
*Unless otherwise noted, this notary public administered the oath. Please refer to the transcript for any exceptions.

Figures

Figure 1

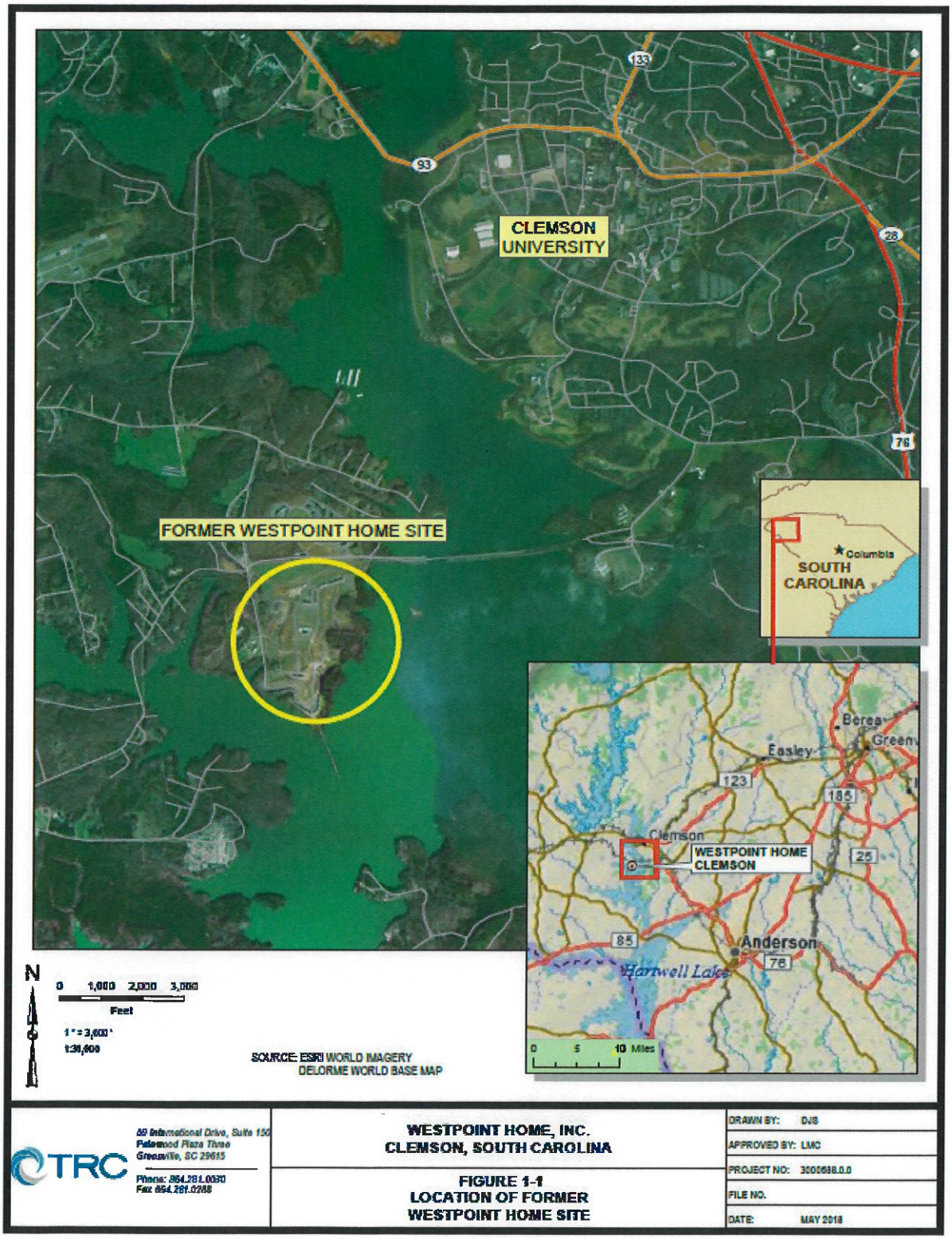
CLEMSON UNIVERSITY
FORMER WESTPOINT HOME SITE
Columbia
SOUTH CAROLINA
Berea
Easley
Greenv
123
185
Clemson
WESTPOINT HOME CLEMSON
25
85
Anderson
76
Hartwell Lake
0 5 10 Miles
N
0 1,000 2,000 3,000
Feet
1" = 3,000'
1:36,000
SOURCE: ESRI WORLD IMAGERY
DELORME WORLD BASE MAP
TRC
WESTPOINT HOME, INC.
CLEMSON, SOUTH CAROLINA
FIGURE 1-1
LOCATION OF FORMER
WESTPOINT HOME SITE
DRAWN BY: DJS
APPROVED BY: LMC
PROJECT NO: 3000698.0.0
FILE NO.
DATE: MAY 2018

Figure 2


W Cherry Rd
W Cherry Rd
Whitechapel Rd
Aberlady Dr
Broad Meadow Dr

Figure 3

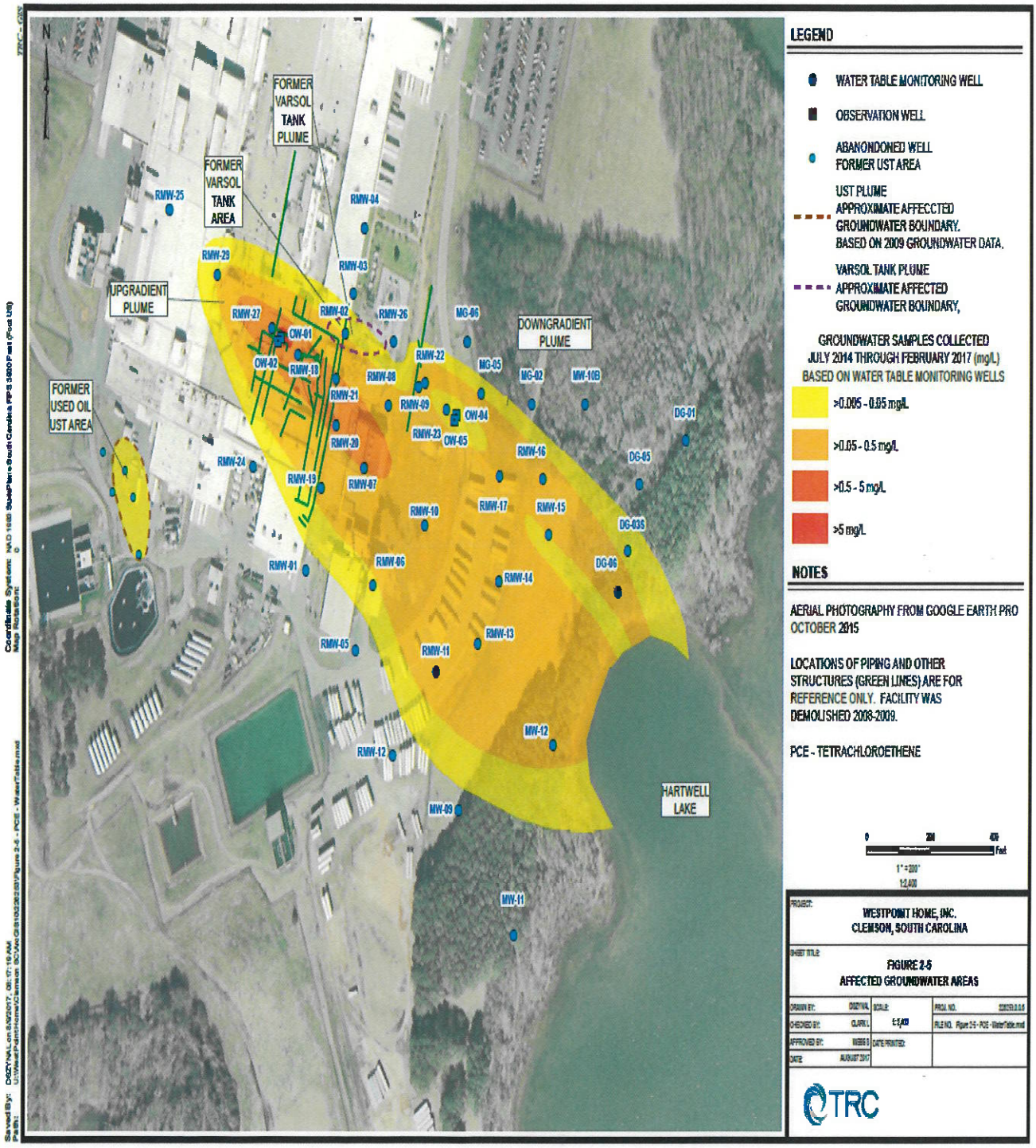
N
FORMER VARSOL TANK PLUME
FORMER VARSOL TANK AREA
UPGRADIENT PLUME
DOWNGRADIENT PLUME
FORMER USED OIL UST AREA
HARTWELL LAKE
RMW-25
RMW-29
RMW-04
RMW-03
RMW-27
RMW-02
RMW-26
MG-06
OW-01
OW-02
RMW-18
RMW-22
MG-05
MG-02
MW-10B
RMW-08
RMW-21
RMW-09
OW-04
OW-05
RMW-23
RMW-20
RMW-24
RMW-19
RMW-07
RMW-16
DG-01
DG-05
RMW-10
RMW-17
RMW-15
DG-03S
RMW-01
RMW-06
DG-06
RMW-14
RMW-13
RMW-05
RMW-11
MW-12
RMW-12
MW-09
MW-11
LEGEND
WATER TABLE MONITORING WELL
OBSERVATION WELL
ABANDONED WELL FORMER UST AREA
UST PLUME APPROXIMATE AFFECCTED GROUNDWATER BOUNDARY. BASED ON 2009 GROUNDWATER DATA.
VARSOL TANK PLUME APPROXIMATE AFFECTED GROUNDWATER BOUNDARY,
GROUNDWATER SAMPLES COLLECTED JULY 2014 THROUGH FEBRUARY 2017 (mg/L) BASED ON WATER TABLE MONITORING WELLS
>0.005 - 0.05 mg/L
>0.05 - 0.5 mg/L
>0.5 - 5 mg/L
>5 mg/L
NOTES
AERIAL PHOTOGRAPHY FROM GOOGLE EARTH PRO OCTOBER 2015
LOCATIONS OF PIPING AND OTHER STRUCTURES (GREEN LINES) ARE FOR REFERENCE ONLY. FACILITY WAS DEMOLISHED 2008-2009.
PCE - TETRACHLOROETHENE
0
200
400
Feet
1" = 200'
1:2,400
PROJECT:
WESTPOINT HOME, INC.
CLEMSON, SOUTH CAROLINA
SHEET TITLE:
FIGURE 2-5
AFFECTED GROUNDWATER AREAS
DRAWN BY:
CHECKED BY:
CLARK L.
APPROVED BY:
DATE:
AUGUST 2017
SCALE:
1:400
DATE PRINTED:
PROJ. NO.
FILE NO. Figure 2-5 - PCE - WaterTable.mxd
TRC

Figure 4

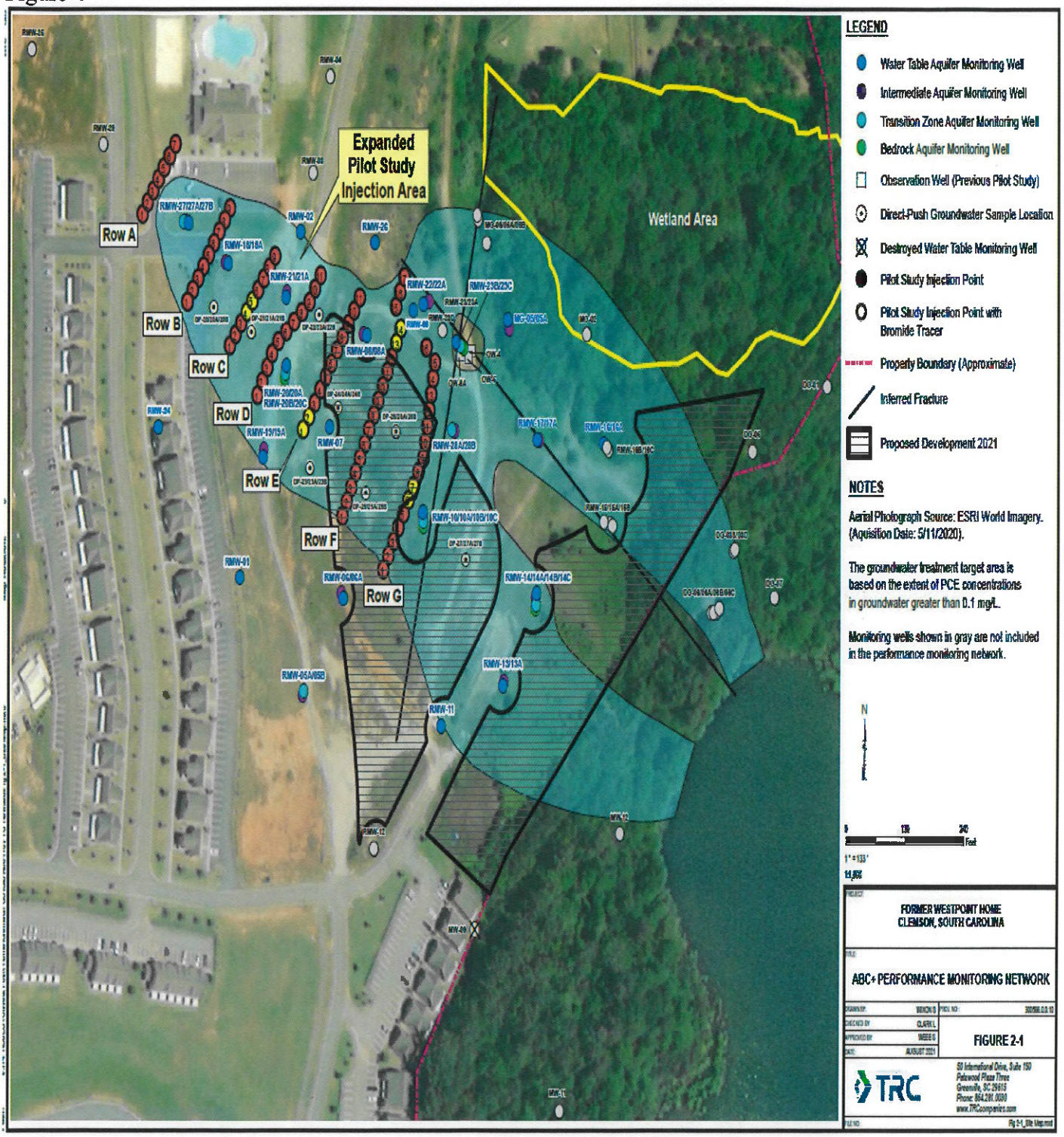
Expanded Pilot Study Injection Area
Wetland Area
Row A
Row B
Row C
Row D
Row E
Row F
Row G
LEGEND
Water Table Aquifer Monitoring Well
Intermediate Aquifer Monitoring Well
Transition Zone Aquifer Monitoring Well
Bedrock Aquifer Monitoring Well
Observation Well (Previous Pilot Study)
Direct-Push Groundwater Sample Location
Destroyed Water Table Monitoring Well
Pilot Study Injection Point
Pilot Study Injection Point with Bromide Tracer
Property Boundary (Approximate)
Inferred Fracture
Proposed Development 2021
NOTES
Aerial Photograph Source: ESRI World Imagery. (Aquisition Date: 5/11/2020).
The groundwater treatment target area is based on the extent of PCE concentrations in groundwater greater than 0.1 mg/L.
Monitoring wells shown in gray are not included in the performance monitoring network.
N
0
120
240
Feet
1" = 133'
FORMER WESTPOINT HOME
CLEMSON, SOUTH CAROLINA
ABC+ PERFORMANCE MONITORING NETWORK
FIGURE 2-1
AUGUST 2021
TRC

Figure 5

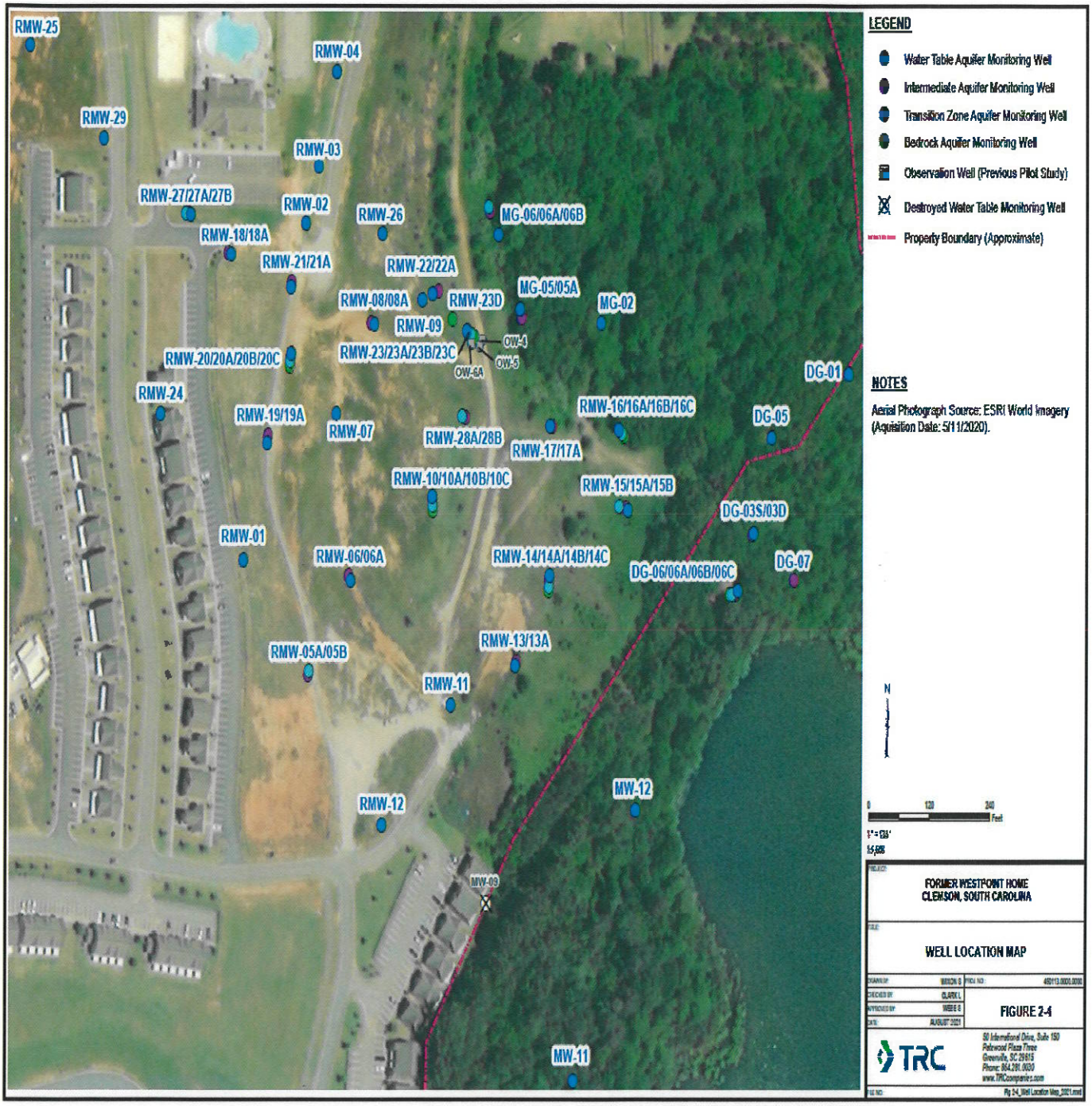
RMW-25
RMW-04
RMW-29
RMW-03
RMW-27/27A/27B
RMW-02
RMW-26
MG-06/06A/06B
RMW-18/18A
RMW-21/21A
RMW-22/22A
MG-05/05A
RMW-08/08A
RMW-23D
MG-02
RMW-09
OW-4
OW-5
OW-6A
RMW-20/20A/20B/20C
RMW-23/23A/23B/23C
DG-01
RMW-24
RMW-19/19A
RMW-07
RMW-28A/28B
RMW-16/16A/16B/16C
DG-05
RMW-17/17A
RMW-10/10A/10B/10C
RMW-15/15A/15B
DG-03S/03D
RMW-01
RMW-06/06A
RMW-14/14A/14B/14C
DG-06/06A/06B/06C
DG-07
RMW-05A/05B
RMW-13/13A
RMW-11
MW-12
RMW-12
MW-09
MW-11
LEGEND
Water Table Aquifer Monitoring Well
Intermediate Aquifer Monitoring Well
Transition Zone Aquifer Monitoring Well
Bedrock Aquifer Monitoring Well
Observation Well (Previous Pilot Study)
Destroyed Water Table Monitoring Well
Property Boundary (Approximate)
NOTES
Aerial Photograph Source: ESRI World Imagery (Aquisition Date: 5/11/2020).
N
0
120
240
Feet
FORMER WESTPOINT HOME
CLEMSON, SOUTH CAROLINA
WELL LOCATION MAP
FIGURE 2-4
TRC

Figure 6

Remedial Alternatives	1	2	3	4	5
Criterion	No Action	MNA	ISCO	ERD	ABC+
Overall Protection of Human Health and the Environment	1	1	3	5	5
Compliance with Applicable Federal, State, and Local Regulations	1	1	5	5	5
Long-Term Effectiveness and Permanence	1	1	4	4	5
Reduction of Toxicity, Mobility, and Volume	1	1	4	4	5
Short-Term Effectiveness	1	1	4	4	5
Implementability	3	3	4	5	5
Cost	5	3	1	3	4
Total Score	13	11	25	30	34