

# DECISION DOCUMENT

---

Former Materials Research Corporation  
Operable Unit Number 01: Remedial Program  
Brownfield Cleanup Program  
Orangeburg, Rockland County  
Site No. C344070  
October 2018



Prepared by  
Division of Environmental Remediation  
New York State Department of Environmental Conservation

# **DECLARATION STATEMENT - DECISION DOCUMENT**

---

Former Materials Research Corporation  
Operable Unit Number: 01  
Brownfield Cleanup Program  
Orangeburg, Rockland County  
Site No. C344070  
October 2018

## **Statement of Purpose and Basis**

This document presents the remedy for Operable Unit Number: 01: Remedial Program of the Former Materials Research Corporation site, a brownfield cleanup site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for Operable Unit Number: 01 of the Former Materials Research Corporation site and the public's input to the proposed remedy presented by the Department.

## **Description of Selected Remedy**

The elements of the selected remedy are as follows:

### 1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and

- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

## 2. In-situ Chemical Oxidation

In-situ chemical oxidation will be implemented to treat the contaminants of concern in groundwater. A chemical oxidant will be injected into the subsurface via injection wells to destroy the contaminants in two areas of the site where TCE is elevated in groundwater. One area will be in an approximate 80 by 120 foot area located in the western portion of the site. The second area will be in the southeast corner, in the area of the 2014 interim remedial measure. The oxidant will target the unconsolidated aquifer. The method and depth of injection are identified in the Remedial Action Work Plan.

## 3. Cover System

A site cover currently exists in areas not occupied by buildings and will be maintained to allow for commercial use of the site. Any site redevelopment will maintain the existing site cover. The site cover may include paved surface parking areas, sidewalks or soil where the upper one foot of exposed surface soil meets the applicable soil cleanup objectives (SCOs) for commercial use. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6NYCRR part 375-6.7(d).

## 4. Institutional Control

Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

- Require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- Allow the use and development of the controlled property for commercial use or industrial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- Restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
- Require compliance with the Department approved Site Management Plan.

## 5. Site Management Plan

A Site Management Plan is required, which includes the following:

- a. An Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 4

Engineering Controls: The sub-slab depressurization system discussed in Section 6.2 and

the cover system described in element 3

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- a provision for further investigation and remediation should large scale redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible. The nature and extent of contamination in areas where access was previously limited or unavailable will be immediately and thoroughly investigated pursuant to a plan approved by the Department. Based on the investigation results and the Department determination of the need for a remedy, a Remedial Action Work Plan will be developed for the final remedy for the site, including removal and/or treatment of any source areas to the extent feasible. Citizen Participation Plan activities will continue through this process. Any necessary remediation will be completed prior to, or in association with, redevelopment. This includes a provision for removal or treatment of the source area located under the building.
- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any new buildings constructed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. A Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater, indoor air and soil vapor to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department; and
- monitoring for vapor intrusion for any buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. An Operation and Maintenance Plan to ensure continued operation, maintenance optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

- Procedures for operating and maintaining the remedy;
- Compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting; and

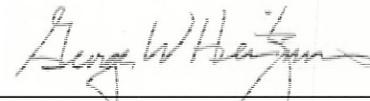
- Providing the Department access to the site and O&M records.

**Declaration**

The remedy conforms with promulgated standards and criteria that are directly applicable, or that are relevant and appropriate and takes into consideration Department guidance, as appropriate. The remedy is protective of public health and the environment.

October 15, 2018

\_\_\_\_\_  
Date



\_\_\_\_\_  
George Heitzman, Assistant Director  
Division of Environmental Remediation

# DECISION DOCUMENT

Former Materials Research Corporation  
Orangeburg, Rockland County  
Site No. C344070  
October 2018

---

## **SECTION 1: SUMMARY AND PURPOSE**

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of contaminants at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of contaminants at this site, as more fully described in this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum.

The New York State Brownfield Cleanup Program (BCP) is a voluntary program. The goal of the BCP is to enhance private-sector cleanups of brownfields and to reduce development pressure on "greenfields." A brownfield site is real property, the redevelopment or reuse of which may be complicated by the presence or potential presence of a contaminant.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

## **SECTION 2: CITIZEN PARTICIPATION**

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repositories:

Orangeburg Library  
20 South Greenbush Road  
Orangeburg, NY 10962-2204  
Phone: 845-359-2244

Blauvelt Free Library  
541 Western Highway  
Blauvelt, NY 10913-1527  
Phone: 845-359-2811

## **Receive Site Citizen Participation Information By Email**

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at <http://www.dec.ny.gov/chemical/61092.html>

### **SECTION 3: SITE DESCRIPTION AND HISTORY**

**Location:** The Former Materials Research Corporation (MRC) site is located at 542 Route 303 in the Town of Orangetown, Rockland County, at the intersection with Glenshaw Street. The 2.7-acre site is currently owned by Praxair Surface Technologies, Inc.

**Site Features:** The site is nearly flat, with a slight downward grade to the southeast. A one story building, approximately 43,000 square feet in size, occupies the site. The remainder of the site is covered with paved parking areas and lawn space. A small drainage swale, which is a portion of an unnamed tributary to Sparkill Creek, lies to the west of the property. A railroad runs adjacent to the west edge of the site.

**Current Zoning and Land Use:** The site is zoned Laboratory Office District. Surrounding properties are used for a combination of commercial or Light Industrial. The nearest residential property is approximately 300 feet from the site.

**Past Use of the Site:** Use of the site prior to 1961 is not well documented. Since 1961, the MRC facility has purified metals and formed metal targets used in sputtering machines that manufacture chips for electronic equipment. These processes have involved the use of degreasing agents.

**Operable Units:** The site was divided into two operable units. An operable unit represents a portion of a remedial program for a site that for technical or administrative reasons can be addressed separately to investigate, eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination.

Operable Unit (OU) Number 01 is the on-site area that is the location of the current facility. Operable Unit 02 is comprised of the down-gradient and off-site portion of the facility groundwater contaminant plume.

#### **Site Geology and Hydrogeology:**

Unconsolidated materials at the site consist of fine sand with some silt to clay. The western portion of the site contains a higher percentage of finer grained material. A sandstone bedrock underlies the unconsolidated materials at a depth of 17 to 52 feet below ground surface. The groundwater table is an approximate depth of five feet, but has been shown to vary significantly. The unconsolidated aquifer flows to the southeast. Bedrock groundwater flow has been reported as

flowing in both the northwest and southeast directions at the site, with a flow divide in the eastern portion of the site. Regional bedrock flow reportedly flows to the south.

Operable Unit (OU) Number 01 is the subject of this document.

A Decision Document will be issued for OU 02 in the future.

A site location map is attached as Figure 1.

#### **SECTION 4: LAND USE AND PHYSICAL SETTING**

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the Remedial Investigation (RI) to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is available in the RI Report.

#### **SECTION 5: ENFORCEMENT STATUS**

The Applicant under the Brownfield Cleanup Agreement is a Participant. The Applicant has an obligation to address on-site and off-site contamination. Accordingly, no enforcement actions are necessary.

The Brownfield Cleanup Agreement was executed by the Department on February 11, 2010. Prior to the agreement, the applicant, Sony Electronics, entered into a Voluntary Agreement with the Department on September 21, 2001.

#### **SECTION 6: SITE CONTAMINATION**

##### **6.1: Summary of the Remedial Investigation**

A remedial investigation (RI) serves as the mechanism for collecting data to:

- characterize site conditions;
- determine the nature of the contamination; and
- assess risk to human health and the environment.

The RI is intended to identify the nature (or type) of contamination which may be present at a site and the extent of that contamination in the environment on the site, or leaving the site. The RI reports on data gathered to determine if the soil, groundwater, soil vapor, indoor air, surface water or sediments may have been contaminated. Monitoring wells are installed to assess groundwater and soil borings or test pits are installed to sample soil and/or waste(s) identified. If other natural

resources are present, such as surface water bodies or wetlands, the water and sediment may be sampled as well. Based on the presence of contaminants in soil and groundwater, soil vapor will also be sampled for the presence of contamination. Data collected in the RI influence the development of remedial alternatives. The RI report is available for review in the site document repository and the results are summarized in section 6.3.

The analytical data collected on this site includes data for:

- groundwater
- soil
- sub-slab vapor

### **6.1.1: Standards, Criteria, and Guidance (SCGs)**

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. For a full listing of all SCGs see: <http://www.dec.ny.gov/regulations/61794.html>

### **6.1.2: RI Results**

The data have identified contaminants of concern. A "contaminant of concern" is a contaminant that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized below. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified for this Operable Unit at this site is/are:

|                         |                       |
|-------------------------|-----------------------|
| trichloroethene (TCE)   | 1,1-dichloroethene    |
| tetrachloroethene (PCE) | 1,2-dichloroethene    |
| carbon tetrachloride    | 1,1,1-trichloroethane |

The contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil
- soil vapor intrusion

## **6.2: Interim Remedial Measures**

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Decision Document.

The following IRM(s) has/have been completed at this site based on conditions observed during the RI.

### **ISCO - Southeast Corner**

Chemical oxidation treatment was applied to on-site overburden groundwater over an area of about 50 by 100 feet in the southeast corner of the site in September 2014. Approximately 90 days after permanganate injection, the concentrations of TCE as well as PCE, cis-1,2 dichloroethene and 1,1 dichloroethene were reduced in all but 2 of the wells in the study area to below the laboratory detection limit and below the groundwater standard of 5 parts per billion (ppb) for each of these compounds. At well EW-8, the concentration of TCE decreased from 12,000 ppb before the injection to 6,200 ppb following the injection. At well MW-22 the concentration of TCE increased from 30 ppb before the injection to 420 ppb following the injection. The IRM has been documented in Leggette, Brashears & Graham's Interim Remedial Measures Construction Completion Report, February 2016.

### **Sub-Slab Depressurization System**

Sub-slab vapor samples only were collected in 2004 and showed the presence of PCE, TCE, TCA and cis 1, 2 dichloroethene in sub-slab vapor at maximum concentrations of 9,600  $\mu\text{g}/\text{m}^3$  (micrograms per cubic meter), 5,400  $\mu\text{g}/\text{m}^3$ , 44,000  $\mu\text{g}/\text{m}^3$ , and 128,000  $\mu\text{g}/\text{m}^3$  respectively. No indoor air samples were collected at that time to determine if VOCs were impacting the indoor air quality. Based on the findings, a sub-slab depressurization system was installed to prevent contaminated vapors beneath the slab from entering the building. As documented in Leggette, Brashears & Graham's December 23, 2005 letter to the Department, the system was built to a performance specification of 0.002 inches water column sub-slab vacuum and consists of 4 sub-slab suction points and fans capable of producing a maximum vacuum of 50 inches water column. Post mitigation indoor air samples will be collected. The system has operated continuously since 2005.

## **6.3: Summary of Environmental Assessment**

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water. The RI report presents a detailed discussion of any existing and potential impacts from the site to fish and wildlife receptors.

## Nature and Extent of Contamination:

Based upon investigations conducted to date, the primary contaminants of concern are certain chlorinated volatile organic compounds. Specifically, these compounds are trichloroethene (TCE), tetrachloroethene (PCE), carbon tetrachloride, cis-1,2 dichloroethene, 1,1 dichloroethene and 1,1,1 trichloroethane (TCA). No other VOCs, semi-volatile organic compounds, polychlorinated biphenyls (PCBs), pesticides, or metals than those identified below were found in soil exceeding the commercial use soil cleanup objectives or the protection of groundwater soil cleanup objectives. Similarly, no other VOCs, semi-volatile organic compounds, PCBs, pesticides, or metals than those identified below were found in groundwater the exceeding the class GA standards.

Surface Soil - Soil samples were collected at the site at a depth of zero to two inches and analyzed. The results indicated the soil satisfied the Department's soil cleanup objectives for an unrestricted use.

Sub-Surface Soil - Specific contaminants detected above the protection of groundwater soil cleanup objective (PGSCO) include: TCE up to 730 parts per million (ppm) (PGSCO: 0.47 ppm), TCA up to 2.2 ppm (PGSCO: 0.68 ppm), 1,1 DCE up to 3.9 ppm (PGSCO: 0.33 ppm), cis 1,2 DCE up to 530 ppm (PGSCO: 0.25 ppm), 1,1 dichloroethane up to 1.9 ppm (PGSCO: 0.33 ppm). In addition, the commercial use soil cleanup objectives (CSCO) were also exceeded for TCE (CSCO: 200 ppm) and cis-1,2 DCE (CSCO: 500 ppm). The highest concentrations of these compounds were found underneath the building.

Groundwater - Specific contaminants detected above groundwater standards include: TCE up to 18,000 parts per billion (ppb) (standard (SCG): 5 ppb), TCA up to 2,900 ppb (SCG:5 ppb), cis-1,2 dichloroethene up to 150 ppb (SCG: 5 ppb), carbon tetrachloride up to 7,700 ppb (SCG: 5 ppb), 1,1, dichloroethane up to 150 ppb (SCG: 5 ppb), PCE up to 26 ppb (SCG: 5 ppb). These values are subsequent to the ISCO IRM or at site locations beyond the IRM area. Thus, while the IRM was effective in reducing the concentration of the contaminants of concern, certain contaminants continue to remain above their respective SCOs within specific zones of the area of treatment.

TCE was also detected in off-site monitoring wells approximately 100 feet south of Glenshaw Street, and beyond the limits of the IRM study area, at concentrations up to 950 ppb. Sampling of residential wells approximately 1,000 feet from the site in 2005 revealed the presence of TCE and PCE. Due to the presence of contamination in the private drinking water supplies, 24 residences have been connected to public water and two residences have been connected to activated carbon filtration systems. Off-site contaminants attributable to the site will be addressed in the Decision Document for Operable Unit 2.

Soil vapor - As reported in Section 6.2, sub-slab vapor samples only were collected from beneath the on-site building with several contaminants of concern being detected. Because these levels exceeded the threshold for mitigation, a sub-slab depressurization system (SSDS) was installed in the building as an interim remedial measure. Confirmation indoor air samples will be collected as part of the Site Management Plan to verify no further actions relating to soil vapor are needed.

#### **6.4: Summary of Human Exposure Pathways**

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure*.

Contact with contaminants in soil is not likely because the site is covered with buildings and pavement. Drinking contaminated groundwater is not expected since residences were either connected to the public water supply, have had granular activated carbon filters installed, or their well water is monitored. An active sub-slab depressurization system in the on-site building addresses the potential for soil vapor intrusion to impact indoor air. Off-site buildings will be evaluated to determine if impacts due to soil vapor intrusion of site-related contaminants is occurring.

#### **6.5: Summary of the Remediation Objectives**

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

##### **Groundwater**

###### **RAOs for Public Health Protection**

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

###### **RAOs for Environmental Protection**

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

##### **Soil**

###### **RAOs for Public Health Protection**

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

###### **RAOs for Environmental Protection**

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

##### **Soil Vapor**

###### **RAOs for Public Health Protection**

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

## **SECTION 7: ELEMENTS OF THE SELECTED REMEDY**

The alternatives developed for the site and the evaluation of the remedial criteria are presented in the Alternative Analysis. The remedy is selected pursuant to the remedy selection criteria set forth in DER-10, Technical Guidance for Site Investigation and Remediation and 6 NYCRR Part 375.

The selected remedy is a Track 4: Restricted use with site-specific soil cleanup objectives remedy.

The selected remedy is referred to as the chemical oxidation remedy.

The elements of the selected remedy, as shown in Figure 4, are as follows:

### 1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

### 2. In-situ Chemical Oxidation

In-situ chemical oxidation will be implemented to treat the contaminants of concern in groundwater. A chemical oxidant will be injected into the subsurface via injection wells to destroy the contaminants in two areas of the site where TCE is elevated in groundwater. One area will be in an approximate 80 by 120 foot area located in the western portion of the site. The second area will be in the southeast corner, in the area of the 2014 interim remedial measure. The oxidant will target the unconsolidated aquifer. The method and depth of injection are identified in the Remedial Action Work Plan.

### 3. Cover System

A site cover currently exists in areas not occupied by buildings and will be maintained to allow for commercial use of the site. Any site redevelopment will maintain the existing site cover. The site cover may include paved surface parking areas, sidewalks or soil where the upper one foot of exposed surface soil meets the applicable soil cleanup objectives (SCOs) for commercial use. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6NYCRR part 375-6.7(d).

### 4. Institutional Control

Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

- Require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8(h)(3);
- Allow the use and development of the controlled property for commercial use or industrial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- Restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
- Require compliance with the Department approved Site Management Plan.

### 5. Site Management Plan

A Site Management Plan is required, which includes the following:

- a. An Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 4

Engineering Controls: The sub-slab depressurization system discussed in Section 6.2 and the cover system described in element 3

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- a provision for further investigation and remediation should large scale redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible. The nature and extent of contamination in areas where access was previously limited or unavailable will be immediately and thoroughly investigated pursuant to a plan approved by the Department. Based on the investigation results and the Department determination of the need for a remedy, a Remedial Action Work Plan will be developed for the final remedy for the site, including removal and/or treatment of any source areas to the extent feasible. Citizen Participation

Plan activities will continue through this process. Any necessary remediation will be completed prior to, or in association with, redevelopment. This includes a provision for removal or treatment of the source area located under the building.

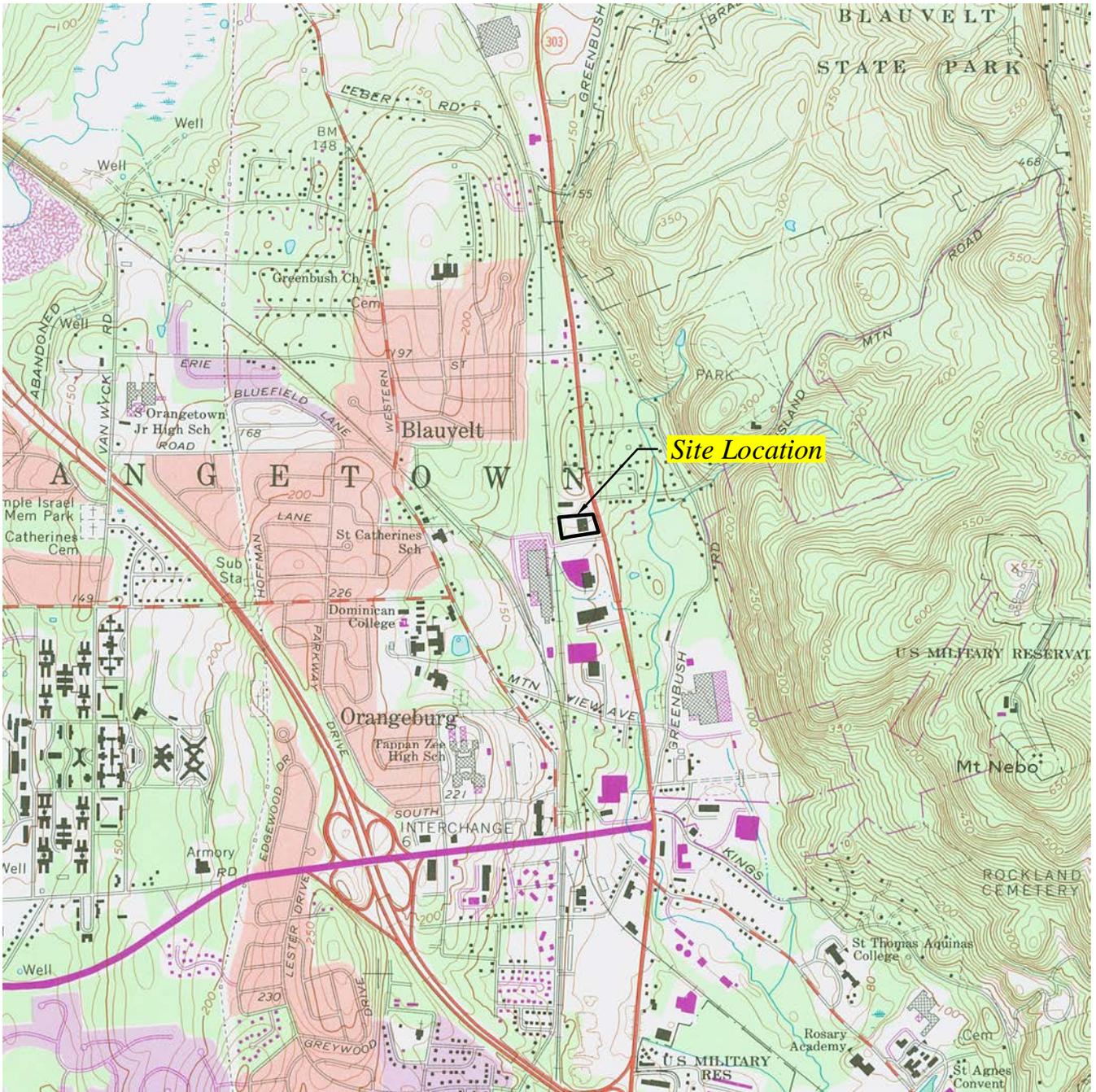
- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any new buildings constructed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. A Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater, indoor air and soil vapor to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department; and
- monitoring for vapor intrusion for any buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. An Operation and Maintenance Plan to ensure continued operation, maintenance optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

- Procedures for operating and maintaining the remedy;
- Compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting; and
- Providing the Department access to the site and O&M records.



SOURCE: USGS TOPOGRAPHIC QUADRANGLE NYACK, NEW YORK (PHOTOREVISED 1979).

## FORMER MATERIALS RESEARCH CORPORATION 542 ROUTE 303 ORANGETOWN, NEW YORK

### SITE MAP



QUADRANGLE LOCATION

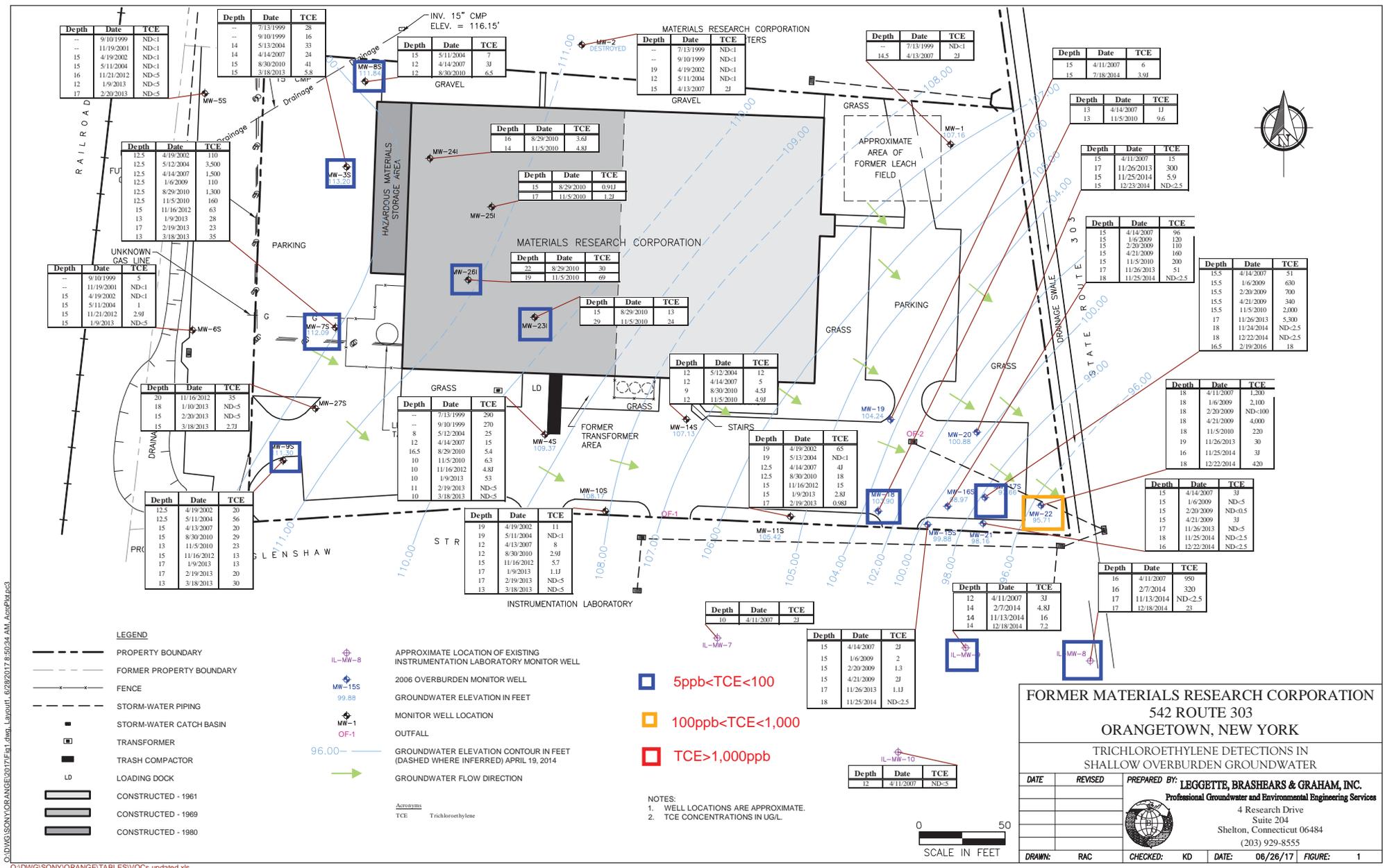
0 2000



SCALE IN FEET

| DATE          | REVISED    | PREPARED BY:   |           |              |                 |                |          |
|---------------|------------|--|-----------|--------------|-----------------|----------------|----------|
|               |            | <b>LBG ENGINEERING SERVICES, P.C.</b><br>Professional Environmental and Civil Engineers<br>4 Research Drive<br>Suite 204<br>Shelton, Connecticut 06484<br>(203) 929-8555 |           |              |                 |                |          |
|               |            |  |           |              |                 |                |          |
|               |            |  |           |              |                 |                |          |
|               |            |  |           |              |                 |                |          |
| <b>DRAWN:</b> | <b>RAC</b> | <b>CHECKED:</b>  | <b>KD</b> | <b>DATE:</b> | <b>05/21/15</b> | <b>FIGURE:</b> | <b>1</b> |

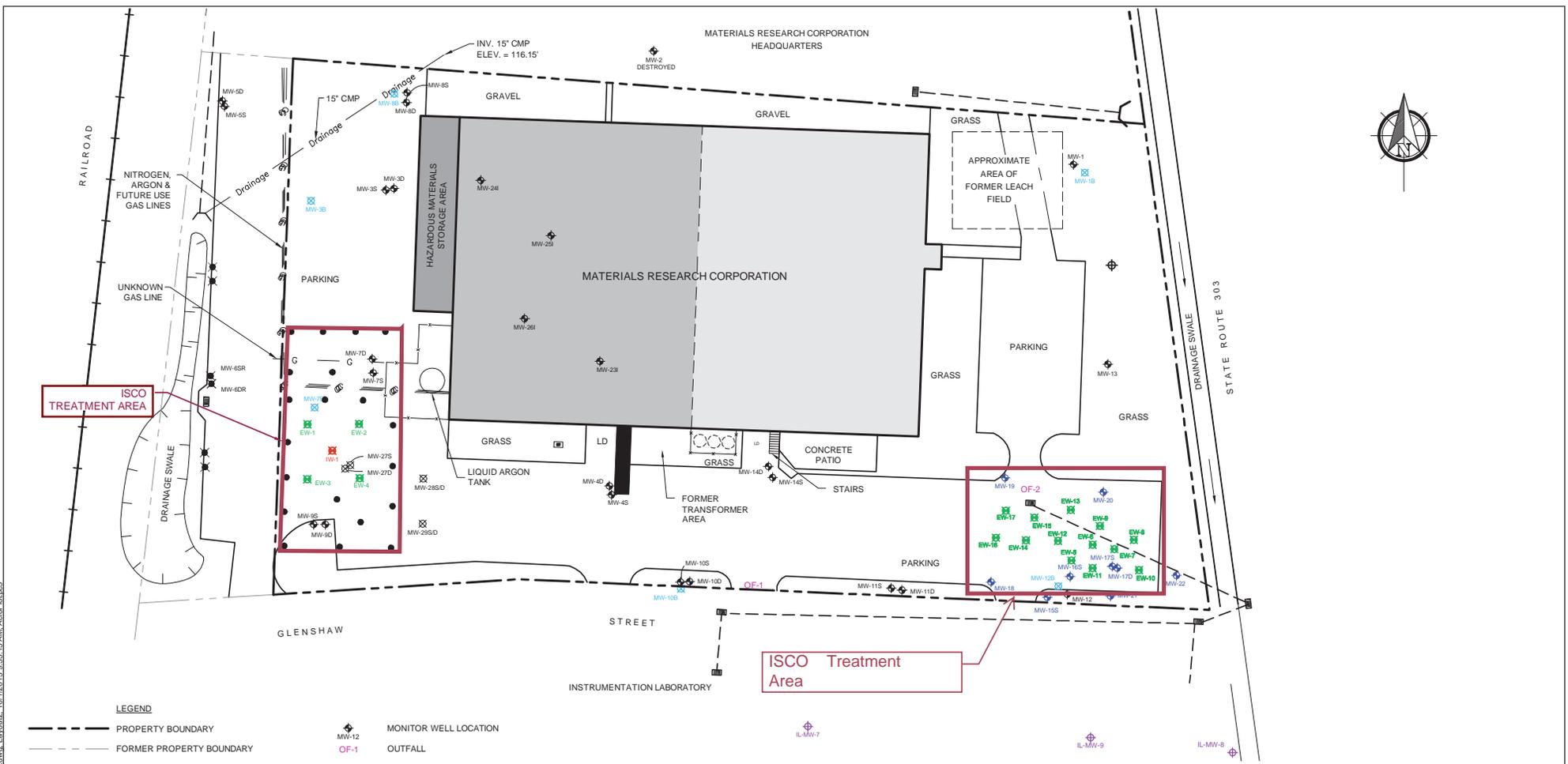




C:\DWG\GIS\YORANGE\TABLES\VOCs updated.xd



C:\DWG\ISCO\ORANGE\2015\RAW\PI\F5-ISCO Locations.dwg - Layout2 - 10/1/2015 9:30:15 AM Accep2k1.pcs



**LEGEND**

- PROPERTY BOUNDARY
  - - - FORMER PROPERTY BOUNDARY
  - x-x- FENCE
  - - - STORM-WATER PIPING
  - STORM-WATER CATCH BASIN
  - ⊕ SEWER DISCHARGE pH MONITOR
  - TRANSFORMER
  - TRASH COMPACTOR
  - LD LOADING DOCK
  - CONSTRUCTED - 1961
  - CONSTRUCTED - 1969
  - CONSTRUCTED - 1980
  - ⊕ MW-12 MONITOR WELL LOCATION
  - ⊕ OF-1 OFFFALL
  - ⊕ EW-1 2-INCH DIAMETER INJECTION/EXTRACTION WELL LOCATION
  - ⊕ IW-1 4-INCH DIAMETER INJECTION WELL LOCATION
  - ⊕ IL-MW-8 APPROXIMATE LOCATION OF EXISTING INSTRUMENTATION LABORATORY MONITOR WELL
  - ⊕ MW-1B 2006 BEDROCK MONITOR WELL
  - ⊕ MW-1SS 2006 OVERBURDEN MONITOR WELL
  - ⊕ MW-28 PROPOSED MONITOR WELL CLUSTER LOCATION
  - PROPOSED 2-INCH DIAMETER INJECTION/EXTRACTION WELL LOCATION
  - ⊕ PROPOSED OFFSITE MONITOR WELL LOCATION
- NOTE: WELL LOCATIONS ARE APPROXIMATE.



**FORMER MATERIALS RESEARCH CORPORATION  
542 ROUTE 303  
ORANGETOWN, NEW YORK**

PROPOSED ISCO WELL LOCATIONS

| DATE   | REVISED  | PREPARED BY:                                   |
|--------|----------|--|
|        |          | LBG ENGINEERING SERVICES, P.C.                 |
|        |          | Professional Environmental and Civil Engineers |
|        |          | 4 Research Drive                               |
|        |          | Suite 204                                      |
|        |          | Shelton, Connecticut 06484                     |
|        |          | (203) 929-8555                                 |
| DRAWN: | RAC      | CHECKED:                                       |
|        |          | KD   |
| DATE:  | 10/01/15 | FIGURE:  |
|        |          | 5  |

