



**New Jersey  
Department of Environmental Protection**



**Site Remediation Program**

# **Immediate Environmental Concern Technical Guidance**

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# IMMEDIATE ENVIRONMENTAL CONCERN TECHNICAL GUIDANCE

## 1. INTENDED USE

This guidance document is designed to help the person responsible for conducting remediations to comply with the Department of Environmental Protection (Department) requirements established by the Technical Requirements for Site Remediation (Technical Rules), N.J.A.C. 7:26E, SRRRA N.J.S.A. 58:10C and the ARRCs Rule at N.J.A.C. 7:26C. Since this guidance will be used by many different people who are remediating Immediate Environmental Concern (IEC) sites (i.e., Licensed Site Remediation Professionals (LSRPs), subsurface evaluators and environmental consultants), the generic term “investigator” will be used to refer to any person using this guidance to remediate an IEC site.

This guidance supersedes previous DEP guidance issued on this topic. Technical guidance may be used immediately upon issuance. However, the Department recognizes the challenge of using newly issued technical guidance when a remediation affected by the guidance may have already been conducted or is currently in progress. To provide for the reasonable implementation of new technical guidance, the Department will allow a 6-month “phase-in” period between the date the technical guidance is issued final (or the revision date) and the time it should be used.

This guidance was prepared with stakeholder input. The following people were on the committee who prepared this document:

### **DEP Representatives**

Andrew Sites, Bureau of Environmental Measurements and Site Assessment

Email: [Andrew.sites@dep.nj.gov](mailto:Andrew.sites@dep.nj.gov)

Steve MacGregor, Bureau of Environmental Measurements and Site Assessment

Email: [Steve.macgregor@dep.nj.gov](mailto:Steve.macgregor@dep.nj.gov)

Bruce Venner, Bureau of Investigation, Design and Construction

Email: [Bruce.venner@dep.nj.gov](mailto:Bruce.venner@dep.nj.gov)

Bob Gallagher, Bureau of Environmental Measurements and Site Assessment

Email: [Robert.gallagher@dep.nj.gov](mailto:Robert.gallagher@dep.nj.gov)

### **Regulated Community**

Martin Hilfinger, Cumberland Gulf

Email: [mhilfinger@cumberlandgulf.com](mailto:mhilfinger@cumberlandgulf.com)

### **Consulting Community**

Mark Fisher, The ELM Group, Inc., LSRPA

Email: [mfisher@elminc.com](mailto:mfisher@elminc.com)

Jeff Farrell, AECOM

Email: [jfarrell@aecom.com](mailto:jfarrell@aecom.com)

## **2. PURPOSE**

The Immediate Environmental Concern (IEC) technical guidance is intended to provide a single document to address IEC conditions involving potable water, vapor intrusion and direct contact. This document incorporates information contained in the Site Remediation Reform Act N.J.S.A. 58:10C-1 et seq. (SRRA), the Technical Requirements for Site Remediation N.J.A.C. 7:26E (Technical Rules), Administrative Requirement for the Remediation of Contaminated Sites N.J.A.C. 7:26C (ARRCS) and provides interpretative examples to guide the investigator.

Throughout this document the word “should” refers to technical guidance and the word “shall” refers to the requirements of SRRA or the Technical Rules. When a requirement of either SRRA or the Technical Rules is specified, the citation is included in the document. This document was written to include both technical guidance and the rules to be more beneficial to the user so they do not need to cross-reference multiple documents to determine how an IEC case must be addressed. This guidance details procedures for identification, notification, receptor control, receptor delineation, and source control. It is intended to aid the investigator in addressing commonly encountered IECs. It cannot, however, anticipate every possible IEC scenario. Professional judgment will always be an important part of the overall process.

The investigator should act quickly, effectively and within the regulatory and mandatory timeframes to minimize ongoing exposures. The IEC guidance compliments the Vapor Intrusion Technical Guidance (VITG) and is designed to be used in tandem. An IEC condition may be identified in any phase of the remedial process and shall be addressed in accordance with the Technical Requirements N.J.A.C. 7:26E-1.11 regardless of the remedial phase of the site. This guidance also includes suggested remedial actions related to source control for IEC conditions.

## **3. DOCUMENT OVERVIEW**

The investigator must complete seven tasks to address the IEC condition (N.J.A.C. 7:26E-1.11). These tasks are: Identification, Initial Notification, Interim Response Action, Engineered System Response Action, Receptor Delineation, Source Control and Monitoring and Maintenance. These tasks are summarized below:

### **3.1. Identification**

An IEC condition is identified when a New Jersey Drinking Water/Ground Water Remediation Standard or a Rapid Action Indoor Air Screening Level is exceeded or a Direct Contact threat exists and a completed pathway between a hazardous substance release and a receptor exists.

### **3.2. Initial Notification**

Immediately upon the identification of an IEC condition, the investigator must notify the Department’s Hotline (1-877-WARN DEP) per N.J.A.C. 7:26E-1.11(a)1. Typically, notification will occur after review of final laboratory data. The investigator should assume the final laboratory data is valid unless otherwise noted within the data package.

### **3.3. Interim Response Action**

The investigator shall provide an interim response action to mitigate receptor exposure per N.J.A.C. 7:26E-1.11(a)2. Examples of Interim Response Actions are providing bottled water, increasing ventilation and eliminating direct contact.

### **3.4. Engineered System Response Action**

An engineered system response is required to control receptor exposure per N.J.A.C. 7:26E-1.11(a)6. Controlling receptor exposures involves reducing contamination to below acceptable criteria or standards. Examples of an Engineered Response Action are installation of a Point of Entry Treatment (POET) system or connection to a public supply for potable water; sub-slab depressurization for vapor intrusion; and soil removal or capping for direct contact.

### **3.5. Receptor Delineation**

Receptor delineation must be completed per N.J.A.C. 7:26E-1.11(a)6 to determine if there are impacts to additional receptors. The investigator may need to collect and analyze samples from potential receptors depending on their distance from the original IEC. Depending on the results from the initial delineation, additional sampling may be needed to determine the full extent of receptor impacts.

### **3.6. Source Control**

Source control is the process of removing the contaminants that are causing the IEC condition. Examples of source control are excavating contaminated soil, removing free product, or excavating a leaking underground storage tank. Source control must be initiated to meet the IEC requirement per N.J.A.C. 7:26E-1.11(a)8. It should be noted that complete remediation of the source area does not need to be done to meet the IEC requirement for source control.

### **3.7. Monitoring and Maintenance**

Monitoring and maintenance required per N.J.A.C. 7:26E-1.11(a)9, refers to all activities related to the continued operation of the engineered system response action after it is confirmed to be protective.

## **4. PROCEDURES**

### **4.1. Potable Well IEC Technical Guidance Procedures**

#### **4.1.1. Identification**

A Potable Well IEC exists when discharges of hazardous substance(s) have resulted in the presence of contaminants above the Class II Ground Water Remediation Standards (GWRS), per N.J.A.C. 7:26C. This applies to water from a domestic well used for potable purposes or when

contamination above federal and state drinking water standards (Maximum Contaminant Levels) is found in public supply wells or raw surface waters used for public water supplies. If an IEC exists, the investigator shall call the Department's Hotline (1-877-WARN DEP) per N.J.A.C. 7:26E-1.11(a)1, to report the IEC condition.

The investigator may discover an IEC that they believe is not attributable to the site but is related to an off-site source. If the new IEC is off-site and it is determined that the contaminant causing the IEC is not a site-related COC, the investigator should call the Department's Hotline and report an off-site source IEC. The Department will then address this IEC using public funds. If the new IEC is found on-site or off-site and caused by a site-related COC discharged from an off-site source, the investigator should conduct a PA/SI, including pertinent justification pursuant to N.J.A.C. 7:26E-3.9 that supports the claim that the IEC is not site-related. Once this investigation is completed, the investigator should call the Department's Hotline and report an off-site source IEC. The Department will then address this IEC using public funds. The investigator, however, should continue to address the IEC until the PA/SI and pertinent justification are submitted to the Department using the PA/SI form. The IEC case manager should be copied on this submittal. If the investigator is maintaining IEC receptor control systems related to the offsite source, those property owners should be notified, after discussion with the IEC case manager, that future monitoring and maintenance will be conducted by the Department until the ownership of the property changes. If the off-site source claim is later determined to be invalid by the Department, cost recovery for public funds spent to address the IEC will be initiated. In cases where it is determined that there is co-mingled contamination from multiple sites, the responsible parties/investigators should negotiate an equitable apportionment of IEC responsibilities. If this negotiation fails, the Department will address the receptors with public funds and will commence enforcement and/or seek cost recovery.

#### **4.1.2. Initial Notification (Day 1)**

##### **N.J.A.C. 7:26E-1.11(a)1**

When an IEC is identified the investigator must immediately call the Department Hotline (1-877-WARN DEP). When calling the Hotline, the caller should inform the Hotline operator that they are reporting an IEC.

#### **4.1.3. Interim Response Action and IEC Information Submittal (5-14 Days)**

##### **N.J.A.C. 7:26E-1.11(a)2i and 3i**

Within 5 days of the date of discovery of the IEC condition, the investigator shall notify the receptor of the contamination and shall implement an interim response action to address any receptor impacted by contamination from the site.

Written notification of the test results, their significance and future actions should be sent to any impacted property owner (and occupant, if applicable). The investigator shall also provide a copy

to the local health department within 5 days per N.J.A.C. 7:26E-1.11(a)2i(2). The notification letter should explain that when a potable well is contaminated above GWRS, the well is not considered acceptable for potable purposes such as drinking and cooking. In addition, the letter should contain information on specific future interim response actions that will be provided by the investigator such as delivering bottled water and conducting additional sampling. Examples of letters for the owner/occupant and local officials are provided at the Department's website <http://www.nj.gov/dep/srp/guidance/IEC/index.html>.

Within the first 5 days, the investigator shall implement an interim response action to remediate receptor exposure per N.J.A.C. 7:26E-1.11(a)2i. These actions may include providing bottled water or installing a POET system.

Within 14 days, the investigator shall submit to the Department, an IEC Response Action form, IEC Potable Well spreadsheet (located at [www.nj.gov/dep/srp/srra/forms](http://www.nj.gov/dep/srp/srra/forms)) and an IEC map per N.J.A.C. 7:26E-1.11(a)3. The IEC Potable Well spreadsheet shall be submitted and should include all test results, actions taken for each IEC identified, and property information. The spreadsheet should be submitted in Excel format (not a pdf). All properties that are targeted for sampling in the receptor evaluation should be included in the spreadsheet. Results for all contaminants of concern (COCs), whether above or below standards, should be included. Include background or non-site related contaminants if they are above standards. If a property is vacant or the owner refuses access, this should be noted in the spreadsheet. The IEC map shall be plotted on a scaled lot and block map based on the most recent version of a municipal tax map. The following should be included in the IEC map:

- potable well sample locations, including results above and below standards using chemboxes or similar format
- title block with the name of the case, Program Interest (PI) number or Incident number/Communications Center number
- date, scale, north arrow, street names, lot and block numbers
- name of the LSRP

The investigator should verify that the site location as displayed in NJ-GeoWeb is correct. NJ-GeoWeb can be accessed via the following link: <http://www.nj.gov/dep/gis/geoweb splash.htm>. Specific instructions for how to verify the site location in NJ-GeoWeb can be found on the GIS main page at <http://www.state.nj.us/dep/srp/gis/index.html>. If the site is not correctly located or the site does not display in NJ-GeoWeb, please follow the Site Location Verification instructions for providing the correct coordinate information to the Department. The Department will use this information to generate an IEC layer in GIS, which will identify that an IEC is present at this site.

The IEC Response Action form including the Potable Well spreadsheet and IEC map should be submitted in a hard copy and electronic format (email attachment or CD). The IEC Potable Well



spreadsheet should be submitted as an Excel file. Do not submit a pdf file. The mailing and email addresses are located on the IEC Response Action form.

When the Department receives the IEC Response Action form and the required information, an IEC case manager will be assigned for only the IEC portion of the case. Once assigned the IEC case manager will contact the investigator.

It is recommended the investigator frequently communicate with the assigned IEC case manager to stay up to date on issues and provide information to public and local officials. It is suggested that the investigator establish a schedule for providing updates on the status of the case to the case manager. It is also suggested that updates be provided to the case manager every 2 weeks until implementation of an engineered system response. During the source control phase, updates should be provided on a monthly basis. An update should consist of a phone call and/or email explaining the progress since the last update. If new sample data is received or remediation activities have occurred, revise the spreadsheet and the map and email to the case manager. If problems are occurring, it is important to communicate them to the case manager. If these problems result in project delays, the investigator should be familiar with the requirements for requesting a time extension (N.J.A.C.7. 26C-3).

#### **4.1.4. Engineered System Response Action (60 Days)**

##### **N.J.A.C. 7:26E-1.11(a)6i**

Within 60 days from receipt of analytical results indicating that an IEC exists, the investigator shall implement an engineered system response action to remediate the IEC. Engineered systems include the use of a POET system or the connection to a public water supply system. An engineered system should provide potable water to the whole house. Providing bottled water or point-of-use (POU) treatment systems are not considered an engineered system response action. (An under the counter system which treats one faucet or treatment installed on the end of a faucet are examples of POU systems.)

Confirmation testing of the initial analytical results is optional. A time extension request will not be granted, however, for taking a confirmation sample. If the confirmation sample exceeds GWRS, then an engineered system will need to be installed. If the analytical results of the confirmation sample show contaminant concentrations at or below GWRS, a second confirmation sample should be taken. A time extension request of an additional 30 days will be approved to collect and analyze the second confirmation sample and to implement an engineered system (if needed). If two of the three test results exceed GWRS, an engineered system will need to be installed. If two of the three test results are at or below GWRS, an engineered system is not required. The investigator should then request the IEC case manager remove the IEC component from the case.

Specifications for standard POET systems, provided by the Department, should be used when a POET is chosen as the engineered response action. The POET specifications can be found on the

Department's website at <http://www.nj.gov/dep/srp/guidance>. The investigator should be aware that elevated levels of radon (above 4000 picocuries per liter) in the well water could cause the granular activated carbon (GAC) to become radioactive. Appropriate precautions such as more frequent GAC changes or shielding to prevent exposure should be taken.

A post-installation water sample shall be collected per N.J.A.C. 7:26E-1.11(a)6i(1) to confirm that the system is functioning properly. Post-installation sampling is considered part of the system commissioning and should be taken within the timeframe for implementing an engineered system response action. The investigator shall report the sample results to the property owner/occupant and local health department per N.J.A.C. 7:26E-1.11(a)2i(2) and should copy the case manager. All potable well samples shall also be submitted to the NJDEP Office of Data Quality for validation per N.J.A.C. 7:26E-1.11(a)4.

#### **4.1.5. Receptor Delineation (60 Days)**

##### **N.J.A.C. 7:26E-1.11(a)6i**

Receptor delineation investigation of potential impacts to other nearby receptors shall be conducted within 60 days of the date of discovery of the IEC. Receptor delineation and implementation of receptor controls should be conducted concurrently. Within 60 days of discovery of an IEC, the investigator will need to identify and sample all potable wells within 500 feet of the impacted well. If the ground water flow direction is known, sampling may be limited to wells located 250 feet upgradient, and 500 feet side gradient and downgradient of the impacted well.

If the number of potable wells presents logistical issues due to a large number of samples needed, contact the assigned IEC case manager to discuss a modified plan and/or a possible time extension to complete the delineation.

If the first round of sampling identified additional IEC impacted wells, additional 500 foot step-out sampling should be conducted from the outermost impacted wells. Additional step-out sampling should be conducted until all samples show contaminant concentrations below GWRS. If additional wells are found during the delineation process, the time frame for providing the engineered response action for the new receptor will be 60 days from discovery of the additional contaminated well(s).

Initial contact with potential receptors should be in writing with copies submitted to the local health department and the Department. If needed, these letters should be followed up with phone calls and an additional letter. The investigator should contact the IEC case manager regarding the delineation sampling schedule, as well as any access issues. The investigator should document in writing any lack of response to repeated attempts to contact potential receptors. Letters should be sent certified or a similar method to document receipt/delivery to potential receptors. Certified receipts can be beneficial if there is a dispute whether a potential receptor was contacted.

**NOTE:** An updated receptor evaluation is required to be submitted with the source control report (N.J.A.C. 7:26E-1.12). When sampling is being conducted to meet the requirement of the IEC receptor delineation, it would be advisable to conduct any additional sampling that would be needed to satisfy the receptor evaluation.

#### **4.1.6. IEC Engineered System Response Action Report (120 Days)**

##### **N.J.A.C. 7:26E-1.11(a)7**

An IEC Engineered System Response Action (ESRA) report shall be submitted within 120 days after the date of discovery of the first IEC. If additional rounds of sampling are conducted and more receptors are found, the ESRA report must be updated and resubmitted within 120 days of the discovery of the additional receptor. This process of conducting sampling, addressing receptors and updating the ESRA report will continue until no further impacted receptors are found. The revised reports should include an updated IEC Potable Well spreadsheet, IEC map and narrative. The report shall consist of the following:

- narrative summary of remedial work performed including the interim response actions and engineered system response actions that were implemented
- receptor delineation summary
- updated IEC Response Action form
- updated IEC map
- updated Potable Well spreadsheet
- Currently Known Extent (CKE) Map/Geographic Information System (GIS) compatible map – see <http://www.nj.gov/dep/srp/gis/index.html> for specific instruction on GIS submissions (see section 4.1.7 below)

**GIS Compatible Currently Known Extent (CKE) Map:** The investigator shall create a CKE map per N.J.A.C. 7:26E-1.11(a)8v, that encompasses all properties with potable well contamination above a GWRS. The CKE area should be drawn on the IEC map. If the well exceeds GWRS and the lot is equal to or less than three acres, the entire lot boundary should be used in the delineation. If the well exceeds the GWRS and the lot is greater than three acres, the location of the well should be used as the reference point for plotting. For lots greater than three acres, if the location of the well is unknown, the location of the home should be used as the reference point. Using a straight line, connect the lot perimeters for all lots that exceed a GWRS to create a polygon encompassing all lots exceeding GWRS. When the polygon is drawn, lots around the perimeter of the polygon may be bisected. For any bisected lot that is three acres or less in size, the entire lot should be encompassed in the CKE area. If a lot is bisected and is greater than three acres, the CKE line will remain as drawn. Appendix C shows the step by step process for drawing a CKE map.

**GIS Compatible CKE Map:** The CKE map shall also be provided as a GIS deliverable pursuant to N.J.A.C. 7:26E-1.11(a)8v, in accordance with the requirements below and GIS

guidance found at <http://www.nj.gov/dep/srp/gis>. The GIS deliverable needs to be provided as an attachment via email as either a shape file or a CAD file as specified:

### **GIS Deliverable Specifications:**

- ESRI ArcMap users are advised that “mdb” (geodatabase) files are no longer accepted via email for security reasons. Attach GIS **polygon** shape files instead. For shape file submittals, the following three file extensions are needed: .shp; .shx; and .dbf.
- Computer-aided Design (CAD) software users need to submit DWG files defined in “model space” NAD 83 State Plane Coordinate feet. The CKE needs to be mapped as a DWG **Polygon** and the record(s) that depict the extent of the CKE needs to be named “CKE\_Boundary” in the Layer field. Do not name annotation, graphics or any other map element in this way.
- Send GIS deliverables **by email only** to [srpgis\\_cke@dep.nj.gov](mailto:srpgis_cke@dep.nj.gov) (do not include CAD or shape files on the CD submitted with the form or report).
- Please refer to [http://www.nj.gov/dep/srp/gis/minimum\\_accuracy\\_requirements\\_for\\_srp\\_gis.pdf](http://www.nj.gov/dep/srp/gis/minimum_accuracy_requirements_for_srp_gis.pdf) for the Minimum Accuracy Requirements for SRP GIS Submissions.
- In the body of the email that includes the GIS deliverable, include the CKE information as described in the Administrative Requirements for GIS Deliverables found at [http://www.state.nj.us/dep/srp/gis/adminstrative\\_requirements\\_for\\_gis\\_deliverables.pdf](http://www.state.nj.us/dep/srp/gis/adminstrative_requirements_for_gis_deliverables.pdf).
- GIS questions/comments should be directed to [srpgis@dep.nj.gov](mailto:srpgis@dep.nj.gov).

The ESRA report including the IEC Response Action form, Potable Well spreadsheet and IEC map should be submitted in a hard copy and electronic format (email attachment or CD). The IEC Potable Well spreadsheet should be submitted as an Excel file and not as a pdf file. The mailing and email addresses are located on the IEC Response Action Form. An electronic version of the above documents should also be sent directly to the IEC case manager.

If additional receptors are found during the delineation process, an initial IEC ESRA report should still be submitted within 120 days, summarizing the response actions to date. An updated ESRA report, which includes the additional receptors, should be submitted within 120 days from the discovery of the new IECs.

#### **4.1.7. Source Control (1 Year)**

##### **N.J.A.C. 7:26E-1.11(a)8**

An IEC Source Control report shall be submitted within one year of the discovery of the IEC. The source control report shall include the following:

- updated IEC Response Action form
- updated IEC Potable Well spreadsheet

- updated maps and figures related to the IEC
- description of initiated source control measures
- identified source areas
- updated receptor evaluation
- engineered system response actions
- data usability determination
- monitoring and maintenance plan
- updated Currently Known Extent (CKE) Map/GIS Compatible Map

The Source Control report, including the IEC Response Action form, IEC Potable Well spreadsheet and IEC map should be submitted in a hard copy and electronic format. The mailing and email addresses are located on the IEC Response Action Form. An electronic version of the above documents should also be sent directly to the IEC case manager.

Within one year after identifying an IEC, the investigator will need to identify all contaminant source areas contributing to the IEC and begin contaminant source control. While contaminant source control shall start within one year, it is not required to be completed within that timeframe. The goal of starting source control in one year is to start removing the contaminants that are creating the IEC. Examples of source areas that should have source control started within one year are leaking tanks, soils containing product and floating product. Source control is initiated when the source is physically removed or reduced.

Source control may have already been initiated before an IEC is discovered. If source control has already been initiated, the source control report can be incorporated into the ESRA report. If the investigator wants to combine these reports, consult your IEC case manager.

**NOTE:** For IECs, a dissolved ground water plume is not considered a source that must have source control initiated to meet the requirement of N.J.A.C. 7:26E-1.11(a)8.

A monitoring and maintenance plan shall be submitted per N.J.A.C 7:26E-1.11(a)8vii,viii that specifies actions to maintain controls for receptors and monitoring of potential receptors. The monitoring and maintenance plan will specify the schedule for sampling and maintaining mitigation systems.

#### **4.1.8. Annual Monitoring and Maintenance Report** **N.J.A.C. 7:26E-1.11(a)9**

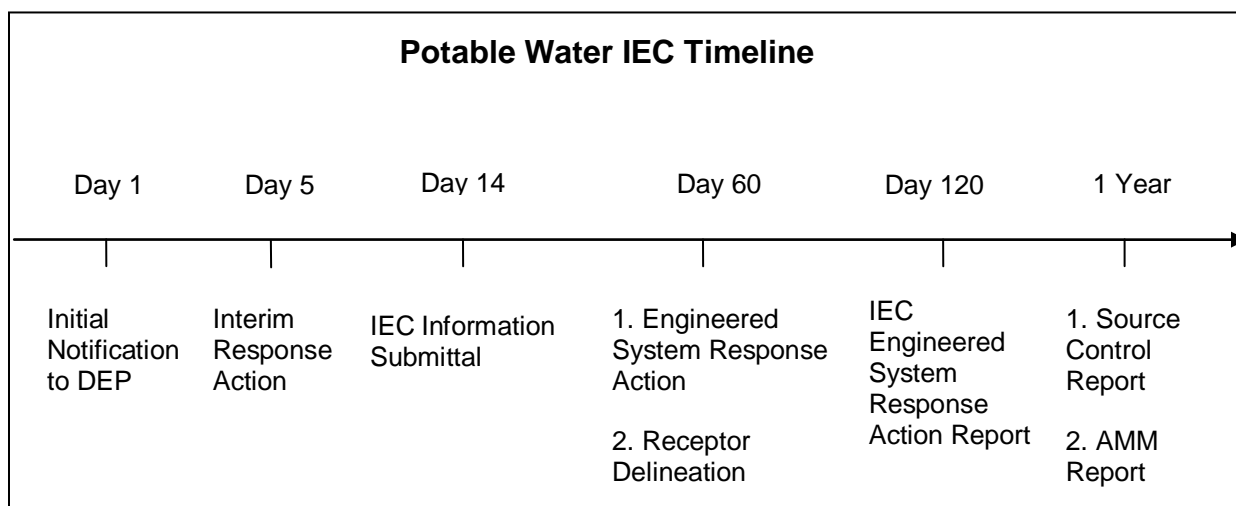
The investigator shall submit an Annual Monitoring and Maintenance (AMM) report to the Bureau of Case Assignment and Initial Notice (BCAIN) if operation, maintenance or monitoring is needed. The submittal of an AMM report was first required in the current Technical Rules dated May 12, 2012. The AMM report should be submitted on a yearly basis starting one year after the IEC identification date.

The AMM report should include the following:

- The IEC Response Action Form - A completed IEC Response Action form along with the AMM report should be mailed to BCAIN. The address for BCAIN is included on the form. Also email an electronic copy of the form and report to the email address on the Response Action form and directly to the IEC case manager.
- The Monitoring and Maintenance Plan – The original Monitoring and Maintenance plan will have already been submitted to the Department as part of the IEC Source Control report. The plan should clearly list the receptors being monitored and the frequency and type of monitoring/maintenance that was expected to be conducted during the year being covered by the report. Each Monitoring and Maintenance report should include a copy of the Monitoring and Maintenance plan with any changes to the original plan highlighted and an explanation for each change provided. The proposed changes to the following year’s plan should also be included along with justification for the changes.
- Updated IEC Potable Well spreadsheet – The collection of potable well samples will be necessary as part of the Monitoring and Maintenance program. These sample results should be included on the spreadsheet.

When the investigator submits an application for a Remedial Action (RA) permit, the application should include the Annual Monitoring and Maintenance plan for the IEC. All AMM reporting will be submitted with RA permit deliverables. AMM reports will no longer be submitted to the IEC case manager.

**Figure 4-1**



## 4.2. Vapor Intrusion IEC Technical Guidance Procedures

### 4.2.1. Identification

A Vapor Intrusion (VI) IEC exists when there is an exceedance of a Rapid Action Level (RAL) in a building, a contaminant source and a demonstrated pathway (typically an exceedance of a Soil Gas Screening Level) between the two. The investigator should refer to the most current version of the VITG for procedures to address VI cases ([http://www.nj.gov/dep/srp/guidance/vaporintrusion/vig\\_main.pdf](http://www.nj.gov/dep/srp/guidance/vaporintrusion/vig_main.pdf)).

The RALs along with all vapor intrusion screening levels can be found at the Vapor Intrusion website at <http://www.nj.gov/dep/srp/guidance/vaporintrusion/index.html>. The RALs are calculated for commonly used chemicals based on both residential and non-residential scenarios. If an IEC exists, the investigator shall call the Department's Hotline (1-877-WARN DEP) per N.J.A.C. 7:26E-1.11(a)1, to report the IEC condition.

VI cases with contaminant concentrations between the Indoor Air Screening Levels and the RALs are not IEC cases; they are termed Vapor Concern (VC) cases. Technical guidance for VC cases is provided in the VITG. In instances where multiple locations have been sampled and both IECs and VCs exist, the overall case will be classified as an IEC.

The investigator may discover an IEC that they believe is not attributable to the site but is related to an off-site source. If the new IEC is off-site and it is determined that the contaminant causing the IEC is not a site-related COC, the investigator should call the Department's Hotline and report an off-site source IEC. The Department will then address this IEC using public funds. If the new IEC is found on-site or off-site and caused by a site-related COC discharged from an off-site source, the investigator will need to conduct a PA/SI, including pertinent justification pursuant to N.J.A.C. 7:26E-3.9 that supports the claim that the IEC is not site-related. Once this investigation is completed, the investigator should call the Department's Hotline and report an off-site source IEC. The Department will then address this IEC using public funds. The investigator, however, should continue to address the IEC until the PA/SI and pertinent justification are submitted to the Department using the PA/SI form. The IEC case manager should be copied on this submittal. If the investigator is maintaining IEC receptor control systems related to the offsite source, those property owners should be notified, after discussion with the IEC case manager, that future monitoring and maintenance will be conducted by the Department until the ownership of the property changes. If the off-site source claim is later determined to be invalid by the Department, cost recovery for public funds spent to address the IEC will be initiated. In cases where it is determined that there is co-mingled contamination from multiple sites, the responsible parties/investigators should negotiate an equitable apportionment of IEC responsibilities. If this negotiation fails, the Department will address the receptors with public funds and will commence enforcement and/or seek cost recovery.

VI cases can be complex. The following examples are provided to help the investigator.

**Example 1:** VI impacts a vacant building at contaminant levels above the RALs. An IEC exists even though there is no current human receptor. The case is considered an IEC because the building could be occupied in the future. Since there are no current human receptors, the implementation of an ESRA can be postponed. The investigator must certify as part of the maintenance and monitoring, consistent with Section 4.2.8 of this document, that the building remains unoccupied. If the building use changes and is to be reoccupied, the IEC must be remediated with an engineered system response. Since the case is an IEC, all other requirements of the Technical Rules should be followed; including conducting a receptor delineation and submitting ESRA, Source Control and Annual Operation and Maintenance reports.

**Example 2:** A commercial facility has an RAL exceedance for PCE; however, PCE is used at this facility (i.e., dry cleaners). The OSHA indoor air quality standard for PCE, rather than the RAL, would apply at this location. OSHA standards are typically far higher than RALs. The Department is not responsible for enforcement of OSHA standards. Thus, this would not be an IEC.

**Example 3:** A site impacts an adjacent building with contaminants that the adjacent facility does not use. For example, a drycleaner impacts a nail salon with PCE at levels above the RAL. Since the nail salon does not use PCE, OSHA standards would not be applicable at the salon. RALs would apply to the PCE contamination. In this instance, PCE triggers an IEC condition at the nail salon.

**Example 4:** An IEC exists, an ESRA is implemented and the contaminant of concern is reduced below the RALs but is still above the indoor air screening levels. This case does not convert from an IEC to a VC case. The case shall continue to follow the Technical Rules for IECs and the IEC Technical Guidance until indoor air screening levels are achieved.

**Example 5:** The Department does not require the collection of indoor air samples in structures that use the same COC that is being investigated (i.e. PCE at a drycleaner). This is due to the difficulty in determining whether air contaminants present in a structure are from operational activities within the facility or from vapor intrusion. However, sub-slab soil gas and indoor air sampling should be conducted in those areas of a building or structure under one roof (i.e., strip mall or an office area) not associated with the storage or use of the COC. In these situations, indoor air results exceeding RALs (with VI pathway complete) would constitute an IEC.

**Example 6:** An active drycleaner in a strip mall using PCE has impacted the subsurface (VI pathway complete) and indoor air in adjacent leaseholds and a sub-slab depressurization system (SSDS) has been installed; however, there are still PCE exceedances in the post-installation indoor air samples. If system commissioning procedures document adequate vacuum beneath the slabs of the affected leaseholds, the likely PCE source for these exceedances is background contamination from the active dry cleaner. The Department acknowledges that additional remedial efforts under these circumstances may not be warranted. It is recommended that a site



visit be scheduled with the IEC case manager for these situations. Once the IEC case manager concurs that the SSDS is effectively controlling VI, the ESRA can be approved.

#### **4.2.2. Initial Notification (Day 1)**

##### **N.J.A.C. 7:26E-1.11(a)1**

When an IEC is identified the investigator must immediately call the Department Hotline (1-877-WARN DEP). When calling the Hotline, the caller should inform the Hotline operator that they are reporting an IEC.

#### **4.2.3. Interim Response Action and IEC Information Submittal (14 Days)**

##### **N.J.A.C. 7:26E-1.11(a)2ii and 3ii**

Within 14 days of the date of discovery of the IEC condition, the investigator shall notify the receptor of the contamination and shall implement an interim response action to address any receptor impacted by contamination from the site.

The investigator shall provide written notification of the test results, their significance and future actions shall be sent to any impacted property owner (and occupant, if applicable) and shall also provide a copy to the local health department within 14 days per N.J.A.C. 7:26E-1.11(a)2ii(2). The notification letter will explain that when indoor air RALs are exceeded, immediate action will be taken to reduce contaminant levels in the building. In addition, the letter should contain information on specific future interim response actions that will be provided by the investigator. Examples of letters for the owner/occupant and local officials are provided at the Department's website [www.nj.gov/dep/srp/guidance/vaporintrusion/templates](http://www.nj.gov/dep/srp/guidance/vaporintrusion/templates).

Within the first 14 days, the investigator shall implement an interim response action to remediate receptor exposure per N.J.A.C. 7:26E 1.11(a)2ii(1). These actions may include such things as caulking cracks, increasing ventilation or providing an air purifier that uses a granular activated carbon filter.

Within 14 days, the investigator shall submit to the Department, an IEC Response Action form, IEC/VC Vapor Intrusion spreadsheet (located at [www.state.nj.us/dep/srp/srra/forms](http://www.state.nj.us/dep/srp/srra/forms)) and an IEC map per N.J.A.C. 7:26E 1.11(a)3. The IEC/VC Vapor Intrusion spreadsheet shall be submitted and should include all test results, actions taken for each IEC/VC identified, and property information. The spreadsheet should be submitted in Excel format (not a pdf). All properties that are targeted for sampling in the receptor evaluation should be included in the spreadsheet. Results for all contaminants of concern (COCs), whether above or below criteria, should be included. Include background or non-site related contaminants if they are above criteria. If a property is vacant or the owner refuses access, this should be noted in the spreadsheet. The IEC map should be plotted on a scaled lot and block map based on the most recent version of a municipal tax map. The following should be included in the IEC map:

- indoor air and sub-slab sample locations, including results above and below criteria using chemboxes or similar format
- title block with the name of the case, PI number or Incident number/Communications Center number
- date, scale, north arrow, street names, lot and block numbers
- name of the LSRP

The IEC Response Action form including the IEC/VC Vapor Intrusion spreadsheet and IEC map should be submitted in a hard copy and electronic format (email attachment or CD). The IEC/VC Vapor Intrusion spreadsheet should be submitted as an Excel compatible file and not as a pdf file. The mailing and email addresses are located on the IEC Response Action form. Based upon the information contained in the IEC Information submittal, the Department will create a GIS layer consisting of a single point which identifies the location of the IEC. The investigator will need to verify that the site location as displayed in NJ-GeoWeb is correct. NJ-GeoWeb can be accessed via the following link: <http://www.nj.gov/dep/gis/geoweb splash.htm>. Specific instructions for how to verify the site location in NJ-GeoWeb can be found on the GIS main page at <http://www.state.nj.us/dep/srp/gis/index.html>. If the site is not correctly located or the site does not display in NJ-GeoWeb, please follow the Site Location Verification the instructions for providing the correct coordinate information to the Department.

When the Department receives the IEC Response Action form and the required information, an IEC case manager will be assigned for the IEC portion of the case. Once assigned, the IEC case manager will contact the investigator.

It is recommended the investigator frequently communicate with the assigned IEC case manager to stay up to date on issues and provide information to public and local officials. It is suggested that the investigator establish a schedule for providing updates on the status of the case to the case manager. It is also suggested that updates be provided to the case manager every 2 weeks until implementation of an engineered system response. During the source control phase, updates should be provided on a monthly basis. An update should consist of a phone call and/or email explaining the progress since the last update. If new sample data is received or remediation activities have occurred, revise the spreadsheet and the map and email to the case manager. If problems are occurring, it is important to communicate them to the case manager. If these problems result in project delays, the investigator should be familiar with the requirements for requesting a time extension (N.J.A.C. 7.26C-3).

#### **4.2.4. Engineered System Response Action (60 Days)**

##### **N.J.A.C. 7:26E-1.11(a)6ii**

Within 60 days from receipt of analytical results indicating that an IEC exists, the investigator shall implement an engineered system response action to remediate the IEC. Engineered systems include the use of SSDS which is the presumptive remedy for this type of IEC. Specifications for

VI remediation systems are provided in the VITG. The use of granular activated carbon filters in air purifiers is not considered an ESRA.

A post-installation indoor air sample shall be collected per N.J.A.C. 7:26E-1.11(a)6ii(1) to confirm that the system is functioning properly. Post-installation sampling is considered part of the system commissioning and should be taken within the timeframe for implementing an engineered system response action. The investigator shall report the sample results to the property owner/occupant, and shall copy the case manager and local health department. All indoor air and soil gas samples must also be submitted per N.J.A.C. 7:26E-1.11(a)4 to the Department's Office of Data Quality for validation.

#### **4.2.5. Receptor Delineation (60 Days)**

##### **N.J.A.C. 7:26E-1.11(a)6ii**

Receptor delineation shall be conducted within 60 days of the date of discovery of the IEC. Receptor delineation and implementation of receptor controls should be conducted concurrently.

Within 60-days of discovery of an IEC, the investigator shall identify and sample all buildings within 100 feet of the impacted building. The 100 foot requirement applies for both petroleum and non-petroleum hydrocarbons.

If the number of properties presents logistical issues due to a large number of samples needed, contact the assigned IEC case manager to discuss a modified plan and/or a possible time extension to complete the delineation.

If the first round of sampling identified additional IEC impacted structures, additional 100 foot step-out sampling should be conducted from the outermost impacted structures. Additional step-out sampling should be conducted until all samples show contaminant concentrations below RALs. If additional impacted structures are found during the delineation process, the time frame for providing the engineered response action for the new receptor will be 60 days from discovery of the additional impacted structure(s).

Initial contact with potential receptors should be in writing with copies submitted to the local health department and the Department. If needed, these letters should be followed up with phone calls and an additional letter. The investigator should contact the IEC case manager regarding the delineation sampling schedule, as well as any access issues. The investigator should document in writing any lack of response to repeated attempts to contact potential receptors. Letters should be sent certified or a similar method to document receipt/delivery to potential receptors. Certified receipts can be beneficial if there is a dispute whether a potential receptor was contacted.

**NOTE:** An updated receptor evaluation (N.J.A.C. 7:26E-1.12) is required to be submitted with the Source Control report. When sampling is being conducted to meet the requirement of the IEC

receptor delineation it would be advisable to conduct any additional sampling that would be needed to satisfy the receptor evaluation.

#### **4.2.6. IEC Engineered System Response Action Report (120 Days)**

##### **N.J.A.C. 7:26E-1.11(a)7**

An IEC ESRA report shall be submitted within 120 days after the date of discovery of the first IEC. If additional rounds of sampling are conducted and more receptors are found, the ESRA should be updated and resubmitted within 120 days of the discovery of the additional receptor. This process of conducting sampling, addressing receptors and updating the ESRA report will continue until no further impacted receptors are found. The revised reports should include an updated IEC/VC Vapor Intrusion spreadsheet, IEC map and narrative. The report shall consist of the following:

- narrative summary of remedial work performed including the interim response actions and engineered system response actions that were implemented within the 60-day timeframe; summary should include information concerning IECs, VCs and locations with soil gas concentrations exceeding the soil gas screening levels
- receptor delineation summary
- updated IEC Response Action form
- updated IEC map
- updated IEC/VC Vapor Intrusion spreadsheet

The ESRA report including the IEC Response Action form, IEC/VC Vapor Intrusion spreadsheet and IEC map should be submitted in a hard copy and electronic format (email attachment or CD). The IEC/VC Vapor Intrusion spreadsheet should be submitted as an Excel compatible file and not as a pdf file. The mailing and email addresses are located on the IEC Response Action form. An electronic version of the above documents should be sent directly to the IEC case manager.

If numerous receptors are found during the delineation process, an initial IEC ESRA Report should be submitted within 120 days summarizing the response actions to date. If additional receptors are discovered, an updated ESRA report should be submitted within 120 days from the discovery of the new IEC or VC. Prior to approval of the IEC ESRA report the investigator should arrange an inspection of the site with the assigned IEC case manager. This inspection will confirm the findings of the report and allow for the opportunity to discuss future submittals (i.e., Source Control report and Annual Operation, Maintenance and Monitoring reports).

#### **4.2.7. Source Control (1 Year)**

##### **N.J.A.C. 7:26E-1.11(a)8**

An IEC Source Control report shall be submitted within one year of the discovery of the IEC. The Source Control report shall include the following:

- updated IEC Response Action form
- description of initiated source control measures
- identified source areas
- updated VI: IEC/VC Vapor Intrusion spreadsheet
- updated maps and figures related to the IEC
- data usability determination
- updated receptor evaluation
- engineered system response actions
- monitoring and maintenance plan

The Source Control report including the IEC Response Action form, IEC/VC Vapor Intrusion spreadsheet and IEC map will be submitted in a hard copy and electronic format. The mailing and email addresses are located on the IEC Response Action form. An electronic version of the above documents should be sent directly to the IEC case manager.

Within one year after identifying an IEC per N.J.A.C. 7:26E-1.11(a)8, the investigator shall identify all contaminant source areas contributing to the IEC and begin contaminant source control. While contaminant source control shall start within one year, it is not required to be completed within that timeframe. The goal of starting source control in one year is to start removing the contaminants that are creating the IEC. Examples of source areas that should have source control started within one year are leaking tanks, soils containing product and floating product. Source control is initiated when source is physically removed or reduced.

Often, source control has already been initiated before most IECs are discovered. If source control has already been initiated, the source control report can be incorporated into the ESRA report. If the investigator wants to combine these reports, consult your IEC case manager. Examples of the initiation of source control would include activities such as the removal of leaking tanks, excavation of product contaminated soil, free product recovery from groundwater, vapor extraction, reagent injection etc.

**NOTE:** For IECs a dissolved ground water plume is not considered a source that must have source control initiated to meet the requirement of N.J.A.C. 7:26E-1.11(a)8.

A monitoring and maintenance plan shall be submitted per N.J.A.C. 7:26E-1.11(a)8vii, viii that specifies actions to maintain controls for receptors and monitoring of potential receptors. The monitoring and maintenance plan will specify the schedule for sampling and maintaining mitigation systems. It will also address potential impacts to nearby receptors whose sub-slab readings exceed soil gas screening levels but do not exceed indoor air screening levels.

#### **4.2.8. Annual Monitoring and Maintenance Report**

##### **N.J.A.C.7:26E-1.11(a)9**

The investigator shall submit an AMM report to BCAIN if operation, maintenance or monitoring is needed. The submittal of an AMM report was first required in the current Technical Rules dated May 12, 2012. The AMM report should be submitted on a yearly basis starting one year after the IEC identification date. The AMM report will include the following:

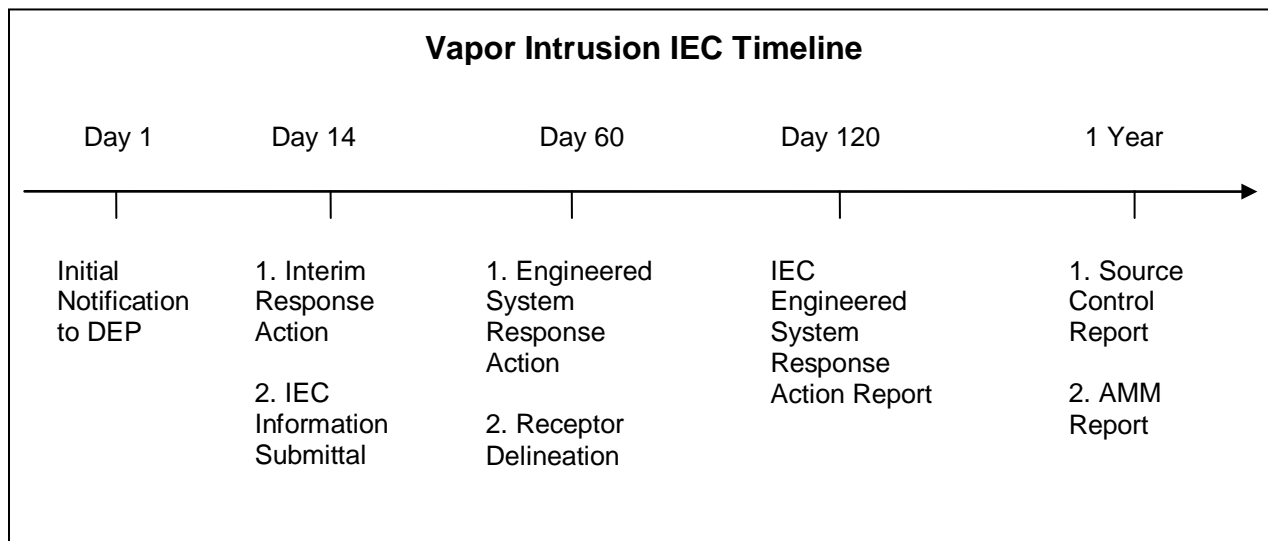
- The IEC Response Action form - A completed IEC Response Action form along with the AMM report should be mailed to BCAIN. The address for BCAIN is included on the form. Also email an electronic copy of the form and report to the email address on the Response Action form and directly to the IEC case manager.
- The Monitoring and Maintenance Plan – The original Monitoring and Maintenance plan will have already been submitted to the Department as part of the IEC Source Control report. The plan should clearly list the receptors being monitored and the frequency and type of monitoring/maintenance that was expected to be conducted during the year being covered by the report. Each report should include a copy of the Monitoring and Maintenance plan with any changes to the original plan highlighted and an explanation for each change provided. The proposed changes to the following year’s plan should also be included along with justification for the changes.
- Monitoring and Maintenance Checklist(s) – A blank copy of this checklist can be found on the Site Remediation Program (SRP) website. A separate checklist should be filled out for each location and for each inspection at that location. This checklist is primarily designed to be used for sites that employ a SSDS for remediation of vapor intrusion. The checklist may also be used for more complex sites; however, additional reporting requirements may be appropriate. Alternatively, at less complex sites using engineered systems other than an SSDS (i.e., crawl space ventilation, passive ventilation, vacant buildings, etc.), more simplified reporting may be appropriate as specified on the checklist. For example, at a location using crawl space ventilation, confirmation that adequate flow is being maintained and no significant changes to the structure have been made would be adequate. If building vacancy is the institutional control, LSRP certification that the building remains unoccupied would be appropriate.
- Updated IEC/VC Vapor Intrusion spreadsheet – In some instances the collection of indoor air samples will be necessary as part of the Monitoring and Maintenance program. Examples include the re-commissioning of an SSDS, the monitoring of buildings without SSDSs and long term monitoring of homes with elevated sub-slab vapors. In these instances, the existing IEC/VC Vapor Intrusion spreadsheet should be updated to include these sample results.

During routine monitoring there are three separate ways to show the SSDS is protective. Each method can be used independently. These options are listed below:

- During each inspection, vacuum extraction point measurements can be collected from the same location in the line prior to the fan that was measured during the system commissioning. If this reading is within 20% of the original commissioning vacuum measurement, the system can be considered protective (see VITG section 6.5.1).
- If a greater than 20% plus or minus variation is observed in the vacuum extraction point measurement, a new round of sub-slab probe readings is required. The location of these probe measurements must be the same as used during the initial system commissioning that showed adequate influence across the sub-slab. It is recommended that during the construction of the SSDS that permanent sub-slab probes be installed. If all the new sub-slab probe readings are greater than 0.004 inches of water, the system can be considered protective. The new vacuum extraction point reading will replace the commissioning value for future 20% variation calculations. If vacuum readings are less than 0.004 inches of water, the system cannot be considered protective and adjustments to the system are required to re-establish adequate negative pressure over the subslab (see VITG section 6.5.1).
- If sub-slab probes are not accessible, indoor air samples can be collected annually (during the heating season only) to determine if the SSDS is functioning properly. If all results are below indoor air screening levels, the system can be considered protective.

When the investigator submits an application for a RA permit, the application should include the AMM plan for the IEC. Once the RA permit has been issued, all AMM reporting will be submitted with RA permit deliverables and AMM reports will no longer be submitted to the IEC case manager.

**Figure 4-2**



### **4.3. Direct Contact IEC Technical Guidance Procedures**

#### **4.3.1. Identification**

A Direct Contact IEC exists when there is contamination above acute health effects levels in the upper six inches of the soil column and there is actual or potential for human contact via dermal contact, ingestion or inhalation. Acute health effect means that an adverse human health impact could result from an exposure of less than two weeks. The potential for exposure is based on site-specific conditions, and therefore, the investigator should evaluate the reasonable likelihood of exposure. As an example, a residential backyard with exposed soil or limited surface cover would have a high likelihood of exposure versus the same contamination under a paved commercial parking lot. When an area used by sensitive receptors is contaminated (for example a school, residence or childcare facility), the investigator should evaluate the upper two feet of the soil column to determine if an IEC condition exists. Certain highly acidic or basic compounds (which include pH levels below 2 and over 12.5) discharged onto soil also could present an acute exposure hazard.

Determinations of acute health effect levels should be made on a site-specific basis. This determination should be based upon site-specific conditions, including but limited to the presence of the impacted soil at a property used for childcare, school or residential purposes, the absence of existing surface cover over the impacted soil and the general toxicity of the contaminant of concern. The investigator should rely upon professional judgment and on a variety of available toxicological references in the assessment of a Direct Contact IEC condition.

Examples of Direct Contact IECs include the following:

- arsenical compounds, such as rat poison, spilled onto soil in a high traffic area whereby contact with this soil could result in an acute health impact
- chromic acid spills could render soil highly acidic where direct contact could result in burns
- high concentrations of phenol or phenolic compounds could cause burns when direct contact occurs

The investigator can contact the Bureau of Environmental Evaluation and Risk Assessment at (609) 984-1825 if assistance is needed when determining whether an IEC Direct Contact exists.

If an IEC exists, the investigator shall call the Department's Hotline (1-877-WARN DEP) to report the IEC condition per 7:26E-1.11(a)1.

The investigator may discover an IEC that they believe is not attributable to the site but is related to an off-site source. If the new IEC is off-site and it is determined that the contaminant causing the IEC is not a site-related COC, the investigator should call the Department's Hotline and report an off-site source IEC. The Department will then address this IEC using public funds. If



the new IEC is found on-site or off-site and caused by a site-related COC discharged from an off-site source, the investigator should conduct a PA/SI, including pertinent justification pursuant to N.J.A.C. 7:26E-3.9 that supports the claim that the IEC is not site-related. Once this investigation is completed, the investigator should call the Department's Hotline and report an off-site source IEC. The Department will then address this IEC using public funds. The investigator, however, should continue to address the IEC until the PA/SI and pertinent justification are submitted to the Department using the PA/SI form. The IEC case manager should be copied on this submittal. If the investigator is maintaining IEC receptor control systems related to the offsite source, those property owners should be notified, after discussion with the IEC case manager, that future monitoring and maintenance will be conducted by the Department until the ownership of the property changes. If the off-site source claim is later determined to be invalid by the Department, cost recovery for public funds spent to address the IEC will be initiated. In cases where it is determined that there is co-mingled contamination from multiple sites, the responsible parties/investigators should negotiate an equitable apportionment of IEC responsibilities. If this negotiation fails, the Department will address the receptors with public funds and will commence enforcement and/or seek cost recovery.

#### **4.3.2. Initial Notification (Day 1)**

##### **N.J.A.C. 7:26E-1.11(a)1**

When an IEC is identified the investigator must immediately call the Department Hotline (1-877-WARN DEP). When calling the Hotline, the caller should inform the Hotline operator that they are reporting an IEC.

#### **4.3.3. Interim Response Action and IEC Information Submittal (5-14 Days)**

##### **N.J.A.C. 7:26E-1.11(a)2iii and 3iii**

Within 5 days of the date of discovery of the IEC condition, the investigator shall notify the receptor of the contamination and shall implement an interim response action to address any receptor impacted by contamination from the site.

Written notification of the test results, their significance and future actions shall be sent to any impacted property owner (and occupant, if applicable). The investigator shall also provide a copy to the local health department within 5 days. The notification letter should explain that when there are exceedances of acute health levels immediate action shall be taken to reduce exposure. In addition, the letter should contain information on specific future interim response actions that will be provided by the investigator. Examples of letters for the owner/occupant and local officials are provided at the Department's website [www.nj.gov/dep/srp/guidance/vaporintrusion/templates](http://www.nj.gov/dep/srp/guidance/vaporintrusion/templates).

Within the first 5 days, the investigator shall implement an interim response action to remediate receptor exposure per N.J.A.C. 7:26E 1.11(a)2iii. These actions may include such things as installing a variety of temporary and or permanent controls such as a physical barrier, weighted

tarp or cap to control contact or dust generation; fencing to preclude entry to the area; or excavation and removal of contamination.

Within 14 days, the investigator shall submit to the Department, an IEC Response Action form, Direct Contact spreadsheet (located at [www.nj.gov/dep/srp/srra/forms](http://www.nj.gov/dep/srp/srra/forms)) and an IEC map per N.J.A.C. 7:26E 1.11(a)3. The IEC Direct Contact spreadsheet shall be submitted and should include all test results, actions taken for each IEC identified, and property information. The spreadsheet should be submitted in Excel format (not a pdf). The IEC map should be plotted on a scaled lot and block map based on the most recent version of a municipal tax map. The following should be included in the IEC map:

- soil sample locations using chemboxes or similar format
- title block with the name of the case, PI number or Incident number/Communications Center number
- date, scale, north arrow, street names, lot and block numbers
- name of the LSRP

The IEC Response Action form including the IEC Direct Contact spreadsheet and IEC map should be submitted in a hard copy and electronic format (email attachment or CD). The IEC Direct Contact spreadsheet should be submitted as an Excel file and not as a pdf file. The mailing and email addresses are located on the IEC Response Action Form.

The investigator will need to verify that the site location as displayed in NJ-GeoWeb is correct. NJ-GeoWeb can be accessed via the following link:

<http://www.nj.gov/dep/gis/geoweb splash.htm>. Specific instructions for how to verify the site location in NJ-GeoWeb can be found on the GIS main page at <http://www.state.nj.us/dep/srp/gis/index.html>. If the site is not correctly located or the site does not display in NJ-GeoWeb, please follow the Site Location Verification the instructions for providing the correct coordinate information to the Department. The Department will use this information to generate an IEC layer in GIS, which will identify that an IEC is present at this site.

When the Department receives the IEC Response Action form and the required information, an IEC case manager will be assigned for only the IEC portion of the case. Once assigned the IEC case manager will contact the investigator.

It is recommended the investigator frequently communicate with the assigned IEC case manager to stay up to date on issues and provide information to public and local officials. It is suggested that the investigator establish a schedule for providing updates on the status of the case to the case manager. It is also suggested that updates be provided to the case manager every 2 weeks until implementation of an engineered system response. During the source control phase, updates should be provided on a monthly basis. An update should consist of a phone call and/or email

explaining the progress since the last update. If new sample data is received or remediation activities have occurred, revise the spreadsheet and the map and email to the case manager. If problems are occurring, it is important to communicate them to the case manager. If these problems result in project delays, the investigator should be familiar with the requirements for requesting a time extension (N.J.A.C.7.26C-3).

#### **4.3.4. Engineered System Response Action (60 Days)**

##### **N.J.A.C. 7:26E-1.11(a)6iii**

Within 60 days from receipt of analytical results indicating that an IEC exists, the investigator shall implement an engineered system response action to remediate the IEC. Engineered systems include permanent caps made of materials such as asphalt, concrete or clay/soil with a subsurface marker system.

#### **4.3.5. Receptor Delineation (60 Days)**

##### **N.J.A.C. 7:26E-1.11(a)6iii**

A receptor delineation investigation of potential impacts to other nearby receptors shall be conducted within 60 days of the date of discovery of the IEC. Receptor delineation and implementation of receptor controls should be conducted concurrently. Within 60 days of discovery of an IEC, the investigator shall identify and sample all Areas of Concern (AOCs) where there is potential for a Direct Contact threat. These AOCs are site specific conditions, such as stressed vegetation, as well as the investigator's professional judgment.

If the number of properties presents logistical issues due to a large number of samples needed, contact the assigned IEC case manager to discuss a modified plan and/or a possible time extension to complete the delineation.

If the first round of sampling identified additional IEC impacted areas, step-out sampling should be conducted from the outermost impacted areas. Additional step-out sampling should be conducted until all samples show contaminant concentrations below acute health effect levels. If additional impacted AOCs are found during the delineation process, the time frame for providing the engineered response action for the new receptor will be 60 days from discovery of the additional contaminated building(s).

Initial contact with potential receptors should be in writing with copies submitted to the local health department and the Department. If needed, these letters should be followed up with phone calls and an additional letter. The investigator should contact the IEC case manager regarding the delineation sampling schedule, as well as any access issues. The investigator should document in writing any lack of response to repeated attempts to contact potential receptors. Letters should be sent certified or a similar method to document receipt/delivery to potential receptors. Certified receipts can be beneficial if there is a dispute whether a potential receptor was contacted.

**NOTE:** An updated receptor evaluation is required to be submitted with the Source Control Report (N.J.A.C. 7:26E-1.12). When sampling is being conducted to meet the requirement of the IEC receptor delineation it would be advisable to conduct any additional sampling that would be needed to satisfy the receptor evaluation.

#### **4.3.6. IEC Engineered System Response Action Report (120 Days)**

##### **N.J.A.C. 7:26E-1.11(a)7**

An IEC ESRA report shall be submitted within 120 days after the date of discovery of the first IEC. If additional rounds of sampling are conducted and more receptors are found, the ESRA should be updated and resubmitted within 120 days of the discovery of the additional receptor. This process of conducting sampling, addressing receptors and updating the ESRA report will continue until no further impacted receptors are found. The updated reports should include an updated Direct Contact, IEC map and narrative. The report shall consist of the following:

- narrative summary of remedial work performed including the interim response actions and engineered system response actions that were implemented within the 60-day timeframe
- receptor delineation summary
- updated IEC Response Action form
- updated IEC map
- updated IEC Direct Contact Spreadsheet

The ESRA report including the IEC Response Action form, IEC Direct Contact spreadsheet and IEC map should be submitted in a hard copy and electronic format (email attachment or CD). The IEC Direct Contact spreadsheet should be submitted as an Excel file and not as a pdf file. The mailing and email addresses are located on the IEC Response Action form. An electronic version of the above documents should be sent directly to the IEC case manager.

If numerous receptors are found during the delineation process, an initial IEC ESRA report should be submitted within 120 days summarizing the response actions to date. If additional receptors are discovered, an updated ESRA report should be submitted within 120 days from the discovery of the new IEC. Prior to approval of the IEC ESRA report the investigator should arrange an inspection of the site with the assigned IEC case manager. This inspection will confirm the findings of the report and allow for the opportunity to discuss future submittals (i.e., Source Control Report and Annual Operation, Maintenance and Monitoring Reports).

#### **4.3.7. Source Control (1 Year)**

##### **N.J.A.C. 7:26E-1.11(a)8**

An IEC Source Control report shall be submitted within one year of the discovery of the IEC. The Source Control report shall include the following:

- updated IEC Response Action form
- updated IEC Direct Contact Spreadsheet
- updated maps and figures related to the IEC
- data usability determination
- description of initiated source control measures
- identified source areas
- updated receptor evaluation
- engineered system response actions
- monitoring and maintenance plan

The Source Control report including the IEC Response Action form, IEC Direct Contact spreadsheet and IEC map will be submitted in a hard copy and electronic format. The mailing and email addresses are located on the IEC Response Action form. An electronic version of the above documents should be sent directly to the IEC case manager.

Within one year after identifying an IEC, the investigator shall identify all contaminant source areas contributing to the IEC and begin contaminant source control. While contaminant source control shall start within one year, it is not required to be completed within that timeframe. The goal of starting source control in one year is to start removing the contaminants that are creating the IEC. Examples of source areas that should have source control started within one year are leaking tanks, soils containing product and floating product. Source control is initiated when the source is physically removed or reduced.

A monitoring and maintenance plan shall be submitted per N.J.A.C. 7:26E-1.11(a)8.vii that should specify actions to maintain controls for receptors and monitoring of potential receptors. The monitoring and maintenance plan will specify the schedule for sampling and maintaining mitigation systems.

#### **4.3.8. Annual Monitoring and Maintenance Report**

##### **N.J.A.C. 7:26E-1.11(a)9**

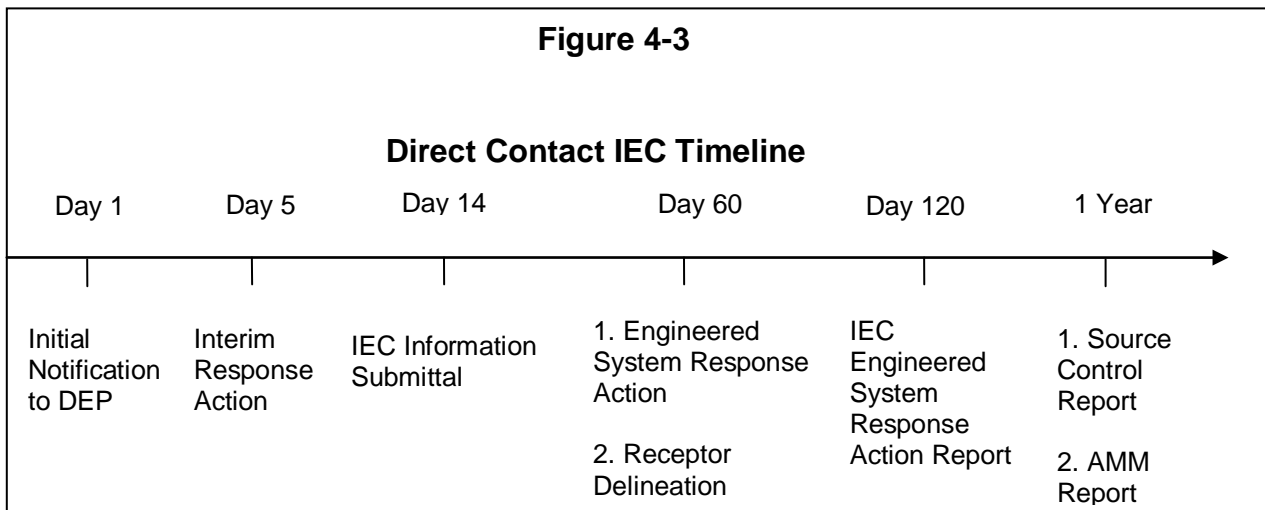
The investigator shall submit an AMM report to BCAIN if operation, maintenance or monitoring is needed. The submittal of an AMM report was first required in the current Technical Rules dated May 12, 2012. The AMM report should be submitted on a yearly basis starting one year after the IEC identification date.

The AMM report will include the following:

- The IEC Response Action form - A completed IEC Response Action form along with the Monitoring and Maintenance Report should be mailed to BCAIN. The address for BCAIN is included on the form. Also email an electronic copy of the form and report to the email address on the RA form and directly to the IEC Case Manager.

- The Monitoring and Maintenance Plan – The original Monitoring and Maintenance plan will have already been submitted to the Department as part of the IEC Source Control report. The plan should clearly list the receptors being monitored and the frequency and type of monitoring/maintenance that was expected to be conducted during the year being covered by the report. Each Monitoring and Maintenance report should include a copy of the Monitoring and Maintenance plan with any changes to the original plan highlighted and an explanation for each change provided. The proposed changes to the following year’s plan should also be included along with justification for the changes.

When the investigator submits an application for a RA permit, the application should include the Monitoring and Maintenance plan for the IEC. All monitoring and maintenance reporting will be submitted with RA permit deliverables. AMM reports will no longer be submitted to the IEC case manager.



## References

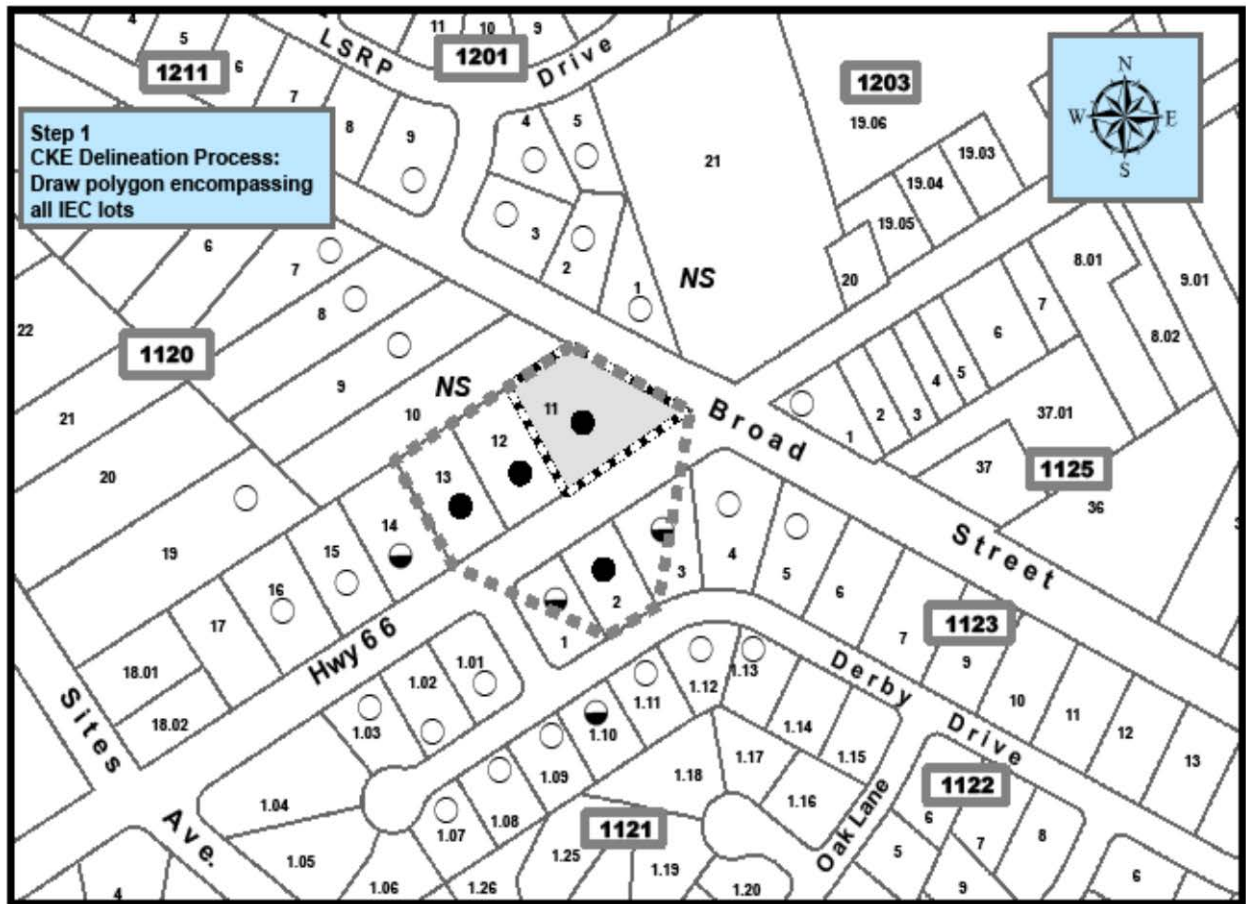
1. Administrative Requirements for the Remediation of Contaminated Sites (N.J.A.C. 7:26C)
2. Site Remediation Reform Act (SRRA) (N.J.S.A. 58:10C)
3. Technical Requirements for Site Remediation 7:26E-11 (immediate environmental concern cases); 7:26E-1.11 through 7:26E-1.16 (receptor evaluation – general and reporting, land use, ground water, vapor intrusion)
4. Vapor Intrusion Technical Guidance (located at <http://www.nj.gov/dep/srp/guidance/vaporintrusion/index.html>)

## **APPENDIX A**

### **CKE MAPPING PROCESS**



## CKE MAPPING PROCESS



**1120** = Block designation

● = Contaminant detected above GWRS

◐ = Contaminant detected at or below GWRS

○ = Contaminant not detected

**NS** = Not sampled (no well/vacant land)

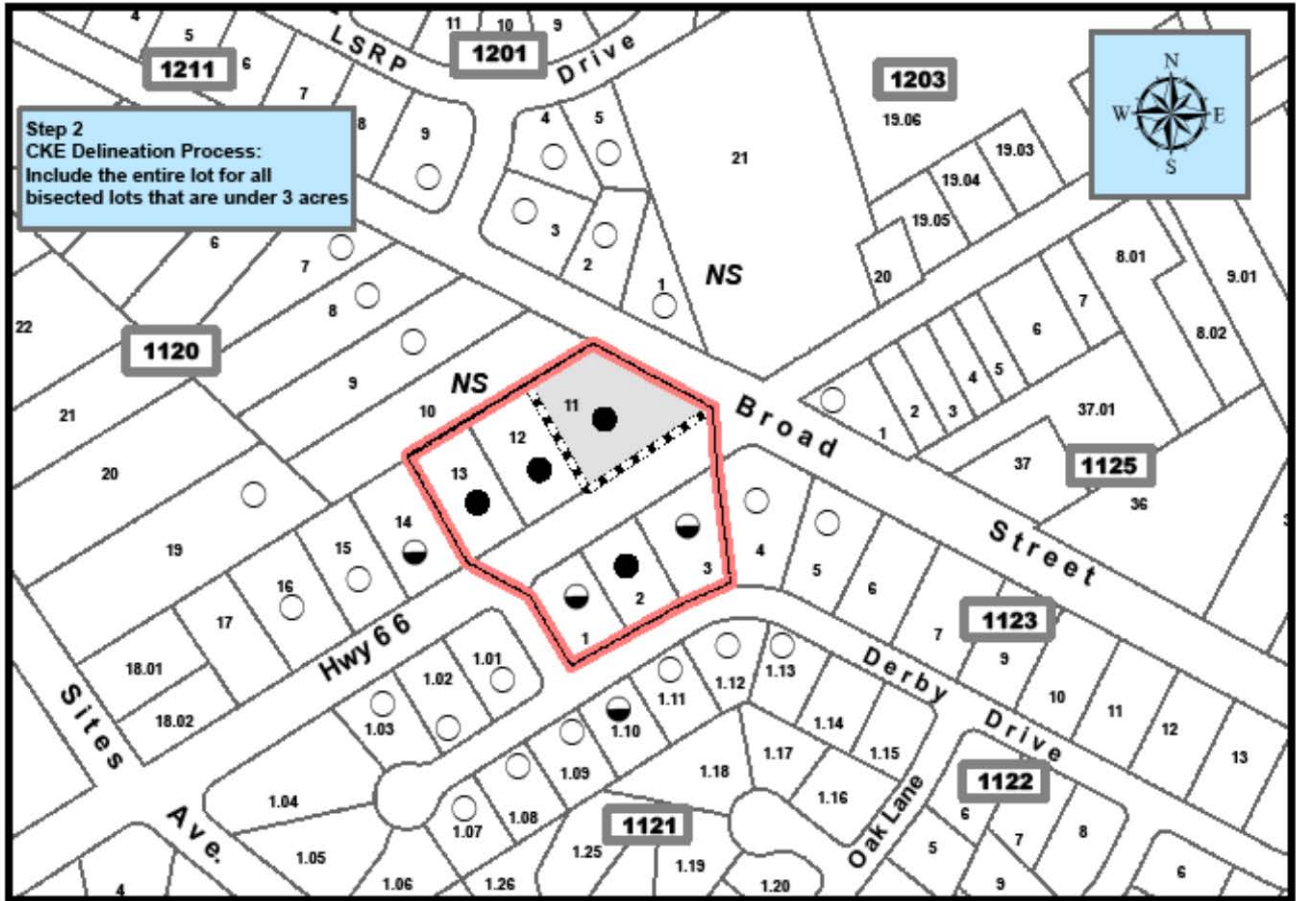


### Step 1: CKE Boundary Delineation

⊞ = Initial CKE Boundary

⊞ = Site

**Rocky's Cleaners**  
 3600 Hwy 66  
 Anytown, NJ  
 NJDEP SRP ID 123456  
 John B. Expert, LSRP  
 January 31, 2011



Step 2  
CKE Delineation Process:  
Include the entire lot for all  
bisected lots that are under 3 acres



1120 = Block designation



● = Contaminant detected above GWRS

**Step 2: CKE Boundary Delineation**

◐ = Contaminant detected at or below GWRS

◻ = Final CKE Boundary

○ = Contaminant not detected

▣ = Site

NS = Not sampled (no well/vacant land)

Rocky's Cleaners  
3600 Hwy 66  
Anytown, NJ  
NJDEP SRP ID 123456  
John B. Expert, LSRP  
January 31, 2011

## **APPENDIX B**

## **GLOSSARY**

## GLOSSARY

**Acute Health Effects Levels** - contaminant concentrations which may produce adverse health effects over a short period of time (less than 2 weeks) from the ingestion-dermal and inhalation exposure pathways.

**Block & lot map** - a map used to identify parcels of land by their lot number or letter and the block or subdivision plat in which the lot is located. These maps are often produced by municipalities and used for tax purposes.

**Building** - an enclosed construction that is over a plot of land, having a roof, door(s) and usually window(s) that is or can be occupied by humans and utilized for a wide variety of activities (e.g., residential, commercial, retail, industrial).

**Contaminant of Concern (COC)** - New definition from the Vapor Intrusion Technical Guidance Document: Site-specific compounds associated with a discharge(s) at or from a site that are detected in environmental media (soil, ground water, surface water, sediment, air) above regulatory criteria. It also includes the degradation byproducts from the COCs.

**Currently Known Extent (CKE)** - the aerial extent of ground water in which concentrations of one or more hazardous substances exceed the applicable contaminant standard for such hazardous substances.

**Engineered System Response Action** - a system that is designed to mitigate risk or remediate exposure as part of an IEC condition.

**Exposure pathways** - from N.J.A.C. 7:26D, Remediation Standards - the methods by which humans can come into contact with contamination including, but not limited to, the ingestion-dermal and inhalation exposure pathway.

**IEC map** - a Block & Lot map, as in the type used by municipal tax officials, depicting locations of samples collected during a receptor evaluation.

**Immediate Environmental Concern (IEC)** - from 7:26E Technical Rules "Immediate environmental concern" or "IEC" means a condition where any of the following types of contamination or any of the following conditions related to the discharge are found:

1. Contamination in a well used for potable purposes at concentrations at or above the Class II ground water remediation standard pursuant to N.J.A.C. 7:9C – Appendix Table 1;

2. Contamination in indoor air at a level greater than the Department's vapor intrusion rapid action level as found in <http://www.nj.gov/dep/srp/guidance/vaporintrusion/index.html>;
3. Contamination that has migrated into an occupied or confined space producing a toxic or harmful atmosphere resulting in an unacceptable human health exposure, or producing an oxygen-deficient atmosphere, or resulting in demonstrated physical damage to essential underground services;
4. Contamination in surface soil such that dermal contact, ingestion or inhalation of the contamination could result in an acute human health exposure; or
5. Any other condition that poses an immediate threat to the environment or to the public health and safety. For the purpose of this definition, an "unacceptable human health exposure" is based on an evaluation of site specific conditions and the toxicity of the contaminant present. An oxygen-deficient atmosphere is defined as any atmosphere containing oxygen at a concentration below 19.5% at sea level and an acute health exposure means that an adverse human health impact could result from an exposure of less than 2 weeks to a contaminant. The potential for exposure is based on site-specific conditions, and therefore, the person responsible for conducting the remediation shall evaluate the reasonable likelihood of exposure.

**Ingestion-dermal exposure** - the pathway by which humans can come into contact with contamination through the direct ingestion of contamination and the absorption of contamination through the skin.

**Inhalation exposure** - the pathway by which humans can come into contact with contamination through the inhalation of contamination.

**Investigator** - The Licensed Site Remediation Professional or the person responsible for conducting the remediation.

**Licensed Site Remediation Professional or LSRP** - a person defined as such pursuant to the Administrative Requirements for the Remediation of Contaminated Sites rules, N.J.A.C. 7:26C-1.3.

**Occupant** - a tenant or other person who occupies a building and who is not the owner.

**Owners** - revised from 7:10A Licensing of Water Supply - any municipality, institution, authority, commission, corporation, person or other similar body who owns or controls a property.

**Point-of-entry treatment (POET)** - from 7:9E the private Well Testing Act rules - a water treatment device applied to the drinking water entering a house or building for the purpose of reducing contaminants in the drinking water distributed to the entire house or building.

**Point-of-use treatment** - from 7:9E the private Well Testing Act rules - a water treatment device applied to a single tap for the purpose of reducing contaminants in drinking water at that one tap.

**Potable water** - from 7:9E the Private Well Testing Act rules - any water used, or intended to be used, for drinking and/or culinary purposes which is free from impurities in amounts sufficient to cause disease or harmful physiological effects, and complies with the bacteriological and chemical quality conforming to applicable standards of the New Jersey Safe Drinking Water Act rules, N.J.A.C. 7:10.

**Receptor** - from 7:26E Technical Rules - any human which is or may be affected by a contaminant from a contaminated site.

**Shall** - used to refer to a requirement in the Rule 7:26E. When the word “shall” is used, the citation for the rule is shown in the heading for each section. In some cases the citation will follow the sentence in which “shall” was used directing the reader to the appropriate location in the rule.

**Should** - used to aid the investigator in performing a task. The investigator is not required to perform the task but if they do deviate from the guidance they must notify the case manager and provide a reason for not following the guidance.

**Site-related contaminants** - those contaminants present in samples of any media that are not considered “background” contaminants.

**Vapor intrusion** - the migration of volatile chemicals from the subsurface into overlying buildings through subsurface soils and/or preferential pathways (such as underground utilities) thereby affecting the indoor air quality of a building.

# **APPENDIX C**

## **ACRONYMS**

## ACRONYMS

AOC	Area of Concern
AMM	Annual Monitoring and Maintenance
ARRCS	Administrative Requirements for Remediation of Contaminated Sites
BCAIN	Bureau of Case Assignment and Initial Notice
CKE	Currently Known Extent
COC	Contaminant of Concern
ESRA	Engineered System Response Action
GAC	Granular Activated Carbon
GIS	Geographic Information System
GWRS	Ground Water Remediation Standards
IEC	Immediate Environmental Concern
LSRP	Licensed Site Remediation Professional
NJAC	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
NJDOH	New Jersey Department of Health
NJSA	New Jersey Statutes Annotated
ODQ	Office of Data Quality
OSHA	Occupational Safety and Health Administration
PA/SI	Preliminary Assessment/Site Investigation
PCE	Perchloroethylene (PERC) or tetrachloroethylene or tetrachloroethene
PI	Program Interest
POET	Point of Entry Treatment
POU	Point of Use
RA	Remedial Action
RAL	Rapid Action Level
SRP	Site Remediation Program
SRRA	Site Remediation Reform Act
SSDS	Sub-Slab Depressurization System
VC	Vapor Concern
VI	Vapor Intrusion
VITG	Vapor Intrusion Technical Guidance