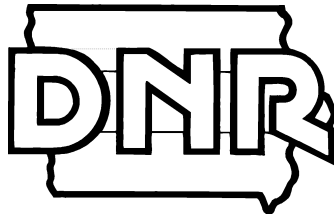


Site Monitoring Report (SMR) Guidance:
A Supplement for Post-RBCA Low and High Risk:Interim Monitoring

for Leaking Underground Storage Tanks (LUST) Sites



Iowa Department of Natural Resources
Underground Storage Tank Section
Wallace State Office Building
502 East Ninth Street
Des Moines, IA 50319-0034
515/281-8693

Version 2.2 -- July 1999

TABLE OF CONTENTS

TOPIC	Page Number
Instructions	3
Information Sources	3
Applicability	3
Monitoring Summary.....	3
Table 1. Types of Wells.....	4
High risk: interim monitoring	4
Low risk monitoring.....	4
Exit monitoring criteria.....	5
Reclassification.....	6
When to re-run the Tier 2 model.....	6
Report Submittal and Review Process	8
Report Preparation.....	8
Cover page	8
Checklist page	9
SMR Receptor Summary Tables.....	9
Table 2. Groundwater Source, Receptor Summary Table.....	9
Potential receptor summary table	9
Table 3. Potential receptor summary	10
Receptors: status change	10
Site reclassification	10
SMR Groundwater Analytical Data Table	10
SMR Soil Analytical Data Table	10
SMR Soil Gas Analytical Data Table	11
Soil SSTL Tables	11
Groundwater / Soil Leaching Monitoring Plan Summary.....	11
Soil Gas Monitoring Plan Summary	11
Requirements for Report Maps and Appendices.....	11

INSTRUCTIONS

IMPORTANT: This document provides instructions for conducting monitoring and preparing Site Monitoring Reports (SMR) for sites which have been evaluated using the Risk-Based Corrective Action (RBCA) process. Specifically, this includes sites classified low risk, high risk: interim, and exempt granular bedrock. This guidance is to be used in conjunction with the Tier 2 version 2.2 software which includes an SMR component. Read all instructions before completing the form. The guidance documents for Tier 1 and Tier 2 should be referenced for acceptable sampling and assessment procedures. If a monitoring well which is part of a monitoring plan cannot be sampled (i.e., the well is dry, cannot be found, is damaged, etc.), it must be replaced unless adequate justification can be provided for substituting an existing monitoring well or an explanation given as to why sampling at that location is no longer required.

UST owners and operators eligible to receive state funds to cover site investigation expenses must submit the SMR preparation budget prior to initiating work at the site to GAB Robins, 2600 72nd Street, Suite A, Des Moines, IA 50322, 515/276-8046. Failure to receive budget approval from GAB Robins prior to starting work at the site may result in a loss of state benefit eligibility.

Information Sources: All Iowa certified groundwater professionals will be provided updates of the guidance documents and software as these become available. Other interested parties may obtain updated versions of the guidance documents by submitting a written request to the IDNR, LUST Coordinator, Wallace Building, Des Moines, IA 50319-0034. The written request must include the name and mailing address of the person making the request. Copies of administrative rules referenced in this document may also be obtained from IDNR Records Center by calling 515/242-5818. Frequent updates on policy issues, upcoming training, and other items of interest are provided through Tank Memos and the bulletin board of the UST Section web page: (<http://www.state.ia.us/epd/ust/gwprof/gwbb.htm>)

Applicability: SMR Form-version 2.2 (1999) is to be used exclusively for monitoring conducted at low risk sites or interim monitoring conducted at high risk sites (for both non-bedrock and exempt-granular bedrock). SMR Form-version 1.0 (1997) must be used for all other types of monitoring including non-granular bedrock, granular bedrock, high risk: remediation, and pre-RBCA monitoring. If a Tier 2 evaluation was completed using Tier 2 version 1.0 software, the SMR Form-version 1.0 (1997) may be used. The department, however, strongly recommends use of the SMR Form-version 2.2 (1999) which will require the user to transfer all site data into version 2.2. Refer to the Site Monitoring Report (SMR) Guidance - version 1.0, February 1997 for instructions on preparing version 1.0 SMRs. All SMRs must be prepared by an Iowa certified groundwater professional.

Monitoring Summary

Low risk and high risk: interim monitoring must be conducted at least annually (typically required in the third calendar quarter) until the site is classified No Action Required. More frequent sampling may be conducted, but in order to meet exit monitoring criteria for groundwater pathways, sampling events must be at least six months apart; for soil leaching pathways, sampling events must be at least one year apart. For groundwater pathways, groundwater samples must be collected from the source well(s), transition well, and guard well for each receptor (Table 1). Each source, transition, and guard well for a receptor must continue to be monitored until all have met exit monitoring criteria. Refer to Section 5.4 of the Tier 2 Site Cleanup Report Guidance - version 2.17 for detailed instructions about developing a monitoring plan.

Table 1. Types of Wells.

Symbol	Description	Required for Which Receptors	When (Minimum)
I. Always Required for Groundwater Receptors			
S	<u>S</u> ource well (groundwater maximum)	All High & Low Risk Receptors	Annually
T	<u>T</u> ransition well (monitoring well with detected levels of contamination closest to the leading edge of the groundwater plume as defined to the pathway-specific target level and between the source and the receptor)		
G	<u>G</u> uard well (monitoring well between the source and the point of exposure with concentrations less than the SSTL line value at that point)		
II. Always Required for Soil Leaching Receptors			
SL	<u>S</u> ource well (maximum groundwater inside the soil plume defined to the soil SSTL; may be different than groundwater maximum)	All High & Low Risk Receptors	Annually
III. Additional Required Monitoring Wells for Groundwater			
X	Monitoring wells which <u>e</u> Xceed the SSTL line value at that point	Actual Receptors Only	Annually
P	<u>P</u> rimarily area well which exceeds the smallest applicable source SSTL for the site		
L	<u>L</u> ow risk actual receptors: monitoring wells which exceed the simulation line value (but not the SSTL line value at that point)		
E	Monitoring wells which <u>E</u> xceed the target level. Target level is: <ul style="list-style-type: none"> • SSTL line value at that point—if institutional control • Tier 2 default levels for vapor pathways or Tier 1 level for other pathways—if no institutional control 	Potential Receptors Only	At Least Once; Must Meet Target Level at NAR

Exceptions: If any required monitoring wells are not included in the monitoring plan, justification must be provided. For example, if the guard well is less than 50 feet from the source well, no transition well is required. If the receptor is less than 50 feet from the transition well, no guard well is required. If the receptor is less than 50 feet from the source well, neither a transition well nor guard well is required.

High risk: interim monitoring: Interim monitoring begins once a Tier 2 Site Cleanup Report is submitted and continues until the site is classified as no action required. A source, transition, and guard well for each receptor must be sampled at least annually. Although different than remediation monitoring, high risk: interim monitoring is conducted before, during, and after operation of a remediation system.

Low risk monitoring: For sites classified as low risk, the purpose of monitoring is to determine if concentrations are decreasing such that reclassification to no action required may be appropriate, or if concentrations are increasing above the site-specific target level line such that reclassification to high risk is necessary. Monitoring is necessary to evaluate impacts to actual receptors and assess the status of

potential receptor conditions (survey potential receptor areas for new actual receptors). A Best Management Practices Plan must be provided in the initial SMR.

Groundwater monitoring for potential receptors (i.e., groundwater ingestion and groundwater vapor to enclosed space pathways) is required at least annually at a source, transition, and guard well between the source and receptor of concern (i.e., property boundaries). If the entire plume is considered a potential receptor, then monitoring of source, transition, and guard wells is required at least in the downgradient direction. In addition to downgradient, any properties (cross- or up-gradient) which are inside the receptor identification (ID) plume must be evaluated. In this case, each of the site property boundaries is designated as a line receptor. A transition well in the direction of the property boundary with the most limiting SSTL must also be monitored. If a guard well is less than 50 feet from the source well, no transition well is required.

For the soil leaching to groundwater ingestion pathway, potential receptors, annual groundwater monitoring is required for a minimum of three years as provided in 135.12(4)"c". The well with the maximum groundwater concentration located within the soil plume (defined to the soil leaching SSTL) must be used to monitor soil leaching.

Although all monitoring wells which exceed a Tier 1 level are not required to be monitored annually for potential receptors, they should be properly maintained because they must be sampled and meet target levels before requesting to reclassify the site as no action required (i.e., 'E' wells - Table 1).

Potential receptors for soil vapor to enclosed space: If an institutional control is not in place, soil gas monitoring must be conducted at a minimum of once per year at the soil source in area(s) of expected maximum vapor concentration. If an institutional control is in place covering the entire soil plume (defined to the appropriate target level), the pathway is classified no action required, and soil gas monitoring is not needed. If an institutional control is in place which covers only a portion of the soil plume, soil gas monitoring must be conducted in areas not covered by the institutional control where maximum vapor concentrations are expected (e.g., at adjacent property boundaries). Refer to sections 1.5 and 3.4 of the Tier 2 Guidance for soil gas sampling procedures.

Exit monitoring criteria: Exit monitoring criteria for groundwater pathways have been met when:

1. concentrations from the three most recent consecutive groundwater samples from all monitoring wells show a steady or declining trend; and
2. the most recent levels are below the SSTL line; and
3. concentrations from the first of three samples for source and transition wells are greater than detection limits; and
4. concentrations have not increased more than 20 percent from the first of three samples to the third sample; and
5. concentrations have not increased more than 20 percent from the previous sample; and
6. sampling events are separated by at least six months.

For soil leaching to groundwater pathways - potential receptors, annual groundwater monitoring is required for a minimum of three years as provided in 135.12(4)"c". If groundwater concentrations are below the applicable target level for all three years and a final soil sample taken from the source shows no significant vertical movement, the pathway may be reclassified as no action required. The final soil sample may be waived if the groundwater professional provides adequate justification in the SMR (under site

reclassification section) indicating soil leaching is not or will not be likely to occur. For example, the soil contamination is submerged and groundwater concentrations have declined.

Reclassification: Any site or pathway which is classified as high risk may be reclassified to low risk if in the course of corrective action, the criteria for low risk classification are established. Any site or pathway which is classified as low risk may be reclassified to high risk if in the course of monitoring, the conditions for high risk classification are identified. Sites subject to department-approved institutional or technological controls are classified as no action required if all other criteria for no action required classification are satisfied.

All actual and potential receptors must be evaluated at least annually. Actual receptors must be evaluated to ensure contaminant concentrations are not above the SSTL line for that receptor. Potential receptor areas of concern must be evaluated and the presence of no actual receptors confirmed. If new actual receptors are present or are reasonably expected to be brought into existence, the owner or operator must report this to the department as soon as this information is obtained.

For the soil leaching to groundwater ingestion pathway, potential receptors, if groundwater concentrations exceed the applicable target level in any of the three years of monitoring, corrective action is required to reduce soil concentrations to below the target level for soil leaching to groundwater. Target level refers to the Tier 1 level when there are no current or anticipated on-site institutional controls. Target level refers to the SSTL line if there is an on-site institutional control or if the property boundaries are being evaluated in anticipation of an on-site institutional control.

When to rerun the Tier 2 model: If concentrations of chemicals of concern are increasing or it appears the groundwater plume is migrating, the following actions are required:

1. A new receptor ID plume must be generated to determine which additional receptors may need evaluation if either of the following conditions occur:
 - a) the source concentration(s) increases by more than 20% (above the concentration used during the Tier 2 evaluation) for two consecutive sampling events; or
 - b) concentrations in any of the monitoring wells (included in the monitoring plan) have increased more than 20% **and** exceed the simulation value for that point.
2. Evaluate any new receptor which is within the new receptor plume even if it was no further action required for the pathway at Tier 2. (To add new receptors, see the SMR Receptor Summary Tables section under Report Preparation in this guidance).

In some cases it may not be necessary to re-evaluate all receptors if the source concentration increases. However, the groundwater professional must provide justification with supporting documentation for not re-evaluating receptors (e.g., source well concentrations have increased, but concentrations in all other wells in the monitoring plan have decreased; there were no actual receptors at Tier 2, and there are no new receptors within the newly generated receptors ID plumes; and new receptors have been identified by the newly-generated receptor ID plumes, which are not the most controlling, and corrective action is being taken to meet the more stringent SSTLs).

A **no action required** site classification may be proposed if the criteria for pathway clearance have been met for all pathways. Note: all corrective actions necessary to satisfy the criteria for pathway clearance must be conducted prior to submittal of an SMR which requests a no action required site classification. All corrective action supporting documentation must be submitted as attachments to the SMR, if not submitted previously. Documentation may include any of the following:

- Proof of institutional controls (copies of deed restrictions, declaration of restrictive covenants, etc.)
- Copies of notices to the IDNR Water Supply Section
- Copies of notices to county authorities who issue private water supply construction permits
- Report of soil excavation activities
- Report of plastic water line replacement or relocation
- Copies of notices to utility companies who supply water to the area of concern
- Copies of notices to authorities responsible for sanitary sewer construction

Refer to Tier 2 SCR Guidance -version 2.17, (particularly sections 5.5 through 5.7) for detailed descriptions of the corrective action documentation requirements.

Report Submittal and Review Process

Report submittal: The SMR must be submitted to the department **within 30 days of the end of the calendar quarter in which the samples were collected.** Generally, for annual monitoring, the SMR due date is October 30th of each year. Reports not submitted in the format required by this document and subrule 567-135.12 of the Iowa Administrative Code (IAC) are considered to be incomplete and will be rejected. For low risk sites, the monitoring certificate may be invalidated and the site reclassified to high risk if it is determined by the department that the owner of the site is not in compliance with the requirements specified in the monitoring certificate [135.12(10)a].

A blank copy of the SMR form is attached. The groundwater professional must complete the form using the Tier 2-version 2.2 software and the Word for Windows SMR document. Both the Tier 2-version 2.2 software and the SMR form Word for Windows document are available on the DNR web page (<http://www.state.ia.us/epd/ust/>). Upon request, a disk containing both files may be obtained from the IDNR Records Center by calling 515/242-5818. A hardcopy of the completed SMR **and the disk with the SMR data file** must be submitted to the department.

Send one copy of the completed SMR to the Iowa Department of Natural Resources, LUST Coordinator, Wallace Building, Des Moines, IA 50319-0034 and, if the state UST Fund is being used, one copy to GAB Robins, 2600 72nd Street, Suite A, Des Moines, IA 50322.

Review process: Upon receipt of the SMR, the department may either conduct a cursory review of the report for completeness relying on the groundwater professional for accuracy and compliance with the department's rules, or conduct a more thorough review to determine whether the report is complete, accurate, and in compliance with the department's rules. Incomplete SMRs and SMRs not submitted in the format required by this document will be rejected.

Report Preparation

A response must be provided for questions appropriate for the type of monitoring being conducted, unless directed otherwise in the instructions. However, please try to limit the response to the area provided. If an expanded response is required, reference it as an attachment.

The completed SMR form must be accompanied by the maps and appendices listed in the "Requirements for Report Maps and Appendices" section at the end of this guidance. Title and number each appendix as listed in bold. Attach the appendices in the same order as listed. Ensure all maps are legible, have a north arrow, scale, and legend. If possible, maps should either be prepared on 8½ x 11-inch paper or reduced to that size by a single fold, preferably with north at the top of the page.

Cover page: Fully complete the cover page of the SMR. This page may be partially completed and printed using the SMR module of the software. However, some sections including the check boxes and signatures of the responsible party and certified groundwater professional must be completed by hand. The street address is sufficient for site identification purposes. If a rural route, box number, or street without a house number is used, then a legal description must be provided using the township, range, and ¼, ¼, ¼, ¼ section. If a no further action certificate is requested, an accurate legal description of the site, as found in the deed or mortgage, must be provided (a legal description obtained from a tax form is **not** acceptable). The legal description may be submitted as an attachment if the space provided on the cover page is insufficient. Check the appropriate box describing the type of monitoring performed at the site and indicate if this is an exempt granular bedrock site. Indicate whether site reclassification is recommended, and if so, check the box for the **new** classification.

Checklist page: A checklist is included with the form to assist with report compilation. The checklist may be printed from the software, but the check boxes for those documents which have been attached must be completed manually. Please place the attachments in the same order as listed on the checklist page. It is the responsibility of the groundwater professional to determine what site-specific information must be included to produce a complete report.

SMR Receptor Summary Tables: The Receptor Summary Tables (e.g., Table 2) are completed and printed using the software. Separate tables are generated for the groundwater source, soil leaching, and soil vapor/soil-plastic water line.

Each receptor classified low or high risk **at Tier 2** appears in these tables. Because the SMR module is linked to the “Current Risk” column of the Tier 2 Receptor Summary pages to obtain these receptors, it is critical the “Current Risk” column is correctly completed for each receptor on the **Tier 2 Receptor Summary** screens. Any receptor marked “N” is **not** inserted into the SMR Receptor Summary Tables. Receptors for which the box is left blank in the “Current Risk” column will be carried over to the SMR Receptor Summary.

If new receptors are identified during the course of site monitoring activities, these can be evaluated using the SMR module. New receptors are input through the Receptors sub-menu of the Tier 2 software. However, before evaluation under SMR, SSTLs must be determined using Tier 2 modeling and the original Tier 2 data. At Tier 2 for a new receptor, the “Current Risk” on the Tier 2 Receptor Summary screen must be left blank. As new data are entered into the SMR, these data are compared to the SSTL to classify the receptor. Any new receptors identified since the Tier 2 SCR was completed have no classification under the “Tier 2 Risk” column in the SMR Receptor Summary Tables. Under “Last Risk”, the receptors must be identified as “New”, since these have not been previously classified.

The “Tier 2 Risk” column responses are fixed and based on the Tier 2 evaluation. The “Last Risk” column shows the risk calculated by the software based on the previous monitoring event results. “Computed Risk” is determined by the software and is based on the most recent monitoring results for each chemical. The user must indicate whether corrective actions have been taken (Yes or No) since the submittal of the Tier 2 SCR. Therefore, “Current Risk” is either the computed risk or risk selected by the user based on corrective action measures taken.

Table 2

SMR, GROUNDWATER SOURCE, RECEPTOR SUMMARY TABLE										LUST No.	
Type	Receptor	Tier 2 Risk H/L/N	Last Risk H/L/N /New	Computed Risk H / L / N						Corr. Action Taken? Y / N	Current Risk H/L/N
				Group 1				TEH			
				B	T	E	X	D	W		

Potential receptor summary table: Potential receptor areas of concern must be evaluated at least annually and the presence of no actual receptors confirmed. Surveys for new, removed, and replaced receptors must be conducted within the larger area of either of the following: 1) the receptor ID plume for the applicable receptor type, or 2) the receptor-specific distance from the source listed in the brackets after each question. Answer the questions as either “yes” or “no” (“unknown” is not an appropriate response). Provide the names of all people contacted, the company names and addresses, phone numbers and the dates of contact. For the first two questions, regarding new drinking and non-drinking water wells, the certified groundwater

professionals only need to report well information from public entities (i.e., county health or zoning departments, IDNR, Water Supply Section, Geological Survey Bureau, and water well owners). Provide documentation, if applicable (i.e., well plugging forms, utility maps, etc.), as an attachment. For those receptors which require an on-site survey (i.e., those dealing with buildings), the name of the person performing the survey should be listed as the contact name. If actual receptors are present or reasonably expected to be brought into existence, the owner or operator must report this fact to the department as soon as practicable. See the following example (Table 3):

Table 3

Potential Receptor Summary				
Receptor questions	Yes / No	Contact Name/Company Name/ Complete Address	Contact Phone #	Date
New drinking water well(s)? [1,000']	Yes	1. Ms. Emma Geologist, IDNR, Geological Survey Bureau, 109 Trowbridge Hall, Iowa City, IA 52242-1319	(319) 335-1583	09/01/99
		2. Name of contact at county health or zoning departments, street, city, IA zip code	(515) 555-1212	09/10/99
		3. Name of contact at IDNR Water Supply section, street, city, IA zip code	(515) 281-7814	09/09/99
		4. Name of contact - water well owners, street, city, IA zip code	(712) 555-1313	09/06/99
New buildings with basements ? [200']	No	Mr. Austin Bauers, Yeah Consulting Co., 123 Main St., Hometown, IA 55555	(111) 555-1111	09/02/99

Receptors: status change: List and describe all receptors whose status has changed since the previous receptor evaluation (e.g., “Private Well A was plugged, a new housing development was built adjacent to the property”, etc.). Clearly label and show the location of any new receptors or removed receptors on the Site Vicinity Map.

Site reclassification: Mark whether the **site** should be reclassified. If yes, mark the current site classification. Provide justification for the reclassification. If a no action required site classification is being proposed, all corrective actions and any applicable confirmation sampling or exit monitoring must be completed and summarized here. If the groundwater professional has determined the final soil sample for clearing the soil leaching pathway is not necessary, adequate justification that soil leaching is not occurring, or will not likely occur, must be provided here. If indoor vapor sampling has been conducted, identify which receptors were sampled and indicate whether receptors and/or pathways are cleared. Provide all necessary documentation and additional justification in Appendix 12.

SMR Groundwater Analytical Data Table: After new monitoring data are entered and sorted, this table must be printed from the software. Provide the boring or monitoring well number and analytical data in the appropriate columns. Analytical results for groundwater samples must be expressed in micrograms per liter (ug/L). All elevations are to be reported as feet above sea level (ASL); ground surface, and top of screen (TOS) measured to the nearest 0.1 foot; top of casing (TOC) and static water level (SWL) measured to the nearest 0.01 foot. An adequate number of water levels must be measured in each well to determine the static water level.

SMR Soil Analytical Data Table: Complete the table with any new soil data collected since the submittal of the Tier 2 SCR. Provide the boring, monitoring well label, sampling date; ground surface and sample depth elevations in feet above sea level (ASL) measured to the nearest 0.1 foot and static water level

elevation (SWL) in feet ASL measured to the nearest 0.01 foot. Analytical results for soil samples must be expressed in milligrams per kilogram (mg/kg). Provide the printout generated from the SMR module.

SMR Soil Gas Analytical Data Table: Complete the table with any new soil gas data collected since the submittal of the Tier 2 SCR, as well as any previously collected soil gas data. Provide the vapor sample identification number, sampling date, ground surface and sample depth elevation in feet above sea level (ASL) measured to the nearest 0.1 foot, and static water level elevation (SWL) in feet ASL measured to the nearest 0.01 foot. Analytical results for soil gas must be expressed in ug/m³.

Soil SSTL Tables: These Soil SSTL Tables are summaries of SSTLs calculated at Tier 2 for the soil pathways. These tables are printed from the software.

Groundwater / Soil Leaching Monitoring Plan Summary: Provide the Groundwater / Soil Leaching Monitoring Plan Summary, which is generated from the SMR module. This is the updated monitoring plan. When concentrations in guard wells (G) exceed the SSTL for a receptor, these are flagged with asterisks (**). If flagged wells appear in the monitoring plan summary, the groundwater professional must consider whether receptor re-evaluation is necessary and whether a guard well needs to be replaced. Provide an explanation for any changes made to the monitoring plan in Appendix 1 - Evaluation of Analytical Data.

Soil Gas Monitoring Plan Summary: Provide the monitoring plan from the Tier 2 SCR. If necessary, note any changes to the plan (e.g., “soil gas and confirmation samples were collected during the previous monitoring event. Soil gas results have cleared the soil vapor to enclosed space pathway, so additional soil gas sampling is no longer required”).

Requirements for Report Maps and Appendices

Attach the following appendices to the end of the Site Monitoring Report form in the order listed. Title each appendix consistent with the bold print below:

1. Evaluation of Analytical Data. Provide a comprehensive evaluation of the most recent sampling data. Discuss whether reclassification for the site is appropriate. If the concentrations are increasing in any wells which are being monitored, the groundwater professional must determine whether re-running the Tier 2 model and re-evaluating receptors is necessary (refer to criteria on page 6). Provide a detailed summary and conclusions of the re-evaluation. If the monitoring plan has been modified since the approval of the Tier 2 SCR, explain what was changed and provide a justification for the changes (e.g., “the plume has migrated downgradient, so a new guard well needed to be installed. The new guard well, MW13, replaces the old guard well, MW10”).

2. Site Plan Map. Provide a scaled map (scale 1 inch = 20 to 50 feet) for the site and the immediate surrounding area. It must show, but is not limited to, the following: location and content of existing and removed USTs; product lines and dispensers; pertinent site features (i.e., buildings, property boundaries, roads, wells, waterways, sinkholes, etc.); location of subsurface utilities; and any evaluated receptors including new, removed, and Tier 2 receptors. Label the street names.

3. Site Vicinity Map. Provide a scaled vicinity map (scale 1 inch = 200 to 500 feet) showing the site in relation to surrounding general features. It must show, but is not limited to, the following pertinent general features: roads; waterways; sinkholes; **property boundaries**; existing structures such as schools,

hospitals, child care facilities, and other buildings; any new or removed receptors not identified on the Site Plan Map. It must also show which areas are zoned for residential use.

4. Soil Summary Corrective Action Map. If soil pathways have been classified high risk at Tier 2, provide a copy of the Soil Summary Corrective Action Map submitted with the Tier 2 SCR.

5. Soil Contamination / Soil Gas Map(s). Provide a copy of the Soil Contamination Map from the Tier 2 SCR for the most-limiting chemicals for both Group 1 (BTE) and Group 2 (TEH) chemicals. If soil or soil gas samples have been collected since the submittal of the SCR or Tier 2 SCR, clearly label the sample locations and indicate the analytical results.

6. Groundwater Summary Corrective Action Maps. Provide copies of the Groundwater Summary Corrective Action Maps from the Tier 2 SCR.

7. Groundwater Monitoring Results Map. Provide the map generated by the SMR software illustrating the most recent monitoring results for groundwater. The software allows the user to include receptors on this map; however, since a **legible** map is required, the receptors may be excluded, or multiple maps with different scales may be submitted.

8. Groundwater Contamination Map. Provide copies of the Groundwater Contamination Maps from the Tier 2 SCR for the most-limiting chemicals for both Group 1 (BTEX) and Group 2 (TEH) chemicals.

9. Groundwater Flow Direction Map. Provide a groundwater flow map using the most recent static water levels at the site. A minimum of three points must be used. Indicate the groundwater flow direction with an arrow. Groundwater contours and elevations at each data point used for contouring must be labeled. Contours must be consistent with observed water elevations.

10. Analytical Data Sheets. Provide copies of all laboratory data sheets including those for soil gas sample analyses and indoor vapor sample analyses, if applicable. Provide copies of all Chain-of-Custody forms. The laboratory analytical report must state whether the sample tested matches the laboratory standard for waste oil, diesel, or gasoline, or that the sample cannot be reliably matched with any of these standards. **Laboratory data sheets which have been previously submitted to the department do not need to be included in this appendix.**

11. Boring Logs/ Monitoring Well Construction Diagrams. If additional borings/ monitoring wells have been placed at the site since the submittal of the previous report, complete and attach DNR Form 542-1392 for each boring/monitoring well. **Soil boring logs/ monitoring well construction diagrams which have been previously submitted to the department do not need to be included in this appendix.**

12. Documentation. If applicable. Refer to Reclassification section on page 6. If indoor vapor sampling has been conducted, submit the analytical data sheets. Provide a description of the methods used to collect the samples, and an explanation for why the method provides representative results. Identify which receptors were sampled and indicate whether receptors and/ or pathways are cleared.

13. Best Management Practices Plan. Provide a Best Management Practices Plan in the initial SMR. The plan must include maintenance procedures, schedule of activities, prohibition of practices, and other management practices, or a combination thereof, which, after problem assessment, are determined to be the most effective means of monitoring and preventing additional contamination of the groundwater and soil. The plan must also include a monitoring proposal containing sufficient sampling points to ensure the detection of any significant movement of or increase in contaminant concentration.