MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY – REMEDIATION & REDVELOPMENT DIVISION
PO BOX 30426, LANSING, MI 48909-7926, Phone 517-373-9837, Fax 517-373-2637, E-mail rpf@michigan.gov

LEAKING UNDERGROUND STORAGE TANK
FINAL ASSESSMENT REPORT COVER SHEET

INSTRUCTIONS: COMPLETION OF THIS REPORT WITH ALL APPLICABLE INFORMATION IS MANDATORY pursuant to Part 213, Section 21316a of 1994 PA 451, as amended (PA 451). The Certified Underground Storage Tank Professional (CP) MUST sign below. Failure to submit a report within the stated time period may result in administrative penalties as provided for in Part 213, Section 21313a of PA 451. Please return this completed report and associated attachments to the appropriate RRD district office. See form EQP4410 for a complete list of RRD district offices.

FACILITY NAME:			FACILITY ID NUMBER:
STREET ADDRESS:	CITY:	STATE:	ZIP:
DATE(S) RELEASE(S) DISCOVERED:	CONFIRMED RELEASE NUMBER(S):		
OWNER/OPERATOR (O/O) NAME:			
O/O STREET ADDRESS:	CITY:	STATE:	ZIP:
CONTACT PERSON:			PHONE NUMBER:

ANSWER ALL QUESTIONS (DO NOT LEAVE BLANKS):

1. Michigan RBCA Site Classification (1-4): _____

2. Substance(s) released: ☐ Gasoline ☐ Diesel ☐ Ethanol E-10___ E-85___ ☐ Other: _____

3. Corrective Action proposed? Soil: _____ Groundwater: _____

4. Proposed Corrective Action includes: In-situ injection? ☐YES ☐NO Request for mixing zone determination? ☐YES ☐NO
Groundwater not in an aquifer determination? ☐YES ☐NO Institutional controls regarding off-site migration? ☐YES ☐NO

5. Proposed Institutional Controls: ☐ None ☐ Notice of Corrective Action ☐ Restrictive Covenant ☐ Ordinance
☐Other _____ Are Proposed Institutional Controls: ☐ On-site ☐ Off-site

6. Has contamination migrated off-site above Tier 1 Residential RBSLs? ☐YES ☐NO
If YES, have off-site impacted parties been notified per Section 21309a(3) of Part 213? ☐YES ☐NO

7. Predominant groundwater flow direction: _____ Depth to groundwater: _____

8. Free product present: a. Currently? ☐YES ☐NO If YES, total gallons recovered since last report: _____
b. Previously? ☐YES ☐NO If YES, total gallons recovered to date: _____

9. Since last report: cubic yards of soil remediated _____ gallons of groundwater remediated _____

10. Totals to date: cubic yards of soil remediated _____ gallons of groundwater remediated _____

11. Have vapors been identified in any confined spaces (basement, sewers, etc.)? ☐YES ☐NO

12. Drinking water supply affected as a result of a release from this facility? Currently: ☐YES ☐NO Previously: ☐YES ☐NO
Indicate type and # of wells impacted: ☐ Private, # = _____ ☐ Public Type II/III, # = _____ ☐ Municipal, # = _____

13. Estimated distance and direction from point of release to nearest: Private well: _____ Municipal well: _____
Surface water/wetland/storm sewer: _____ Is site within a wellhead protection zone? ☐YES ☐NO

14. Maximum MTBE concentration found in groundwater to date is_____ ppb in MW#_____ on _____ (date).

CERTIFICATION OF REPORT COMPLETION

I, the undersigned Certified Professional (CP), on behalf of _____ *[Insert QC Name]* certify on this _____ day of _____, 20____, that I provided direct oversight of all corrective actions reported herein that were undertaken at this facility while retained as CP, and confirm that the corrective actions have been completed in compliance with statutory requirements, department guidance and policy applicable at the time the work was completed. I attest to the best of my knowledge and belief that the statements in this document and all attachments are true, accurate, and complete. Pursuant to Section 21324 of Part 213, Section 21548 of Part 215, and Rule 324.21514(3) I understand that any false or misleading information contained in this document and all attachments may constitute fraud and may result in the initiation of formal enforcement proceedings including but not limited to revocation of QC/CP certification, permanent suspension from qualification as a QC/CP, and/or civil fines.

_____ _____ _____
CP Original Signature - (**REQUIRED**) Date PRINT QC PROJECT MANAGER'S NAME

_____ _____
PRINT CP's Name NAME OF QUALIFIED CONSULTING FIRM

CP ID # _____ QC ID: **Z**_____

_____ PHONE:_____ FAX:_____
Address City State Zip

Instructions - Utilize the following checklist to ensure that all required information is provided in the Final Assessment Report (FAR). Include this checklist as the table of contents. The order in which the information is provided is at your discretion. Each page of the report (including the cover sheet, table of contents, appendices, figures, etc.) should be consecutively numbered. The location column should be completed with the appropriate page number for each item. You may reference previously submitted materials by specifying the location within that document. Maps, tables, figures, etc. should be combined as appropriate.

All information required by Part 213 to be included in the FAR **must** be provided, and all sections of the report must be completed. If any items are not applicable to the site, provide a justification regarding the absence of this information in the appropriate section of the report.

Refer to applicable Operational Memoranda and guidance materials available from the RRD's homepage www.michigan.gov/deqrrd.

If an Initial Assessment Report (IAR) has not been submitted for this release, provide all required information from the IAR not included below.

Section	Table of Contents	Page

1.0 REPORTING AND RESPONSE TO RELEASES INVOLVING FREE PRODUCT

If free product has not been discovered, then proceed to Section 2.0.

A. Indicate whether free product has been discovered subsequent to the submission of the IAR. _____

B. Describe initial response actions performed at this site to address the presence of free products specified in Sections 21307(2)(c) and (f), and (3)(b) and (c), 21308a(1)(b)(*xviii*). _____

C. Attach the RRD Free Product Recovery Status Report (EQP 3850). _____

D. Include a schedule for subsequent Free Product Report submittals. _____

2.0 SITE CHARACTERIZATION INFORMATION

2.1 SCALED SITE MAPS

A. Provide a scaled area map (or maps) which includes the following**:**

1. Site boundaries in relation to the surrounding area and the nearest major roads. _____
2. Location and depth of nearby underground sewers and utility lines. _____
3. Location of nearby surface waters or wetlands. _____
4. Location and screened depth of all off-site wells (municipal, residential, production, irrigation, etc.) within two years groundwater travel time of the property line, which may be dependent on the pumping rates of the identified well(s). _____
5. Location of all nearby delineated well-head protection areas. _____

B. Provide a scaled site map (or maps) which includes the following**:**

1. Location of fill ports, piping, dispensers, and other pertinent system components for all UST systems currently or formerly at the facility (*prior to excavation if tanks have been removed*). _____
2. Location of the release and the component of the LUST system from which the release occurred. _____
3. Location of adjacent buildings, roadways, paved areas, or other structures. _____
4. Location of all on-site wells and screened intervals. _____
5. Location of soil, groundwater, surface water, sediment, or air samples, as applicable. _____
6. Excavation dimensions and sample locations if applicable. _____

2.2 SCALED CROSS-SECTIONAL DIAGRAMS

A. Provide scaled cross-sectional diagrams of buried utility corridors, including the pipe diameter, the type of backfill, and the trench depth.

B. Provide scaled cross-sectional diagrams depicting the soil lithology and the contaminant distribution, including sampling intervals and boring depths.

C. Provide scaled cross-sectional diagrams depicting the site hydrogeology, including the groundwater potentiometric surface, the monitoring well screened intervals, and sampling intervals.

2.3 DELINEATION OF THE EXTENT OF CONTAMINATION

A. Indicate whether additional site assessment activities were conducted subsequent to the submission of the IAR. If so, describe which environmental media were investigated (e.g., soil, groundwater, surface water, air).

B. Describe the assessment activities conducted. Indicate whether the Work Plan was implemented as outlined in the IAR. If not, describe any changes made, and provide a justification.

2.4 SOIL CONDITIONS AND CHARACTERISTICS

A. Describe the soils encountered in the vadose zone.

B. Describe any soil contamination which has been detected.

C. Describe any soil remediation or disposal activities performed subsequent to submittal of the last report, including the total volume of soil remediated or disposed to date. Indicate the disposal location, and provide proof of disposal (e.g., invoices, not load tickets).

D. Provide a site diagram which depicts the horizontal and vertical extent of on-site and off-site soil contamination. Include the maximum concentrations and sample depths.

E. Provide the volume of impacted soil remaining in the vadose zone.

F. Provide a table with field screening and laboratory data showing the results of all soil sampling performed to date for the required parameters. The RRD may request copies of the laboratory data sheets, chain-of-custody forms, and all available QA/QC information The table should include the following:

1. Sample ID
2. Sample Depth
3. Date of collection
4. Dates of extraction and analysis
5. Method Detection Limits
6. Analytical method or field screening instrument

G. Provide a table which compares the maximum remaining soil contaminant concentrations for each required parameter to the appropriate RBSLs. If residential leaching to groundwater RBSLs are not utilized for comparison, provide an explanation.

H. Provide soil boring logs not previously submitted.

I. Identify any known soil contamination not related to the release, and the source if known.

2.5 GROUNDWATER CONDITIONS AND CHARACTERISTICS

A. Describe the site hydrogeology, and include the following:

1. Depth to groundwater and method of determination

2. Whether the groundwater is potable and/or not in an aquifer. Provide the basis for this determination.

3. Whether the groundwater is currently used as a source of drinking water, either residential or municipal

4. Whether groundwater is being used for a purpose other than drinking water

5. Whether more than one groundwater unit is present beneath the site

6. Depth to bottom of water-bearing layer

7. Predominant soil type in water-bearing stratum (*e.g., sand, silt*)

8. Effective porosity of water-bearing stratum (in $cm^3_{void}/cm^3_{matrix}$), and describe how it was determined

9. Hydraulic conductivity, and describe how it was determined

10. Groundwater flow rate and direction

11. Lateral component of the hydraulic gradient

12. Hydrogeologic conditions that could influence flow direction

13. Magnitude and direction of the vertical component of the hydraulic gradient

B. Attach copies of the following:

1. Boring logs not previously submitted

2. Well construction diagrams not previously submitted

3. Potentiometric surface map

4. Elevation data (USGS datum preferred), including top-of-casing and grade elevations, and depth to groundwater

C. Provide scaled maps and cross-sectional diagrams, showing the screened and/or sampling interval, which depict the extent of impact and the maximum concentrations.

D. Indicate whether more than one groundwater unit has been impacted.

E. Describe any groundwater remediation activities performed subsequent to submittal of the IAR, including the total volume of groundwater remediated and the disposition of this groundwater.

F. Indicate whether the plume currently extends off-site or is expected to migrate off-site.

G. Provide a table with field screening and laboratory data showing the results of all groundwater sampling performed to date for the required parameters. The table should include the following:

1. Sample ID
2. Sample depth and/or screened interval
3. Date of collection
4. Dates of extraction and analysis
5. Method Detection Limits
6. Analytical method or field screening instrument

(NOTE: The RRD may request copies of the laboratory data sheets, chain-of-custody forms, and all available QA/QC information.)

H. Provide a table which compares the maximum remaining groundwater contaminant concentrations for each required parameter to the appropriate RBSLs. If residential health-based/aesthetic drinking water criteria are not utilized for comparison, provide an explanation.

I. Provide a chronological summary of the results for each sampling location.

J. Identify any known groundwater contamination not related to the release, and the source if known.

2.6 CONDITIONS AND CHARACTERISTICS IN OTHER ENVIRONMENTAL MEDIA

A. Describe the evaluations conducted to determine if other environmental media have been impacted.

B. Describe the extent and distribution of any contamination present in any environmental media other than soil or groundwater.

C. Describe any actions taken in response to contamination in other environmental media.

D. Provide a table with the field screening and laboratory data showing the results of all sampling performed to date in the other specified environmental media.

(NOTE: The RRD may request copies of the laboratory data sheets, chain-of-custody forms, and all available QA/QC information.)

E. Identify any known contamination in the other specified media not related to the release, and the source if known.

3.0 SITE CLASSIFICATION

A. Indicate the current Site Classification Level.

B. Provide a justification for this classification. Identify the current conditions that are the basis of the classification.

C. Indicate whether the site classification has changed since the submission of the IAR.

4.0 RESULTS OF THE RBCA EVALUATION

4.1 EXPOSURE PATHWAY CHARACTERIZATION

A. Identify and describe the following (Figure 2, Exposure Scenario Evaluation Flowchart, provided in the *ASTM RBCA E 1739-95*, may be utilized):

1. Potential source(s)
2. Potential transport mechanism(s)
3. Potential exposure route(s)
4. Potential receptor(s)

B. Indicate which pathways are newly identified or have significantly changed since the submission of the IAR. Describe these pathways and any potential impact on the selection of exposure route(s) and potential receptors for this RBCA evaluation relative to the RBCA evaluation included in the IAR.

C. List each possible exposure pathway(s) for each land use and sensitive habitat (if applicable) for the site. Provide an explanation for eliminating any pathways.

NOTE: A complete pathway must include three necessary elements:

1) a source (e.g., contamination);
2) a mechanism by which the contamination can become available to result in exposures at the source or via migration to other locations (e.g., free product and contaminated groundwater movement along a buried utility corridor); and
3) an individual who may come into contact, ingest, or inhale the contamination at the point of exposure (e.g., a utility maintenance worker digging to repair the line).

Examples of a complete pathway include:

1) inhalation of impacted soils by an on-site construction worker
2) impacted soils leaching into potable ground water and being used by a nearby resident for drinking and bathing
3) inhalation of vapors resulting from the migration of free product by a neighboring industrial worker
4) impacted groundwater discharging to wetlands.

4.2 OPTIONAL TIER II OR TIER III EVALUATION

A. Indicate whether a site-specific Tier II or Tier III evaluation has been conducted for this site.

B. If applicable, identify and justify where alternate assumptions or site-specific information were used in place of the default assumptions .

NOTE: If a Tier II evaluation was performed and described in the IAR, explicitly indicate where different assumptions or site-specific information were used in this Tier II or Tier III evaluation and why the change was justified.

C. Provide the calculations and reference citations supporting the development of the relevant Tier II or Tier III SSTLs.

D. Provide a table which compares the maximum remaining contaminant concentrations for each required parameter for all media to the appropriate RBSLs and the calculated SSTLs. Identify all applicable land use scenario(s), and indicate whether or not there is an exceedance of the RBSLs or the SSTLs.

4.3 MODELING

Provide modeling documentation.

5.0 FEASIBILITY ANALYSIS

A. Identify the potentially applicable corrective actions that were considered for the facility to reduce the volume, toxicity and/or mobility of the released regulated substances (*both on-site and off-site, as applicable*), noting the principal advantages and disadvantages of each listed alternative. Provide the estimated cost of each alternative corrective action, the effectiveness, feasibility, and the time needed to implement and complete each alternative.

B. Document the rationale for selecting this (these) corrective action(s) by discussing how the selected corrective action(s) will:

1. Be protective of human health and the environment
2. Comply with applicable or relevant and appropriate requirements
3. Meet the requirements of the RBCA process
4. Be a permanent solution (to the maximum extent possible)
5. Be cost-effective

C. Indicate whether a pilot study has been conducted to demonstrate the performance of any treatment system associated with the corrective action. Describe the pilot study or testing that was conducted and present the results. If a pilot study or testing was not conducted, provide the rationale.

6.0 CORRECTIVE ACTION PLAN

6.1 DESCRIPTION OF THE CORRECTIVE ACTION

A. Describe the corrective action to be implemented at the facility and the anticipated cleanup goals.

B. Attach a schematic drawing of the remedial system to be employed.

C. Provide site maps and diagrams depicting capture zones/zones of influence, system layout, and anticipated system injection and/or extraction rates.

D. Provide a contingency plan to be implemented if the corrective action is ineffective.

6.2 AIR QUALITY MONITORING

Describe the ambient or indoor air quality monitoring that will be conducted during the implementation of the corrective action and include the following:

1. Air sampling locations
2. Analytical parameters to be monitored
3. The action level for each parameter, and the basis for the action level
4. The monitoring device(s) to be used
5. The monitoring frequency
6. The procedure that will be followed if the action level(s) is/are exceeded

6.3 OPERATION AND MAINTENANCE

Attach the treatment system Operation and Maintenance (O&M) plan including the information required by Section 21309a(2)(b).

6.4 PERFORMANCE MONITORING

A. Identify the environmental media to be monitored during the corrective action and indicate whether the monitoring needs to include off-site areas.

B. Attach the performance monitoring plan, including the information required by Section 21309a(2)(c)(*i*), (*iii-xii*).

C. List the indicator parameters for the performance monitoring.

NOTE: The RRD must be notified immediately if ineffective corrective action is indicated by monitoring activities.

6.5 SCHEDULE FOR IMPLEMENTATION OF THE CORRECTIVE ACTION

Attach the schedule for implementing the corrective action which should include the following:

1. The proposed corrective action start date
2. The dates of key interim milestones (specify)
3. Dates for submittal of the O & M/Performance Monitoring reports. The frequency of reporting should be discussed with the RRD Project Manager.
4. The proposed corrective action completion date
5. The expected performance monitoring/verification sampling completion date

6.6 NOTICES AND RESTRICTIONS

If the corrective action plan does not require the use of institutional controls to restrict land or resource use, then proceed to Section 6.7.

A. Identify which notices or restrictions will be filed based on the proposed corrective action. Refer to Storage Tank Division Operational Memorandum No. 12, *Institutional Controls and Public Notice Requirements and Procedures.*

NOTE: If the RRD form(s) provided in Storage Tank Division Operational Memorandum No. 12 was/were not utilized, submit a draft copy of the alternate form(s) for approval prior to filing.

B. Describe all land use and/or resource limitations associated with the proposed corrective action.

C. Identify the individuals or segments of the public to be provided notice of the proposed land use restrictions or limitations to be placed on resource use. Include the names and addresses of the affected parties (unless large segments of the public will be provided notice, e.g., users of a municipal water supply system).

D. Provide a map depicting the location(s) of the individuals or segments of the public to be noticed.

6.7 FINANCIAL ASSURANCE MECHANISM

A. Attach, if applicable, a financial assurance agreement, as provided for in R29.2161 to R29.2169 of the Michigan Administrative Code, for approval by the RRD to assure the effectiveness and integrity of the corrective action.

B. If a financial assurance mechanism is (or will be) provided, include the following:

1. The date the financial assurance mechanism was submitted to the RRD

2. The amount of the financial assurance mechanism

3. A description of the items covered by the financial assurance mechanism, including the following:

- **a.** Monitoring
- **b.** Operation & Maintenance
- **c.** Oversight
- **d.** Other (specify)

6.8 CORRECTIVE ACTION DISCHARGES

If the corrective action will result in any discharge during its implementation, complete the following:

1. Describe the activity(ies) representing the source(s) of the discharge

2. Provide the following information regarding the planned discharges:

- **a.** Source of the discharge
- **b.** Location of the discharge
- **c.** Describe any treatment that will be performed prior to the discharge
- **d.** Indicate whether any permits are required for the discharge. Describe what steps have been taken to obtain the necessary permits
- **e.** Indicate whether any permit exemptions are required for the discharge, and include a copy of the Permit Exemption Acceptance