	OFFICE OF WASTE MANAGEMENT AND RADIOLOGICAL PROTECTION POLICY AND PROCEDURE		DEPARTMENT OF ENVIRONMENTAL QUALITY
Original Effective Date: January 3, 2013 Revised Date: Reformatted Date:	Subject: Off-Site Corrective Action Procedures During and After Fire and/or Explosion Incidents at Hazardous Waste Management Facilities Licensed under Part 111 of the NREPA		Category: <input type="checkbox"/> Internal/Administrative <input type="checkbox"/> External/Non-Interpretive <input checked="" type="checkbox"/> External/Interpretive
Division/Office and Program Names: OWMRP - Hazardous Waste Program	Number: OWMRP-111-25		
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A Department of Environmental Quality (DEQ) Policy and Procedure cannot establish regulatory requirements for parties outside of the DEQ. This document provides direction to DEQ staff regarding the implementation of rules and laws administered by the DEQ. It is merely explanatory; does not affect the rights of, or procedures and practices available to, the public; and does not have the force and effect of law.

INTRODUCTION, PURPOSE, OR ISSUE:

Information provided in this policy is intended to promote consistency in responses to fire and/or explosion incidents at hazardous waste management facilities licensed under Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), and ensure the most effective protection of public health and the environment. The purpose of this policy is to provide staff of the Office of Waste Management and Radiological Protection (OWMRP) with specific directions for conducting hazardous waste management facility operating license (License) application reviews and for coordinating response actions when a fire and/or explosion incident occurs.

AUTHORITY:

R 299.9607(1) of the administrative rules promulgated pursuant to Part 111 states:

Owners or operators of hazardous waste treatment, storage, and disposal facilities shall maintain a contingency plan for the facility and comply with 40 CFR Part 264, Subpart D, regarding the plan and emergency procedures, unless otherwise specified in this rule.

STAKEHOLDER INVOLVEMENT:

Staff of the OWMRP invited representatives from each of Michigan's eleven commercial treatment, storage, and disposal facilities (TSDFs) and from two of Michigan's captive TSDFs (The Dow Chemical Company and Dow Corning Corporation) to participate in a work group to recommend actions that could be taken to minimize fire and/or explosion incidents at licensed TSDFs. Fourteen representatives from twelve of the invited TSDFs accepted the invitation to participate in the work group. The OWMRP provided the work group with a copy of the OWMRP's draft task force report for review and held a meeting with the work group to obtain input on the report's recommended actions. The OWMRP reviewed the input from the work group, incorporated suggestions from the work group into the report, and drafted a final report that was provided to each work group participant. The work group did not express any controversy with regards to the recommended actions that could be taken to minimize future fire and/or explosion incidents at TSDFs and, in general, the group agreed that implementation of the actions in the report could be beneficial.

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PROCEDURES:

A License contains standard language that the Contingency Plan must address emergencies (fires, explosions, threats to human health or the environment, releases to surface water or groundwater, etc.). Traditionally, contingency plans have dealt with the immediate and acute issues of a fire and/or explosion, such as evacuation, fire suppression, and containment and control of liquids. However, a contingency plan is also the best place to address the issues posed by an off-site release of hazardous waste constituents caused by a fire and/or explosion. This is because the Contingency Plan outlines a series of specific actions that the licensee will follow if an incident occurs i.e., actions that are preplanned, rehearsed, and capable of quick implementation during an unstable situation.

OWMRP staff should refer to Appendix 1, "Responses to Fire and Explosion Incidents - Typical Steps to be Included as a Standard Operating Procedure (SOP) in a Hazardous Waste Facility Contingency Plan", for guidance on what needs to be included in a contingency plan SOP and Appendix 2, "Checklist – Tracking Facility Response Actions during and after a Fire/Explosion Incident" for recording facility activities if an incident occurs.

Oversight Procedures for OWMRP Staff in the Event of a Fire and/or Explosion:

1. Screening - Potential for Exposure: The Contingency Plan includes a requirement for the licensee to assess the potential for hazards to human health and the environment when a release occurs (see Section A7.D.3 of Form EQP 5111, Attachment Template A7, Contingency Plan). The Contingency Plan must include:
 - a. The immediate steps the licensee will implement to collect samples and gather information on the off-site release in order to adequately support decisions on an initial risk screening (real-time air data during incident, ash/soot/debris/wipe samples, pool/surface water samples, etc.). OWMRP staff may want to consider performing some level of audit sampling depending on health and safety conditions.
 - b. A requirement for the licensee to use appropriate screening criteria to evaluate all sampling data collected by the facility and other response agencies and to submit a Risk Assessment Screening Report based upon the results from the screening.
 - c. A requirement for the licensee to conduct further remedial investigation under corrective action if the Risk Assessment Screening Report confirms exceedances to applicable criteria.

2. Screening - Review Nature and Extent of Off-Site Contamination: The Contingency Plan includes a requirement to assess the extent of any release. Thus, if the fire and/or explosion results in off-site migration of hazardous substances (e.g., liquids, ash, debris), the existing Contingency Plan offers the means for the DEQ to require assessment (sampling) if the licensee has not already done so (see Section A7.D.2 of Form EQP 5111 Attachment Template A7 - Contingency Plan). It is important for the licensee to understand that their screening obligations for the nature and extent are independent of other response

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agency requirements, which are primarily focused on the active release and for concerns of acute exposures. In addition, OWMRP staff should recognize that each facility is unique and may require additional or lesser actions dependent upon site-specific conditions.

3. Corrective Action - Post Incident Off-Site Remedial Investigation: If the screening steps indicate an exceedance, require the licensee to conduct a Resource Conservation and Recovery Act of 1976 (RCRA) Facility Investigation (RFI)-type off-site investigation that includes at least the following steps:
 - a. Collect random samples from locations generated in the footprint of the release. Predetermined sample locations, defined in the Contingency Plan, may be used to facilitate the data collection process. It may be helpful for the licensee to arrange access agreements in advance to facilitate collecting samples from necessary locations.
 - b. Chemically analyze for the constituents involved in the incident or all permitted waste codes if the incident was major and sustained and the decomposition, degradation, and/or combustion byproducts that may have resulted from the incident.
 - c. Conduct a risk assessment on the data gathered. This risk assessment should include the type of details suitable for meeting the requirements of Title 40 CFR, Section 264.56(i)(6), for both acute and chronic hazards to both on-site and off-site receptors.
 - d. Conduct a corrective measures study, if needed.
 - e. Conduct remediation, if needed.

APPENDICES:

Appendix 1: Responses to Fire and Explosion Incidents – Typical Steps to be Included as a Standard Operating Procedure (SOP) in a Hazardous Waste Facility Contingency Plan

In order to promote consistency in responses to fire and/or explosion incidents at hazardous waste management facilities licensed under Part 111 of the (NREPA) and to ensure effective protection of public health and the environment, staff need to ensure that facilities have a site-specific SOP as part of their contingency plan (see Sections A7.D.2 and A7.D.3 of "Form EQP5111, Attachment Template A7, Contingency Plan"). Staff is instructed to work with their assigned facilities to make sure that the facility incorporates the steps described below into their contingency plan SOP.

The actions incorporated into the facility's Contingency Plan SOP are to be performed by the owner/operator to the extent possible. However, much of the off-site sampling and monitoring will, in all likelihood, have to be performed by a duly-authorized governmental agency as such activities can present legal barriers to a private entity (the owner/operator) and impede a timely response. The Risk Assessment (RA) Screening Report, if needed, may also require significant input and consultation from the Department of Community Health (DCH), in conjunction with local health officials, to achieve the greatest public acceptance and confidence. Governmental agencies are authorized to perform sampling and monitoring on third-party properties under

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Section 20117 of Part 201, Environmental Remediation, of the NREPA, which authorizes the DEQ to enter onto any private property to conduct sampling. For unusual circumstances, a governmental agency, such as the DEQ, may have to prepare the RA Screening Report, or hire a consultant to do so. The facility may be responsible for reimbursement to the State for costs incurred for air monitoring, sampling, preparation of the RA Screening Report, etc. As such, governmental agencies need to carefully account for any activities that they perform so that the State can invoice the owner/operator for cost recovery.

Should a formal RA be needed, the owner/operator shall be responsible for initiating, conducting, and reporting the results to the DEQ. The owner/operator should provide any information requested by the Incident Commander and governmental agencies to facilitate communication with the public (e.g., neighboring residents/businesses and healthcare providers) throughout the event.

If a fire and/or explosion incident occurs at a licensed hazardous waste management facility, staff is responsible for tracking the incident to ensure that the facility follows the steps in their SOP as appropriate. Staff needs to review contingency plans as soon as practicable to determine if they include the steps identified in this guidance. If not, staff is instructed to work with the facility to ensure that the Contingency Plan is revised as soon as possible to include a site-specific SOP through a License modification, during a renewal application, or for a new/expanded facility application. A checklist is included at the end of this guidance for staff to use to track the facility's incident response.

Actions to be Included in the Contingency Plan SOP: The following is an outline of the actions that the facility needs to include in their Contingency Plan SOP. The actions are not necessarily listed in the order in which they should occur. Containing the release and preventing harmful exposures are the first priorities.

1. The owner/operator (if the facility is equipped with air monitoring instruments), in combination with federal (U.S. Environmental Protection Agency [EPA], National Oceanic and Atmospheric Administration [NOAA]) and local hazmat response teams, needs to mobilize a team of air monitoring experts to the site as quickly as possible to begin monitoring contaminants in the ambient air.
 - a. If possible, model dispersion and deposition of the release with real time parameters to determine likely extent of plume and to assist local authorities making shelter-in-place or evacuation recommendations.
 - b. Establish air monitoring equipment in locations upwind and downwind of the incident (assign locations as soon as possible, using visual/meteorological data and update, as needed, with modeling results). Monitoring should continue until downwind data is consistent with upwind values.
 - c. Air monitoring should be conducted utilizing approved methods and should include as many of the identified substances as possible. In the event of a fire/explosion, continuous particulate matter less than 2.5 microns in diameter (PM_{2.5}) should be monitored as well. The Contingency Plan should indicate what kind of monitoring

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equipment may be necessary (e.g., PM_{2.5} meters for fire events, SUMMA canisters/Tedlar bags for volatile organic compounds released from ruptured tanks) and which ones will be readily available.

2. The owner/operator needs to record the following incident parameters as soon as site access is available to employees/witnesses.
 - a. Document the time the incident began and the duration of the overall event. Identify the specific location(s) where the incident began.
 - b. Identify employees/witnesses having direct involvement or direct knowledge of the incident.
 - c. Gather local meteorological data from the National Weather Service (point-specific data are available at the NOAA Web site) and any characteristics noted by personnel directly involved with the incident or recorded elsewhere.
3. The owner/operator needs to develop an event narrative as soon as site access is available to employees/witnesses.
 - a. Determine the sequence of events and time line leading up to and throughout the incident by reviewing with employees directly involved and other on-site peripheral witnesses (office staff, truck drivers, maintenance staff, etc.), along with accessing other tools and resources, as available (automated data records, surveillance cameras, etc.).
 - b. Identify specific event locations, materials, and equipment involved in the incident.
 - c. Identify and characterize, to the extent possible, the size and scope of the event.
4. The owner/operator, in combination with local, state, and federal regulatory and health agencies and hazardous materials (hazmat) response teams, needs to develop a comprehensive list of materials or substances involved in the incident.
 - a. Identify all of the materials/substances that may have been involved in the event, using the information obtained in the previous steps, inventory records and/or container/tank logs, laboratory data, approval records, material safety data sheets, or any other means available. Use a generic list initially, and then develop a final list from off-site records. Verify that the most up-to-date records are used.
 - b. Determine the volume, concentration, and weight of substances identified above, and determine how they may have been altered by the event (e.g., pyrolysis products, decomposition, degradation, and both known and potential mixture reactions). Based on this information, begin developing a list of compounds of potential concern.
 - c. The OWMRP shall identify the primary location where information and documents used in previous Steps 3.a and 3.b. will be housed and ensure that information critical to a response activity is kept in that location.
5. The owner/operator, in combination with the EPA, DEQ, and DCH, needs to collect post-incident samples during and/or immediately following the incident.

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- a. Develop a sampling plan for the collection of waste, groundwater, soil, ash, airborne dust, debris, surface water, and/or wipe samples, as appropriate. The plan, or the need for one, may take into account fallout density, air monitoring data, visual observation, or air modeling. A statistical sampling design may not be necessary for the screening evaluation. Post-incident, off-site sampling may not be necessary based on air monitoring data and lack of off-site migration or deposition.
 - b. Collect a sufficient number of samples to identify and characterize concentrations of substances involved in the incident. Include sampling for background concentrations.
 - c. Complete the analysis of collected samples and review by comparison to relevant screening levels. Screening levels may have to be developed for some chemicals or environmental media.
 - d. Identify and document any substances found to be present in levels that exceed screening levels.
6. The owner/operator needs to begin evaluating data from the incident as soon as it becomes available to begin screening for potential risk (Yes/No determines next steps).
- a. Screen existing data against relevant screening levels.
 - b. Prepare a RA Screening Report and submit it to the DEQ, OWMRP, for review as soon as possible but no more than 90 calendar days after the incident.
 - c. If the data is below relevant screening levels, no further action is needed upon approval of the OWMRP for off-site potential releases.
 - d. If the data is greater than screening levels, proceed immediately to Step 7 after notification from the DEQ.
7. The owner/operator must conduct an off-site RFI if needed and prepare a full RA report.
- a. Prepare an off-site RFI Work Plan and submit it for review and approval to the OWMRP within 30 days following notification from the DEQ.
 - b. Commence the RFI immediately after DEQ approval of the Step 7.a. RFI Work Plan.
 - c. Conduct an RA on the RFI data.
 - d. Prepare and submit the RFI/RA Report to the OWMRP.
 - e. Upon DEQ approval of the RFI, prepare a combined Corrective Measures Study (CMS) and Corrective Measures Implementation (CMI) Plan and submit for review to the OWMRP, if directed.
 - f. Upon DEQ approval of the CMS/CMI, implement the CMI Plan as directed.
 - g. Provide a report to the DEQ upon completion of the CMI Plan.

References ~ Off-Site Release RFI, CMS, and CMI:

- Owners/operators must conduct corrective action for releases. R 299.9629(1)(a) of the Part 111 Rules.
- Requires owners/operators to implement corrective action for releases that migrate beyond the facility boundary. R 299.9629(2) of the Part 111 Rules.

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- RCRA Guidance – Corrective Action
http://www.epa.gov/epawaste/hazard/correctiveaction/resources/guidance/gen_ca/rcracap.pdf
- Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A), Interim Final, EPA/540/1-89/002, December 1989.

Notes ~ Risk Assessments:

- 1. General Components of a Risk Assessment:** In general, a RA is the process of estimating the potential threat that environmental contaminants or hazardous substances pose to human health and the environment and includes the following:
 - a. Hazard Identification
 - b. Dose-Response Assessment
 - c. Exposure Assessment
 - d. Risk Characterization (exposure x toxicity)
- 2. Part 111 Risk Assessment:** In the event of an explosion and/or fire incident (Incident) involving contaminants or hazardous substance, as defined in Part 201 of the NREPA and R 299.9629(2) of the Part 111 Rules, implementation of corrective action for any releases beyond the facility boundary is required. As a part of the corrective action program, an assessment of actual or potential hazards to human health or the environment (Title 40 of the Code of Federal Regulations, Section 264.56(i)(6)), should be included for both acute and chronic hazards and on-site and off-site receptors. The information required includes the following:
 - a. A comprehensive list of the hazardous substance and all the likely decomposition, reaction, and combustion products that could result (especially during Incident conditions [e.g., high temperature]) from the hazardous substance involved, together with their respective chemical abstract service numbers, material safety data sheets, and amount (weight, volume, percentage) involved in the Incident.
 - b. Plot plan(s) with a north arrow, scale, details of facility boundaries, and the location of each hazardous substance at the start of the Incident. Also, include the size, location, quantities, and dimensions of any storage tanks or process equipment involved in the Incident.
 - c. Quantitative air monitoring data, gathered during the incident, utilizing current DEQ- or EPA-approved methodologies (e.g., TO-11, TO-15), for as many of the individual hazardous substance and decomposition, reaction, and combustion products involved in the Incident as possible. Monitors placed in the plume should be installed in accordance with approved site health and safety plans.
 - d. Sufficient surface water (e.g., pond or swimming pool), groundwater, soil, ash, waste, debris, airborne dust, and wipe samples to characterize any airborne fallout from the Incident. All samples should be taken from the area(s) of

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greatest concentration of airborne deposition, as determined by the air data generated during the event, visual observation, and an established accidental release model such as Computer-Aided Management of Emergency Operations or the NOAA Hybrid Single-Particle Lagrangian Integrated Trajectory model. During off-site corrective action activities (RFI, Interim Measures, CMS, CMI), deposition or release area samples should be compared with additional samples taken from outside the affected area (i.e., background). The selection of specific sampling locations for surface water and soil, inside and outside of the affected area, and ash and debris should be consistent with the DEQ, Remediation and Redevelopment Division (RRD), Sampling Strategies and Statistics Training Materials for Part 201 Cleanup Criteria (S3TM). Sampling locations for the RA Screening Report may be biased, in order to delineate contaminated areas. If an RFI is required, then a statistical sampling design may be required. The S3TM outlines a procedure whereby grid formulas can be used to grid an area, then property sampling points (parcels) are chosen by randomly selecting a subset of the grid nodes. Additionally, surface water and soil background levels may need to be determined prior to, and verified after, the hazardous waste management facility License approval.

- e. Comparison of all data in all media with the pertinent Part 201; Part 31, Water Resources Protection; and Part 55, Air Pollution Control, of the NREPA standards. If standards for any hazardous substance or decomposition, reaction, and combustion products are not available, they may need to be developed (R 299.5706 of the Part 201 Rules, R 323.1057 of the Part 31 Rules, and R 336.1229 of the Part 55 Rules).

3. Additional OWMRP Requirements and Recommendations:

The RA must include all data, together with methods/SOPs used, quantification limits, chains of custody, quality assurance/quality control data, batch quality control data, and final reports. Final report data must be presented in an organized format such as charts, spreadsheets, or other forms compatible with the state of Michigan computer software (e.g., Excel or Access) as soon as possible, but no more than 90 calendar days after the incident. The RA must be submitted to the OWMRP in both paper and electronic form.

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**Appendix 2: Checklist - Tracking Facility Response Actions During and After a
Fire/Explosion Incident**

Date Incident Started: _____ Staff Name and Office: _____

Facility Name and Location: _____

Comments: _____

1. Air Monitoring During Incident
*Owner/operator (if the facility is equipped with monitoring instruments), in
combination with federal (EPA, NOAA) and local hazmat response teams – As
soon as can be mobilized*

<u>Status</u> e.g. Pending or Complete	<u>Date Completed</u>	<u>Action</u>
		a. If possible, model dispersion and deposition of the release with real time parameters to determine likely extent of plume and to assist local authorities making shelter-in-place or evacuation recommendations.
		b. Establish air monitoring equipment in locations upwind and downwind of the incident (assign locations as soon as possible, using visual/meteorological data and update, as needed, with modeling results). Monitoring should continue until downwind data is consistent with upwind values.
		c. Air monitoring should be conducted utilizing approved methods and should include as many of the identified substances as possible. In the event of a fire/explosion, continuous particulate matter less than 2.5 microns in diameter (PM _{2.5}) should be monitored as well. The Contingency Plan should indicate what kind of monitoring equipment may be necessary (e.g., PM _{2.5} meters for fire events, SUMMA canisters/Tedlar bags for volatile organic compounds released from ruptured tanks), and which ones will be readily available.

Comments:

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2. Record Incident Parameters

Owner/Operator – As soon as access is available to employees/witnesses

<u>Status</u> e.g. Pending or Complete	<u>Date</u> <u>Completed</u>	<u>ACTION</u>
		a. Document the time the incident began and the duration of the overall event. Identify the specific location(s) where the incident began.
		b. Identify employees/witnesses having direct involvement or direct knowledge of the incident.
		c. Identify any relevant witnesses to the event.
		d. Gather local meteorological data from the National Weather Service (point-specific data are available at the NOAA Web site) and any characteristics noted by personnel directly involved with the incident or recorded elsewhere.

Comments:

3. Develop Event Narrative

Owner/Operator - As soon as access is available to employees/witnesses

<u>Status</u> e.g. Pending or Complete	<u>Date</u> <u>Completed</u>	<u>ACTION</u>
		a. Determine the sequence of events and time line leading up to and throughout the incident by reviewing with employees directly involved and other on-site peripheral witnesses (office staff, truck drivers, maintenance staff, etc.), along with accessing other tools and resources, as available (automated data records, surveillance cameras, etc.).
		b. Identify specific event locations, materials, and equipment involved in the incident.
		c. Identify and characterize, to the extent possible, the size and scope of the event.

Comments:

4. Develop a Comprehensive List of Materials or Substances Involved

Owner/operator in combination with regulatory and health agencies and hazardous materials (hazmat) response teams – As soon as possible

<u>Status</u> e.g. Pending or Complete	<u>Date</u> <u>Completed</u>	<u>ACTION</u>
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		a. Identify all of the materials/substances that may have been involved in the event, using the information obtained in the previous steps, inventory records and/or container/tank logs, laboratory data, approval records, material safety data sheets, or any other means available. Use a generic list initially, and then develop a final list from off-site records. Verify that the most up-to-date records are used.
		b. Determine the volume, concentration, and weight of substances identified above, and determine how they may have been altered by the event (e.g., pyrolysis products, decomposition, degradation, and both known and potential mixture reactions). Based on this information, begin developing a list of compounds of potential concern.
		c. The OWMRP shall identify the primary location where information and documents used to in previous steps 3.a. and 3.b. will be housed and ensure that information critical to response an activity is kept in that location.

Comments:

5. Post-Incident Sample Collection

Owner/Operator, in combination with EPA, DEQ, and DCH – During and/or immediately following the incident

<u>Status</u> e.g. Pending or Complete	<u>Date</u> <u>Completed</u>	<u>ACTION</u>
		a. Develop a sampling plan for the collection of waste, groundwater, soil, ash, airborne dust, debris, surface water, and/or wipe samples, as appropriate. The plan, or the need for one, may take into account fallout density, air monitoring data, visual observation, or air modeling. A statistical sampling design may not be necessary for the screening evaluation. Post-incident, off-site sampling may not be necessary based on air monitoring data and lack of off-site migration or deposition.
		b. Collect a sufficient number of samples to identify and characterize concentrations of substances involved in the incident. Include sampling for background concentrations.
		c. Complete the analysis of collected samples and review by comparison to relevant screening levels. Screening levels may have to be developed for some chemicals or environmental media.
		d. Identify and document any substances found to be present in levels that exceed screening levels.

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**6. Evaluate Data for Screening Potential Risk Yes/No (determines next step)
Owner/Operator – As soon as possible**

<u>Status</u> e.g. Pending or Complete	<u>Date Completed</u>	<u>ACTION</u>
		a. Screen existing data against relevant screening levels.
		b. Prepare RA Screening Report and submit it to the DEQ, OWMRP, for review as soon as possible but no more than 90 days after the incident.
		c. If less than screening levels, no further action is needed for off-site potential releases upon approval of the OWMRP.
		d. If the data is greater than screening levels, proceed immediately to Step 7.0, after notification from the DEQ.


Comments:

**7. If Needed, Conduct Off-Site RCRA RFI and Prepare Full RA Report - Owner/Operator
(Steps 7.b. through 7.c. to be completed within 180 days, if at all possible)**

<u>Status</u> e.g. Pending or Complete	<u>Date Completed</u>	<u>ACTION</u>
		a. Prepare off-site RFI Work Plan and submit for review to the OWMRP. Submit within 30 days from step 6.d. notification from the DEQ.
		b. Commence RFI immediately after DEQ approval of step 7.a. RFI Work Plan.
		c. Conduct a RA on RFI data.
		d. Prepare and submit RFI Report to the OWMRP.
		e. Upon DEQ approval of the RFI, prepare a combined CMS and CMI Plan, and submit for review to the OWMRP, if directed.
		f. Upon DEQ approval of the CMS/CMI, implement the CMI Plan as directed.
		g. Provide a report to the DEQ upon completion of the CMI Plan.

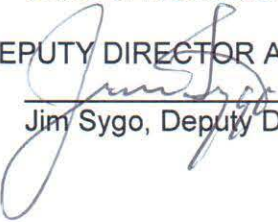
Comments:

OFFICE CHIEF APPROVAL:


Elizabeth M. Browne, Chief
Office of Waste Management and Radiological Protection

December 21, 2012
Date

DEPUTY DIRECTOR APPROVAL:


Jim Sygo, Deputy Director

1/3/2013
Date