MUNICIPAL SOLID WASTE LANDFILL
GAS COLLECTION AND CONTROL SYSTEM (GCCS)

STARTUP, SHUTDOWN, AND MALFUNCTION PLAN

R-BOARD LANDFILL
STAFFORD, VIRGINIA

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This startup, shutdown, and malfunction (SSM) plan (SSM Plan) was prepared by Resource International, Ltd. in order to comply with the requirements of 40 CFR 63.6(e)(3), as this facility is subject to 40 CFR Part 63, Subpart AAAAA, the National Emission Standard for Hazardous Air Pollutants (NESHAPs) for Municipal Solid Waste (MSW) landfills. The SSM Plan contains all of the required elements set forth within 40 CFR 63.6(e).

This SSM Plan will be revised if the procedures described herein do not adequately address any malfunction or startup/shutdown events that occur at the facility. A copy of the original plan and all revisions/addenda will be kept on file at the facility for at least five (5) years. The Landfill Superintendent is responsible for assuring that the most recent copy of this SSM Plan is made available to all personnel involved with the landfill gas (LFG) control system at the R-Board Landfill as well as to appropriate regulatory agency personnel for inspection.
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Appendices

A Common Causes and Response Actions for GCCS Malfunctions
B SSM Reporting Forms
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1 Revision History

Add the effective date of the most-recent revision to the list below. Do not overwrite or delete any dates. This is intended to be a complete record of all revisions made to this plan, and assists in making certain that all plan versions are retained for at least 5 years as required by §63.6(e)(3)(v).

<table>
<thead>
<tr>
<th>Date of Initial Issuance</th>
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</tr>
</thead>
<tbody>
<tr>
<td>October 24, 2013</td>
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<table>
<thead>
<tr>
<th>Revision Dates</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8/17/2015</td>
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</tbody>
</table>
2 Introduction

2.1 Purpose and Scope

A landfill gas treatment facility co-located with a municipal solid waste (MSW) landfill of an affected source must develop and implement a written startup, shutdown, and malfunction (SSM) Plan that describes, in detail, procedures for operating and maintaining the source during periods of startup, shutdown, and malfunction; a program of corrective action for malfunctioning processes; and air pollution control and monitoring equipment used to comply with the relevant standard. The purpose of the SSM Plan is to:

- Ensure that, at all times, the LFG treatment operator operates and maintains the affected source, including associated air pollution control and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions to the levels required by the relevant standards;

- Ensure that owners or operators are prepared to correct malfunctions as soon as practicable after their occurrence in order to minimize excess emissions of hazardous air pollutants; and

- Reduce the reporting burden associated with periods of startup, shutdown, and malfunction (including corrective action taken to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation).

The R-Board Landfill is an existing affected source under the Maximum Achievable Control Technology (MACT) rule for MSW landfills.

The Virginia Department of Environmental Quality amended the R-Board’s stationary source permit to include an allowance for the beneficial use of the landfill gas, rather than destruction in the flares. This amendment states that while a flare is required, it will only be used when gas is routed to it. The primary use for the landfill gas is either or both of the AMERESCO Stafford, LLC engines. R-Board staff works closely with AMERESCO Stafford, LLC to ensure that all of the landfill gas is destroyed by one of the three components of the treatment system. Therefore, recordkeeping and reporting of SSM instances are limited to when the entire plant is shutdown, not an individual component.

The management of the R-Board Landfill fully understands and acknowledges the SSM Plan requirements of the MACT rule. This SSM Plan has been developed to specifically address these requirements as summarized above.

2.2 Description of SSM Plan

This SSM Plan has been divided into three major sections comprising the major elements related to startup, shutdown, and/or malfunction of a control system at a MSW landfill gas treatment facility. Malfunction events are distinct events when the treatment system is not operating in accordance with NSPS/EG requirements and which result, or have the potential to result, in an
exceedance of one or more emission limitations or operational standards under the NSPS/EG. Startup and shutdown events are generally planned events associated with system repair, maintenance, testing, and upgrade, and may or may not be related to or occur in association with a malfunction of the system.

2.3 Site Equipment Subject To This SSM Plan

The following components of the GCCS are subject to this SSM Plan:

| Landfill gas treatment system |

3 Startup/Shutdown Plan

This section details procedures for the startup of the treatment system to ensure that, at all times, good safety and air pollution control practices are used for minimizing emissions to the levels required by the relevant standards.

Pursuant to the requirements of the NSPS/EG for MSW landfills, a GCCS must be installed and operated when the landfill exceeds a threshold of 50 Mg/year NMOC and meets all the applicable criteria for a controlled landfill. R-Board Landfill is a landfill that meets these requirements.

3.1 How to Identify a GCCS Startup / Shutdown Event

The regulatory definition of “startup” reads as follows:

“Startup means the setting in operation of an affected source or portion of an affected source for any purpose.” (§63.2)

The regulatory definition of “shutdown” reads as follows:

“Shutdown means the cessation of an affected source or portion of an affected source for any purpose.” (§63.2)

Treatment system startup operations and shutdown events generally include startup or shutdown of gas mover equipment, LFG control devices, and any ancillary equipment that could affect the operation of the treatment system (e.g., power supply, air compressors, etc.). This section details procedures for the startup and/or shutdown of the treatment system to ensure that, at all times,
good safety and air pollution control practices are used for minimizing emissions to the levels required by the relevant standards.

The following list includes events that may necessitate a shutdown of the treatment system at the R-Board Landfill. This list should not be considered exhaustive.

**Table 3 - 1—Potential Events Necessitating Shutdown of the Treatment System**

<table>
<thead>
<tr>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collection &amp; Control Device Maintenance, Repair, or Cleaning</td>
</tr>
<tr>
<td>Addition of New GCCS Components</td>
</tr>
<tr>
<td>Extraction Well Raising</td>
</tr>
<tr>
<td>Movement of LFG Piping to Accommodate New Components or Filling Operations</td>
</tr>
<tr>
<td>Source Testing</td>
</tr>
<tr>
<td>Gas Mover Equipment Maintenance, Repair, or Cleaning</td>
</tr>
<tr>
<td>Gas Processing Equipment Maintenance, Repair, or Cleaning</td>
</tr>
<tr>
<td>Ancillary Equipment (e.g., compressors, etc.) Maintenance, Repair, or Cleaning</td>
</tr>
<tr>
<td>New Equipment Testing and Debugging</td>
</tr>
<tr>
<td>Shutdown and Subsequent Startup to Address Malfunctions or Other Occurrences</td>
</tr>
<tr>
<td>Planned Electrical Outages</td>
</tr>
<tr>
<td>Landfill Gas Condensate Removal Equipment Maintenance, Repair, or Cleaning</td>
</tr>
<tr>
<td>Landfill Gas Treatment System Maintenance, Repair, or Cleaning</td>
</tr>
</tbody>
</table>

**3.2 Actions to Take When the Treatment System is Started-Up**

The following provides a summary of typical response actions for startup of the treatment system.

**3.2.1 Gas Mover and Collection System**

The following activities may have the potential to emit regulated air pollutants to the atmosphere during startup of the collection system portion of GCCS: (1) purging of gases trapped within piping system prior to normal operation; (2) repair of system leaks discovered during startup, and (3) all other activities after construction of the system but prior to fulltime operation, which could release HAPs from the collection system. These activities would be subject to the Startup Plan portion of the SSM Plan.

During such activities, work shall progress such that air emissions are minimized to the greatest extent possible by:

- Temporarily capping pipes venting gas if such capping does not impact safety or the effective construction of the system.
- Minimizing surface area allowing gas to emit to the atmosphere to the extent that it does not impact safety or the effective construction of the system.
• Ensuring that other parts of the system, not impacted by the activity, are operating in accordance with the applicable requirements of NSPS/EG.
• Limiting the purging of piping to as short duration as possible to ensure safe combustion of the gas in the control device.

GCCSs, once installed, are “closed” systems designed to prevent the uncontrolled release of LFG to the atmosphere. The network of piping installed at the site connects each extraction point with the control device(s) with no open vents located anywhere in the collection system.

Portions of collection systems or individual extraction points may be isolated by valves installed in the system from time to time and subsequently opened. Opening these valves shall not be considered a startup, unless such an activity causes the venting of gas to the atmosphere. If the activity results in emissions to the atmosphere, the actions listed above shall be followed.

The operation of the collection system, once installed, shall be consistent with the provisions of NSPS/EG as well as the GCCS Design Plan, which has been developed and approved for the facility.

3.2.1 Landfill Gas Treatment System:

The landfill gas treatment system filters particulate below 10 micron, compresses, cools, and removes moisture from the gas ensuring complete combustion and destruction of NMOC in the power plant.

The treatment system would normally undergo planned startups after scheduled maintenance and shutdown. Potential emissions from the treatment system during startup consist of the: (1) purging of gases trapped within piping system prior to normal operation; (2) repair of system leaks discovered during startup, and (3) all other activities after construction of the system but prior to fulltime operation.

During such activities, work shall progress such that air emissions are minimized to the greatest extent possible by:

• Limiting the purging duration to ensure safe combustion of the gas in the power plant.
• Ensuring that filter housings and other leak points are closed to prevent fugitive emissions.

Standard Operating Procedures

Startup

1. Check that there are no unsafe conditions present.

2. Check that the system is ready to start by one or more of the following:
a. Valves are in correct operating position
b. Levels, pressures, temperatures are within normal starting range
c. Alarms are cleared
d. Power is on and available to control panel and energized equipment
e. Emergency Stop is de-energized
f. Check that there are no gas emissions
g. Check that all wellheads are intact
h. Check that there are no signs of pipe damage

3  Initiate start sequence (Note time and date on top section of form as Start)

4  Observe that system achieves normal operating ranges for levels, pressures, and
temperatures (Note time and date on top section of form as End)

5  Complete top section of form. Duration is the time it takes to go from Step 3 to 4.

3.3  Actions to Take When the GCCS Is Shutdown

3.3.1  Collection System

GCCSs, once installed, are “closed” systems designed to prevent the uncontrolled release of LFG
to the atmosphere. The network of piping installed at the site connects each extraction point with
the control device(s) with no open vents located anywhere in the collection system.

Portions of collection systems or individual extraction points may be isolated by valves installed
in the system from time to time. Closing these valves shall not be considered a shutdown, unless
such an activity causes an exceedance of the provisions of NSPS/EG and/or any subsequent
approvals of alternatives in the facility’s GCCS Design Plan or approved variances issued
thereafter. If a shutdown occurs, the following action shall occur.

3.3.2  Landfill Gas Treatment System:

The landfill gas treatment system filters particulate below 10 micron, compresses, cools, and
removes moisture from the gas ensuring complete combustion and destruction of NMOC in the
power plant.

The treatment system would normally undergo planned shutdown for scheduled maintenance.
Potential emissions from the treatment system during shutdown would result from venting of
gases trapped within piping system, compressors, and cooler.

Standard Operating Procedures

Shutdown

1  Check that there are no unsafe conditions present
2 Initiate shutdown sequence by one or more of the following (Note time and date on top section of form as Start)
   a. Press Emergency Stop if necessary
   b. Close On/ Off switch(es) or Push On/ Off button(s)
   c. Close adjacent valves if necessary
3 Observe that system achieves normal shutdown ranges for levels, pressures, and temperatures (Note time and date on top section of form as End)
4 Complete top section of form. Duration is the time it takes to go from Step 2 to 3.

3.4 What to Record for All Startup / Shutdown Events

The operator shall record the following information on the attached SSM Report Form (Appendix B):

- The date and time the startup/shutdown occurred.
- The duration of the startup/shutdown.
- The actions taken to effect the startup/shutdown.
- Whether procedures in this SSM Plan were followed. If the procedures in the SSM Plan were not followed, a SSM Plan Departure Report Form (Appendix B) must also be completed.
- If an applicable emission limitation was exceeded, a description of the emission standard that was exceeded.

3.5 Whom to Notify at the Facility in Case of a Startup/Shutdown Event

- The Landfill Superintendent, Operations Manager, and Landfill Environmental Compliance Manager should be notified of Start-up/Shutdown events if one or more of the following occurs:
  - The duration of start-up/shutdown takes longer than one hour for control devices;
  - The duration of start-up/shutdown takes longer than five days for the collection system;
  - Uncombusted landfill gas is emitted during the start-up/shutdown;
  - The start-up/shutdown procedures listed in this SSM plan are not followed; or
  - A malfunction occurs during start-up/shutdown.
• The Landfill Superintendent or other appropriate Facility Personnel should be notified immediately of the startup/shutdown.

• The Landfill Superintendent or other appropriate Facility Personnel should be notified within a reasonable timeframe of progress of the diagnosis and resolution of the startup/shutdown.

• The Landfill Superintendent or other appropriate Facility Personnel should be notified when the alternative timeframe for startup/shutdown has been established if it is outside of the timeframes currently allowed by the NSPS/EG for particular compliance elements.

• The SSM Report Form should be initially prepared upon startup/shutdown and implementation of the SSM Plan. The form should be finalized by the operator on duty upon successful implementation of the SSM Plan and submitted to the Landfill Environmental Compliance Manager. The original form should be retained in the landfill files for five (5) years. As previously noted, documentation of the date, time and duration of automatic shutdown/startup events is contained in the flare temperature and/or flow charts. In addition, there are no actions that need to be taken to affect the shutdown/startup sequence in these instances; therefore, these activities do not need to be documented beyond the information already contained on chart recorders.

3.6 What to Report for a Startup/Shutdown Event

• If the actions taken during the startup/shutdown were consistent with this SSM Plan, file the necessary information in your semi-annual SSM report with the following information included:

  1. Certifying signature of the owner/operator or other responsible official;
  2. Statement that the actions taken during the startup or shutdown were consistent with the SSM Plan.

• If the actions taken during a startup/shutdown were not consistent with this SSM Plan, the Landfill Superintendent or Landfill Environmental Compliance Manager must report the actions taken to the enforcing authority by telephone or facsimile transmission within two (2) working days after the startup or shutdown. A letter must then be sent to the enforcing authority within seven (7) working days after the startup or shutdown. The letter should be sent by certified or registered mail or overnight delivery service, and must include the following information:

  1. Certifying signature of the owner/operator or other responsible official;
  2. A copy of the SSM Report Form;
  3. Detailed explanation of the circumstances of the start/shutdown;
4. The reasons the SSM Plan was not adequate; and whether any excess emissions and/or parameter monitoring exceedances is believed to have occurred during the event.

5. A copy of the SSM Plan Departure Report Form.

- Note: If the revisions to the SSM Plan alter the scope of the process activities at the R-Board Landfill or otherwise modify the applicability of any emission limit, work practice requirement, or other requirement in the MACT rule and/or the NSPS/EG, the revised SSM Plan is not effective until written notice has been provided to the permitting authority describing the SSM Plan revision(s).
4  Malfunction Plan

4.1  How to Identify a GCCS Malfunction

The regulatory definition of “malfunction” reads as follows:

“Malfunction means any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.” (§63.2, revised 5/30/03)

The following list includes events that may constitute a malfunction of the treatment system at R-Board Landfill. The cause of these events should be investigated immediately in order to determine the best course of action to correct the malfunction. Each of these malfunctions could have multiple causes that need to be evaluated and possibly considered. It is the intent of this SSM Plan to include all possible causes for the specific malfunction events. Common malfunction events for the treatment systems are listed in Table 4-1.

<table>
<thead>
<tr>
<th>Possible Malfunction</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss of LFG Flow/Gas Mover Malfunction</td>
<td>4.3</td>
</tr>
<tr>
<td>Loss of Electrical Power</td>
<td>4.4</td>
</tr>
<tr>
<td>Collection Well and Pipe Failures</td>
<td>4.5</td>
</tr>
<tr>
<td>Other Control Device Malfunctions</td>
<td>4.6</td>
</tr>
<tr>
<td>Malfunctions of the Landfill Gas Treatment System</td>
<td>4.7</td>
</tr>
</tbody>
</table>

For one of these occurrences to be considered a malfunction that is required to be addressed by this SSM Plan, it must result in, or have the potential to result in, an exceedance of one or more of the NSPS/EG operational and compliance requirements or the provisions of the MACT rule (e.g., exceedance, reading outside of required operational range, etc). The following list constitutes the possible exceedances of the New Source Performance Standards (NSPS) for MSW landfills and/or the state/local emission guidelines (EG) rule that could occur due to a malfunction of GCCS, thereby necessitating implementation of this SSM Plan:

<table>
<thead>
<tr>
<th>Potential Emission Limitation Exceedances Caused by Malfunction Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>GCCS downtime of greater than 5 days (if alternative timeframe has not been established)</td>
</tr>
<tr>
<td>Free venting of collected LFG without control for greater than one hour</td>
</tr>
</tbody>
</table>
If the occurrence does not result in an exceedance of an applicable emission limitation, or does not have the potential to result in such an exceedance, then it is not required to be corrected in accordance with this SSM Plan, although use of the plan may still be advisable. Malfunctions should be considered actionable under this SSM Plan whether discovered by the treatment plant’s owner or operator during normal operations or by a regulatory agency during compliance inspections.

The operator should follow all the corrective action, notification, record keeping, and reporting procedures described herein in case of malfunction of the GCCS.

4.2 Actions to Take When the GCCS Malfunctions—All Malfunctions

- Determine whether the malfunction has caused an exceedance, or has the potential to cause an exceedance, of any applicable emission limitation contained in the NSPS/EG or MACT.

- Identify whether the malfunction is causing or has caused excess emissions to the atmosphere. If excess emissions are occurring, take necessary steps to reduce emissions to the maximum extent possible using good air pollution control practices and safety procedures.

- Contact the Landfill Superintendent, Operations Manager, or Landfill Environmental Compliance Manager and proceed with the malfunction diagnosis and correction procedures described in Appendix A (“Common Causes and Response Actions for GCCS Malfunctions”) for each specific malfunction.

- If the procedures in this SSM Plan do not address or adequately address the malfunction that has occurred, the operator should attempt to correct the malfunction with the best resources available. The Landfill Superintendent and Landfill Environmental Compliance Manager should be notified of this situation immediately. Complete a SSM Plan Departure Report Form (Appendix B) as discussed in Section 4.8. The SSM Plan must be updated to better address this type of malfunction.

- Notify the Landfill Superintendent or other appropriate Facility Personnel of the progress of the diagnosis and correction procedures and status of the malfunction as soon as practicable.

- If the GCCS malfunction cannot be corrected within the time frame specified in the NSPS/EG, notify the Landfill Superintendent or other appropriate Facility Personnel and proceed to shutdown the treatment system, if this has not already occurred automatically.

- Once the malfunction is corrected, notify the Landfill Superintendent and Landfill Environmental Compliance Manager as soon as the system is operational.
- Complete the **SSM Report Form** (Appendix B) after the malfunction diagnosis and correction procedures are completed.

- If the procedures in this SSM Plan do not address or adequately address the malfunction that has occurred, the operator should note the circumstances and the actual steps taken to correct the malfunction in the **SSM Report Form** (Appendix B). This SSM Plan will need to be revised based on this information, as described in Section 4.7 below.

- Follow procedures in Sections 4.6 through 4.8, as appropriate, to adequately document, notify, and report the malfunction and corrective action.

### 4.3 Loss of LFG Flow/Gas Mover Malfunction

- Follow the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions**.

- Check to see if the control device has shutdown. If control device has shutdown, make sure that gas mover equipment has shutdown to prevent free venting of LFG. Attempt to restart control device to determine if system will remain operational.

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected within 5 days, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

### 4.4 Loss of Electrical Power

- Follow also the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions**.

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected within the time frame allowed by the NSPS/EG rule, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if malfunction cannot be corrected within the established timeframe.
4.5 Malfunction of LFG Treatment System

- Follow the procedures in Section 4.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Make sure that gas mover equipment has shutdown to prevent free venting of LFG. Attempt to restart blowers to determine if system will remain operational.

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

If the malfunction cannot be corrected within 5 days, follow the procedures under Section 4.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

4.6 What to Record for a Malfunction

The operator must record the following information on the attached **SSM Report Form:**

- The date and time the malfunction occurred.

- The duration of the malfunction.

- A description of the affected equipment.

- The cause or reason for the malfunction (if known).

- The actions taken to correct the malfunction (checklist).

- Whether the procedures in this SSM Plan were followed. If the procedures in the plan were not followed, a **SSM Plan Departure Report Form** must also be completed.

- A description of the emission standard that was exceeded or had the potential to be exceeded.

4.7 Whom to Notify at the Facility in Case of a Malfunction

- The Landfill Superintendent, Operations Manager, and Landfill Environmental Compliance Manager shall be notified immediately of the malfunction.

- The Landfill Superintendent or other appropriate Facility Personnel shall be notified within a reasonable timeframe of progress of the diagnosis and corrective action of the malfunction.
• The Landfill Superintendent or other appropriate Facility Personnel shall be notified when the alternative timeframe for corrective action has been established if it is outside of the timeframes currently allowed by the NSPS/EG for particular compliance elements.

• The Landfill Superintendent or other appropriate Facility Personnel shall be notified if the malfunction cannot be corrected within the timeframe allowed by the NSPS rule or the alternate timeframe established under this SSM Plan. Notification should also occur if the current SSM Plan had not addressed the malfunction.

• The SSM Report Form shall be initially prepared upon discovery of the malfunction and implementation of the SSM Plan. The form shall be finalized by the operator on duty upon successful implementation of the SSM Plan and submitted to the Landfill Environmental Compliance Manager. The original form must be retained in the landfill files for five (5) years.

4.8 What to Report for a Malfunction Event

• If the actions taken during the malfunction were consistent with this SSM Plan, and the malfunction resulted or had the potential to result in an exceedence of an applicable emission standard, file the necessary information in your semi-annual SSM report with the following information included:

1. Certifying signature of the owner/operator or other responsible official;
2. Statement that the actions taken during the malfunction were consistent with the SSM Plan.

• If the actions taken during a malfunction were not consistent with this SSM Plan, and the malfunction resulted in or had the potential to result in an exceedance of an applicable emission standard, (see items listed under Step 1 above), the Landfill Superintendent or Landfill Environmental Compliance Manager must report the actions taken to the enforcing authority by telephone or facsimile (FAX) transmission within two (2) working days after commencing the actions that were inconsistent with the plan. A letter must then be sent to the enforcing authority within seven (7) working days after the malfunction. The letter should be sent by certified or registered mail or overnight delivery service, and must include the following information:

1. Certifying signature of the owner/operator or other responsible official;
2. A copy of the SSM Report Form;
3. Detailed explanation of the circumstances of the malfunction;
4. The reasons the SSM Plan was not adequate; and
5. Whether any excess emissions and/or parameter monitoring exceedances is believed to have occurred during the event.
6. Prepare and include SSM Plan Departure Report Form.

• If the actions taken during the malfunction were not consistent with this SSM Plan, the Landfill Superintendent or Landfill Environmental Compliance Manager must:
1. Revise the SSM Plan within 45 days after the malfunction to include procedures for operating and maintaining the GCCS during similar malfunction events.

2. Include the revised SSM Plan in the semi-annual report.

Note: If the revisions to the SSM Plan alter the scope of the process activities at R-Board Landfill or otherwise modify the applicability of any emission limit, work practice requirement, or other requirement in the MACT rule and/or the NSPS/EG, the revised SSM Plan is not effective until written notice has been provided to the permitting authority describing the SSM Plan revision(s).
APPENDIX A

Common Causes and Response Actions for GCCS Malfunctions
<table>
<thead>
<tr>
<th>EQUIPMENT</th>
<th>PURPOSE</th>
<th>MALFUNCTION EVENT</th>
<th>COMMON CAUSES</th>
<th>TYPICAL RESPONSE ACTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFG Collection and Control System</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blower or Other Gas Mover Equipment</td>
<td>Applies vacuum to wellfield to extract LFG</td>
<td>Loss of LFG Flow/Blower Malfunction</td>
<td>- Flame arrestor fouling/deterioration</td>
<td>- Repair breakages in extraction piping</td>
</tr>
<tr>
<td></td>
<td>and transport to control device</td>
<td></td>
<td>- Automatic valve problems</td>
<td>- Clean flame arrestor</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Blower failure (e.g., belt, motor, impeller, coupling, seizing, etc.)</td>
<td>- Repair blockages in extraction piping</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Loss of power</td>
<td>- Verify automatic valve operation, compressed air/nitrogen supply</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Extraction piping failure</td>
<td>- Notify power utility, if appropriate</td>
</tr>
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<td></td>
<td></td>
<td>- Condensate knock-out problems</td>
<td>- Provide/utilize auxiliary power source, if necessary</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Extraction piping blockages</td>
<td>- Repair Settlement in Collection Piping</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Repair Blower</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Activate back-up blower, if available</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Clean knock-out pot/demister</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Drain knock-out pot</td>
</tr>
<tr>
<td>Extraction Wells and Collection Piping</td>
<td>Conduits for extractions and movement of LFG</td>
<td>Collection well and pipe failures</td>
<td>- Break/crack in header or lateral piping</td>
<td>- Repair leaks or breaks in lines or wellheads</td>
</tr>
<tr>
<td></td>
<td>flow</td>
<td></td>
<td>- Leaks at wellheads, valves, flanges, Test ports, seals, couplings, etc.</td>
<td>- Follow procedures for loss of LFG flow/blower malfunction</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Collection piping blockages</td>
<td>- Repair blockages in collection piping</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Problems due to settlement (e.g. pipe separation, deformation, development</td>
<td>- Repair settlement in collection piping</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>of low points)</td>
<td>- Re-install, repair, or replace piping</td>
</tr>
<tr>
<td>Landfill Gas Treatment System</td>
<td>Filter, compress, cool and remove moisture</td>
<td>Malfunctions of Temperature, Pressure,</td>
<td>- Cooler tubes</td>
<td>- Service cooler tubes and fan fins</td>
</tr>
<tr>
<td></td>
<td>from gas.</td>
<td>Flow, and Moisture content</td>
<td>- Filter pressure drop</td>
<td>- Change filters,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Knock-out liquid levels,</td>
<td>- Check knock-out pumps and transducers</td>
</tr>
</tbody>
</table>
APPENDIX B

SSM Plan Reporting Forms
APPENDIX C

Site-Specific Information
CONTACTS

The following person(s) should be contacted (in order of priority) for any events requiring the implementation of the SSM plan. If unable to reach a person, contact next person on list:

<table>
<thead>
<tr>
<th>Title/Position</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Landfill Superintendent</td>
<td>540-658-4224</td>
</tr>
<tr>
<td></td>
<td>540-295-7737</td>
</tr>
<tr>
<td>2 Landfill Assistant Superintendent</td>
<td>540-658-5278</td>
</tr>
<tr>
<td></td>
<td>540-446-8573</td>
</tr>
<tr>
<td>3 Operations Manager</td>
<td>540-658-5278</td>
</tr>
<tr>
<td></td>
<td>540-446-8707</td>
</tr>
<tr>
<td>4 Landfill Environmental Compliance Manager</td>
<td>540-658-4579</td>
</tr>
<tr>
<td></td>
<td>540-207-8177</td>
</tr>
</tbody>
</table>

The following telephone numbers are provided in the event additional resources are necessary to address a malfunction:

<table>
<thead>
<tr>
<th>Resource</th>
<th>Name</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ameresco</td>
<td>Bill Horniak</td>
<td>540-272-2940</td>
</tr>
<tr>
<td>Draper Aden Associates</td>
<td>Don Marickovich</td>
<td>540-557-1372</td>
</tr>
<tr>
<td></td>
<td></td>
<td>540-449-9545</td>
</tr>
<tr>
<td>Draper Aden Associates</td>
<td>Derek Berry</td>
<td>804-869-8100</td>
</tr>
</tbody>
</table>

The following person(s) should be contacted (in order of priority) if the SSM plan was not followed, the event resulted in the continued release of landfill gas to the air, or the event was not a malfunction, startup or shutdown as specified in the plan. If unable to reach a person, contact next person on list:

<table>
<thead>
<tr>
<th>Title</th>
<th>Phone</th>
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</thead>
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