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## 8. Commitments and Monitoring of the Undertaking

To ensure that the proposed impact management measures set out in **Section 6.0** address predicted effects for each discipline, monitoring strategies were developed so that any respective environmental effects can be monitored during construction, operation and closure/post-closure of the SCRF expansion.

### 8.1 Environmental Effects Monitoring

Monitoring strategies have been developed for the Preferred Landfill Footprint to ensure that:

- Predicted net effects are not exceeded
- Unexpected negative effects are addressed
- Predicted mitigation effects are realized

**Table 8.1** below summarizes and the proposed monitoring by discipline for the Preferred Landfill Footprint.

Table 8.1 Proposed Monitoring

| Discipline              | Proposed Monitoring   |
|-------------------------|---|
| Geology & Hydrogeology  | Groundwater monitoring<br>Leachate monitoring   |
| Surface Water Resources | Surface water monitoring  |
| Terrestrial and Aquatic | Erosion and sediment control<br>Wildlife exclusion fencing<br>Vegetation monitoring<br>Species at Risk monitoring   |
| Air Quality & Odour     | Leachate monitoring<br>Dust Monitoring  |
| Noise                   | Routine landfill equipment monitoring   |
| Land Use                | Existing environmental monitoring programs identified in the Facility Characteristics Report (FCR) (i.e., leachate, groundwater, surface water, landfill gas) and periodic program updates and adaptations<br>Maintain buffers and other visual impact management measures (i.e. fencing and vegetation). |

#### 8.1.1 Geology & Hydrogeology Monitoring

The Site hydrogeologic environmental performance is currently monitored through a comprehensive long-term groundwater monitoring program. This monitoring program includes collection of static water levels and groundwater quality samples four times per year at an extensive network of monitoring wells screened within the various flow zones on-Site and in the Site Study Area. The monitoring well network has evolved through the many years of Site monitoring to provide a very detailed account of the distribution of hydraulic head (static groundwater conditions) and groundwater quality within the various flow zones.

Groundwater quality samples are collected for a comprehensive list of analytes to identify landfill-related alterations to groundwater quality. This monitoring program is currently in place and will be maintained through landfill development under the Preferred Landfill Footprint. The long-term groundwater monitoring program tracks changes in groundwater quality and flow over time and will be used to assess the validity of the model predictions regarding the performance of the Preferred



Landfill Footprint. The results of long-term monitoring will be reviewed and interpreted in detail annually as part of the annual reporting process. Annual data interpretation and reporting is used to ensure any deteriorations in environmental performance are identified and addressed through changes in operational practices or implementation of augmented remedial responses.

In light of the importance of the Hydraulic Control Layer (HCL) as a means of providing early detection of leachate leakage through the primary liner, the long-term monitoring program will include a sampling program for the HCL. This sampling program will involve quarterly monitoring of HCL water quality at various points within the HCL. The exact sampling locations which can be accessed within the HCL will change as the Site develops and additional cells are constructed. Accordingly, the monitoring program will need to evolve to accommodate changing conditions. It is recommended that 4 discrete sampling points within the HCL are accessed during each monitoring event. Ideally sampling points are located on all 4 sides of the HCL. The HCL monitoring program (**defined in Table 7.1 of Appendix J-1 – Geology and Hydrogeology Detailed Impact Assessment Report**) includes provisions for modifying sample locations to suit the configuration of the HCL as Site development progresses.

In addition, once the Site is fully constructed, the long-term monitoring program will include monitoring of water levels within the HCL to ensure that the inward hydraulic gradient between the HCL and the landfilled waste is maintained. This monitoring would be completed by measuring static water levels at selected reference locations within the HCL and calculating the static water elevation from these measurements. This monitoring data will be used to verify that the static water elevation within the HCL is continuously maintained above the elevation of leachate mounding within the waste or leachate collection system.

As part of the ongoing groundwater monitoring program, a survey of surrounding properties downgradient of the SCRF will also be undertaken in order to identify private wells providing drinking water, and these wells will be included in the groundwater monitoring program, as applicable. Private wells will be included in the monitoring program if permission is granted by the property owners or tenants

As with any environmental monitoring program, modifications to the program are occasionally necessary to adapt the program to evolving conditions. Accordingly, the monitoring program will be reviewed, as part of the annual reporting process to ensure that the monitoring program is adequately characterizing Site conditions with respect to the presence and movement of landfill-related groundwater quality alterations.

#### 8.1.2 Surface Water Resources Monitoring

The existing surface water sampling program will continue to ensure that stormwater is being treated effectively by the stormwater management (SWM) ponds. As the Site continues to be developed, the sampling locations will need to be updated to reflect the changing surface water conditions, both on- and off-Site. Water quality parameters will be sampled to ensure that the water quality of the surface water leaving the Site is meeting quality objectives. The current monitoring program samples for many surface water parameters, such as pH, alkalinity, dissolved oxygen, temperature, conductivity, total suspended solids (TSS), total phosphorous, chloride, total ammonia, and phenols. Sampling occurs at locations on-Site as well, and in locations in the downstream receivers. Lower Davis Creek is sampled both upstream and downstream of the discharge location to see if there is any impact that may be attributed to the Site. A similar monitoring program will be implemented for the new SWM measures to ensure that there are no impacts on the surrounding surface water features. As with the current sampling program, the SWM pond outlet should be able to be shut-off in the event that water quality objectives are not being met.

Annual inspections of the SWM ponds, like the inspections currently implemented, will be required to ensure that the SWM pond is operating correctly. Recording the level of sediment accumulation within the ponds will be required to ensure TSS are being effectively removed. Periodic cleaning of the ponds to remove accumulated sediments will be required to ensure that that pond continues to function as designed. The pond will also be inspected to other items that may affect the function of



the pond, such as bank erosion, damage to concrete structures and quality of the pond vegetation. These issues can be addressed on an as needed basis.

### 8.1.3 Terrestrial and Aquatic Monitoring

#### 8.1.3.1 Erosion and Sediment Control/Wildlife Exclusion Fencing

Dual purpose erosion and sediment control (ESC) and wildlife exclusion fencing will be inspected on a regular basis during construction to ensure it is functioning properly and as intended. If regular inspections identify deficiencies (e.g., tears and holes, slumping), these deficiencies will be communicated to the appropriate person and rectified promptly to ensure continued protection/exclusion.

#### 8.1.3.2 Vegetation

The vegetation monitoring program will include the following components: verification of seed mix/plant species to be planted, plant survivorship monitoring, and invasive species management. Vegetation monitoring programs will be developed in greater detail during subsequent design phases, and pending consultation with MNR with respect to vegetative habitat compensation.

#### 8.1.3.3 Species at Risk

Monitoring requirements related to Species at Risk (SAR) are specified as part of the applicable Notice of Activity protocol – should this be required. Further details are provided below in **Table 8.2**.

Table 8.2 Species at Risk Monitoring Requirements

| Species                      | Proposed Monitoring Requirement  | Associated Licenses, Permits or Authorizations |
|------------------------------|--|--|
| Eastern Meadowlark           | Monitor the created or enhanced new habitat for 5 years, which will entail at least 3 breeding bird surveys annually during the appropriate timing window.   | Notice of Activity                             |
| Barn Swallow (if applicable) | If barn swallow nests are detected on Site infrastructure scheduled to be relocated during the operation stage, monitoring requirements as part of the Notice of Activity protocol will be applicable. | Notice of Activity                             |

### 8.1.4 Air Quality & Odour Monitoring

The SCRF currently supports a monitoring station (operated by Rotek Environmental, under contract to Terrapure) specifically to monitor for airborne PM<sub>10</sub> and local meteorological conditions (for investigating the likely source(s) of air quality and odour complaints). This station will continue to operate through the lifetime of the Facility, per the Facility's waste Environmental Compliance Approval. The results of monitoring will be documented as part of the annual reporting process.

### 8.1.5 Noise Monitoring

As part of required semi-annual noise monitoring, a survey was completed in 2016 to measure noise levels at the nearest receptors around the SCRF. This monitoring will continue to operate through the lifetime of the Facility, per the Facility's waste Environmental Compliance Approval. This would also occur during the proposed expansion. The results of monitoring will be documented as part of the annual reporting process.

### 8.1.6 Land Use Monitoring

The current environmental monitoring programs identified in the FCR (**Appendix K**) (i.e., leachate, groundwater, surface water, landfill gas) and Best Management Practices (BMPs) will continue over



the life of the Site. Existing methods and protocols may need to be amended periodically to accurately reflect Site conditions. Confirmatory monitoring programs will continue to be documented in the Annual Monitoring Report. Buffers will be maintained and visual impact management measures including vegetation and fencing will be maintained and monitored in accordance to the Site's operating plan.

## 8.2 Development of Environmental Management Plans, Best Management Practice Plans, and Compliance Monitoring Program

Environmental Management Plan (EMP) and/or Best Management Practice (BMP) Plans identified in the Impact Assessment Reports (**Appendix J**) will be prepared following approval of the proposed Undertaking by the Minister of the Environment, Conservation and Parks (Minister), and prior to construction associated with the approved Undertaking. The EMP and/or BMP Plans will identify a description of the proposed impact management measures, commitments and monitoring, as well as a description on the standard BMPs that are currently in place at the Site that will continue. Copies of current BMP Plans and Standard Operating Procedures in place at the SCRF are included in **Appendix M**.

The EMPs and BMP Plans are tools by which Terrapure can demonstrate how the EA commitments and monitoring requirements have been addressed through subsequent construction, operation and closure/post-closure stages.

As per Section 4.3.5 of the Ministry of the Environment, Conservation and Parks (MECP) Code of Practice for Preparing and Reviewing Environmental Assessments in Ontario, January 2014, if the proposed Undertaking is approved by the Minister under the *EA Act*, Terrapure will report to the MECP on how the monitoring framework was complied with. If the proposed Undertaking is approved by the MECP under the *EA Act*, Terrapure will prepare an EA Compliance Monitoring Program in order to fulfil this reporting requirement, which will include all of the commitments outlined in **Table 8.3**, as well as any *EA Act* Conditions of Approval.

Following establishment of the EA Compliance Monitoring Program, Terrapure will report annually on how they fulfilled the commitments until all commitments are fulfilled. The results of EA Compliance reporting will be retained at the SCRF office. The results will also be made available to the MECP, upon request, in accordance with the Ministry's Codes of Practice for Preparing a Reviewing Environmental Assessments in Ontario, January 2014.

## 8.3 Commitments & Fulfillment

The commitments made in this EA by Terrapure that are related to the construction, operation and closure/post-closure of the undertaking are outlined in **Table 8.3**. Specifically, the following components are outlined:

- **Category** - Discipline or topic to which the commitment applies (e.g., Air Quality & Odour, Noise, etc.)
- **EA Report Section** - Where the specific commitment can be found in the EA
- **EA Commitment** - Specific commitment made in the EA
- **Basis of Commitment** - Company/Agency responsible for commitment
- **EA Compliance Monitoring** - Mechanism(s) by which the commitment will be monitored to ensure fulfilment
- **Commitment Timing** - Appropriate stage of the undertaking during which commitment is to be implemented (e.g., pre-implementation, ongoing)



Table 8.3 SCRF EA Commitments and Compliance Monitoring

| Category     | EA Report Section | EA Commitment  | Basis of Commitment | EA Compliance Monitoring  | Commitment Timing   |
|--------------|-------------------|--|---------------------|---|---|
| General      | 6.7               | Implement the impact management measures as outlined in <b>Table 6.37 (Section 6.7)</b> , unless they are determined and documented to be no longer applicable or required.  | Terrapure           | Confirm impact management measures have been implemented.   | Pre-implementation of Undertaking; ongoing and post-closure |
|              | 6.7, 8.1          | Implement the monitoring programs as outlined in <b>Table 6.37 (Section 6.7)</b> and <b>Section 8.1</b> unless they are determined and documented to be no longer applicable or required.  | Terrapure           | Confirm monitoring programs have been implemented.  | Pre-implementation of Undertaking; ongoing and post-closure |
|              | 8.2               | Prepare an Environmental Management Plan (EMP) and/or Best Management Practice (BMP) Plans following approval of the proposed Undertaking. The EMP and/or BMP Plans will identify a description of the proposed impact management measures, commitments, and monitoring, as well as a description on the standard best management practices (BMPs) that are currently in place at the Site that will continue.   | Terrapure           | Confirm EMP and/or BMP Plan(s) have been prepared prior to implementation of the Undertaking.                 | Pre-implementation of Undertaking                           |
|              | 8.2               | Prepare a Compliance Monitoring Program following approval of the proposed Undertaking, which will include the commitments outlined in <b>Section 8.3</b> as well as any EA Act conditions of approval. Report annually on how commitments have been fulfilled until all commitments are fulfilled.  | Terrapure           | Confirm Compliance Monitoring Program have been prepared prior to implementation of the Undertaking.          | Pre-implementation of Undertaking                           |
|              | 8.4               | Review and modify existing contingency plans.  | Terrapure           | Confirm contingency plans have been reviewed/modified prior to implementation of the Undertaking.             | Pre-implementation of Undertaking                           |
|              | 9                 | Acquire all necessary permits/approvals, as outlined in <b>Section 9</b> .   | Terrapure/MECP      | Confirm permits/approvals are obtained prior to implementation of the Undertaking.                            | Pre-implementation of Undertaking                           |
| Archaeology  | 6.2.5.2           | Should previously undocumented archaeological or indigenous resources be discovered during construction, Terrapure will cease alteration of the Site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Sec. 48 (1) of the Ontario Heritage Act. In accordance with the Funeral, Burial and Cremation Service Act, 2002 should Terrapure discover human remains, the police or coroner and the Registrar of Cemeteries, Ministry of Small Business and Consumer Services will be notified immediately. | Terrapure           | Confirm no previously undocumented archaeological or indigenous resources are discovered during construction. | Pre-implementation of Undertaking                           |
| Human Health | 6.5.2.2           | Continue to undertake the Community Health Assessment Review as part of the Annual Monitoring Report for the SCRF.   | Terrapure           | Verify annually that this review has been conducted.  | Pre-implementation of Undertaking; ongoing                  |



Table 8.3 SCRf EA Commitments and Compliance Monitoring

| Category             | EA Report Section | EA Commitment   | Basis of Commitment                         | EA Compliance Monitoring  | Commitment Timing                          |
|----------------------|-------------------|---|---|---|--|
| Ongoing Consultation | 7.12              | Consult with review agencies through meetings and correspondence on an as-needed basis during design and construction to discuss issues related to their agencies' mandate, such as the permits and approvals identified in <b>Section 9</b> required prior to construction or operation.   | Terrapure                                   | Confirm permits and approvals have been obtained.   | Pre-implementation of Undertaking          |
|                      | 7.12              | Provide the Hamilton Conservation Authority with the Stormwater Management Plan post-approval during the Design Stage.  | City of Hamilton                            | Confirm the Hamilton Conservation Authority has received the Stormwater Management Plan.                    | Pre-implementation of Undertaking          |
|                      | 7.12              | Re-calculate reasonable Use Criteria (RUC) values for the 2018 Annual Monitoring Report and provide to the City of Hamilton.  | City of Hamilton                            | Confirm updated RUC values are included in 2018 Annual Monitoring Report.                                   | Pre-implementation of Undertaking, ongoing |
|                      | 7.12              | The potential visual screening measures presented in <b>Section 6.2.2.1</b> will be finalized following approval of the Undertaking, and implemented, as appropriate.   | MECP, City of Hamilton                      | Confirm visual screening measures have been implemented, as appropriate.                                    | Pre-implementation of Undertaking, ongoing |
|                      | 7.12              | Continue to consult and engage Indigenous communities involved during the SCRf EA (i.e. Mississaugas of the Credit First Nation, Six Nations of the Grand River First Nation, Haudenosaunee Confederacy Chiefs Council, and Metis Nation of Ontario) as appropriate (e.g. notification of project updates, opportunity to participate in site tours, involvement in habitat restoration, circulation of Environmental Management Plan). | Terrapure                                   | Confirm Indigenous communities are consulted and engaged, as appropriate.                                   | Pre-implementation of Undertaking; ongoing |
|                      | 7.12              | Diligently examine future requests by the Mississaugas of the Credit First Nation for ongoing consultation following EA Act approval of the proposed Undertaking including but not limited to site tours and monitoring or habitat restoration, at the First Nations request.   | Mississaugas of the New Credit First Nation | Confirm requests by the Mississaugas of the New Credit First Nation are diligently examined.                | Pre-implementation of Undertaking; ongoing |
|                      | 7.12              | Provide the Mississaugas of the Credit First Nation with the Environmental Management Plan (EMP) for their review and input, for Terrapure's consideration.   | Mississaugas of the New Credit First Nation | Confirm the EMP is provided to the Mississaugas of the New Credit First Nation and comments are considered. | Pre-implementation of Undertaking          |
|                      | 7.12              | Continue to release an annual report highlights for the operations of the SCRf.   | Terrapure                                   | Verify in Annual Facility Reporting that these commitments have been fulfilled.                             | Pre-implementation of Undertaking; ongoing |
|                      | 7.12              | Maintain the Community Liaison Committee (CLC) and utilize the existing CLC website for public communications about the Stoney Creek Regional Facility.   | Terrapure                                   | Confirm the CLC is maintained.  | Pre-implementation of Undertaking; ongoing |



Table 8.3 SCRF EA Commitments and Compliance Monitoring

| Category | EA Report Section | EA Commitment   | Basis of Commitment | EA Compliance Monitoring   | Commitment Timing                          |
|----------|-------------------|---|---------------------|--|--|
|          | N.A.              | Continue to consult with the City of Hamilton on the groundwater monitoring program as part of future annual monitoring.  | City of Hamilton    | Confirm the City of Hamilton has been consulted on the groundwater monitoring program. | Pre-implementation of Undertaking; ongoing |
|          | N.A.              | Prepare a Truck Operations Monitoring Framework describing proposed driver training and awareness strategies, in consultation with the City of Hamilton; and maintain the Framework during construction and operations of the SCRF. | City of Hamilton    | Confirm the Truck Operations Monitoring Framework has been prepared.                   | Pre-implementation of Undertaking; ongoing |



## 8.4 Contingency Plans

Contingency plans are developed to proactively identify measures or a process for taking action on unexpected problems resulting from landfill operations. Terrapure has a number of contingency plans in place, and these plans will be reviewed and modified for the proposed Undertaking, accordingly, during the Detailed Design. These plans include actions to be taken, timing, and roles and responsibilities. The existing contingency plans are outlined in Environmental Compliance Approval documentation (i.e., the amended Design and Operation Report for the Site) and, as mentioned, will be modified accordingly. **Table 8.4** below provides an example of existing contingency plans that will be modified as required. Copies of these plans are included in **Appendix M**.

Table 8.5 Contingency Plan Overview

| Contingency Plan                                | Contingency Plan Summary   |
|---|--|
| Emergency Response Plan                         | <p>This plan includes the following components:</p> <ul style="list-style-type: none"> <li>• Hazardous substances and their locations</li> <li>• Types of potential emergencies</li> <li>• Pre-emergency planning and training</li> <li>• Roles and Responsibilities</li> <li>• Recommended alerting procedures</li> <li>• Response equipment</li> <li>• Personal protective equipment</li> <li>• Standard operating procedures</li> <li>• Reporting requirements and notifications</li> <li>• Post emergency procedures</li> </ul>  |
| Landfill Fire Safety Plan                       | <p>The Fire Safety Plan is designed to:</p> <ul style="list-style-type: none"> <li>• provide occupant safety in the event of fire,</li> <li>• to provide effective utilization of the fire safety features of the building</li> <li>• to minimize the possibilities of fires</li> </ul> <p>This plan outlines:</p> <ul style="list-style-type: none"> <li>• what occupants are to do in the event of a fire</li> <li>• fire safety</li> <li>• functions and responsibilities of supervisory staff and</li> <li>• other related duties and issues pertaining to this plan</li> </ul> <p>This plan includes the following components:</p> <ul style="list-style-type: none"> <li>• Description of buildings</li> <li>• Human resources</li> <li>• Fire wardens</li> <li>• Fire plan distribution</li> <li>• Occupant fire procedures</li> <li>• Emergency procedure signage</li> <li>• Fire extinguishment/control/confinement</li> <li>• Control of fire hazards</li> <li>• Roles and responsibilities</li> <li>• Evacuation of persons requiring assistance</li> <li>• Fire drill procedures</li> <li>• Fire drill reporting</li> <li>• Testing, maintenance, of building fire safety and life safety systems</li> </ul> |
| Noise/Odour/Dust/Drag-out Control Procedures    | <p>The purpose of this plan is to outline the procedure if noise, odour, dust, or drag-out is detected within or around the perimeter of the landfill Site.</p> <p>This plan includes the following components:</p> <ul style="list-style-type: none"> <li>• Hazard Assessment &amp; Identification</li> <li>• EHS Requirements</li> <li>• References (Terrapure Safety Handbook, Dust Management Plan, etc.)</li> </ul>   |
| Stormwater Contingency and Remedial Action Plan | <p>The purpose of this plan is to outline the contingency and remedial action measures associated with the stormwater management facility at the SRCF.</p> <p>This plan includes the following components:</p> <ul style="list-style-type: none"> <li>• brief overview of the Stormwater Management Facility</li> <li>• summary of the monitoring and recording requirements</li> <li>• list of contingency actions</li> <li>• list of remedial actions that have been developed</li> </ul>  |