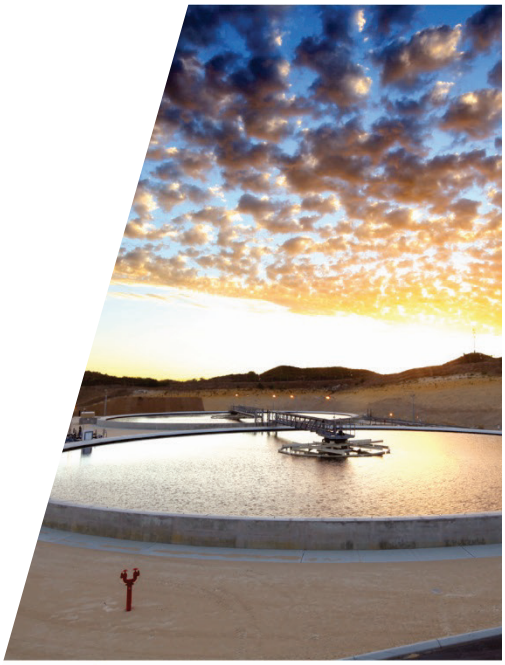
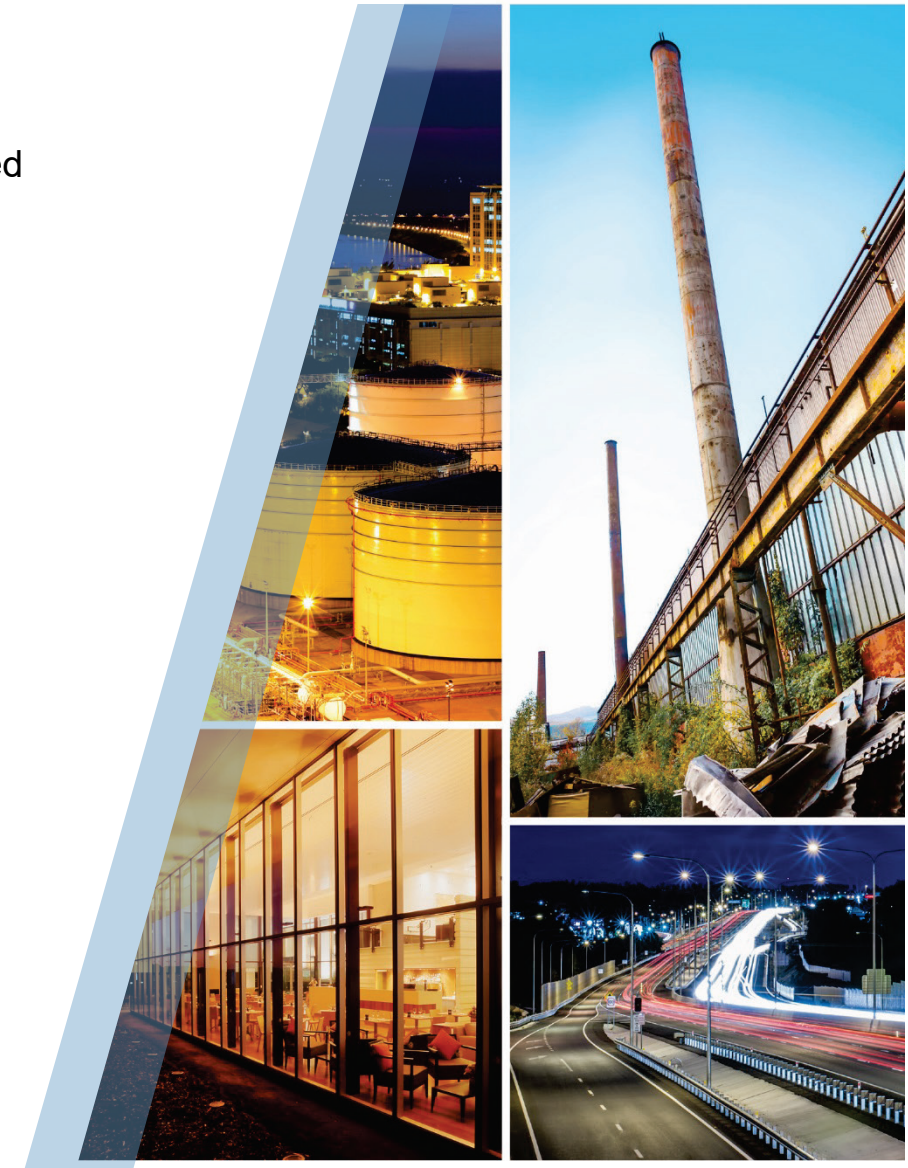


Addendum to EARD

11 Brown Avenue
Dartmouth Nova Scotia

Envirosystems Incorporated



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Appendix Index

1. Introduction

Envirosystems Incorporated (Envirosystems) is seeking Approval for the construction and operation of a waste storage facility for the temporary storage of 1) Waste Dangerous Goods; and 2) Waste Non-Dangerous Goods at its 11 Brown Avenue site in Burnside Industrial Park, Dartmouth, Nova Scotia. The proposed project qualifies as a Class I undertaking in Schedule A of the Environmental Assessment Regulations under the Nova Scotia *Environment Act*.

The Project is located at 11 Brown Avenue, Dartmouth, Nova Scotia, in the Burnside Industrial Park, PID – 40880437. The Project site is approximately 4 kilometres (km) northwest from the community of Dartmouth and approximately 5.6 km northwest from the City of Halifax. Under the Dartmouth Municipal Planning Strategy and Land Use By-law, the site is in a General Industrial Zone (I-2).

The general design concept for the proposed storage facility will be a fabric covered shelter on a concrete pad. The shelter footprint will be approximately 52 ft (15.85 m) x 50 ft (15.24 m) with a storage capacity for approximately 450 45-gallon (205-litre) drums. Storage space will be adequate to allow for separation of material types, access between aisles, and the shelter design includes primary and secondary containment elements. The loading area dimensions will allow an adequate turning radius to facilitate full spill containment by ensuring that loading and unloading occurs on the apron and that any spills would be contained by engineered drainage controls.

The proposed operation would store hazardous waste for two to four weeks on average, and no longer than 90 days. The waste containers are not opened, sampled, or processed on site. The annual handling capacity is estimated to be between 5000 and 7000 drums per year. Waste containers will be picked up at customers' sites, unloaded at the facility, and stored in a section of the shelter based on the type of waste. Waste dangerous and non-dangerous goods are subsequently shipped offsite for disposal. Waste types will be segregated in storage to prevent the mixing of incompatible goods if a spill were to occur. Wastes are typically contained in 205 litre (L) drums, 20 L pails, and occasionally 1000 L intermediate bulk container totes.

Envirosystems registered an Environmental Assessment Registration Document for the proposed project with Nova Scotia Environment (NSE) on August 7, 2019 for environmental assessment to fulfill requirements for a Class I undertaking in Schedule A of the Environmental Assessment Regulations under the Nova Scotia *Environment Act* (https://novascotia.ca/nse/ea/Waste-Dangerous-and-Non-Dangerous-Goods-Temporary-Storage-Facility/). On September 26, 2019, the NS Minister of Environment requested additional information to support the Environmental Assessment of Envirosystems' proposed project (Appendix A). The methodology to be used for the response to the additional information request was discussed with NSE Environmental Assessment Branch via email between October 4th, 2019 and November 5, 2019 to fully understand the requirements and adjust the methodology accordingly.

The responses are structured with the same order as the Minister's additional information request for ease of review.

2. Additional Information Requirements

The review determined that “the following additional information is required in order to evaluate potential environmental effects that may be caused by the undertaking:”

2.1 Contingency Planning

“In consultation with Nova Scotia Environment (NSE), prepare a contingency plan that meets NSE's Contingency Planning Guidelines and addresses:

Potential releases to air. The Plan must detail the potential worst-case incident for all releases (solid, liquid, vapour, and mixing of incompatible materials), and ensure the resources are available to respond.”

An updated Contingency Plan is provided in Appendix B. This updated plan has been prepared in consultation with NSE to meet the Contingency Planning Guidelines and addresses the potential worst-case incident for all releases including solid, liquid, and air (Sections 5.4.1 and 5.4.2 respectively), and details the availability of response resources (Section 13).

The types of waste materials intended for handling at the site are as follows:

Transportation of Dangerous Good (TDG) Regulated Materials	Non TDG Regulated Materials
• Class 2 (2.1, 2.2, 2.2 (5.1), 2.3) • Class 3 • Class 4 (4.1, 4.2, 4.3) • Class 5 (5.1, 5.2) • Class 6.1 • Class 8 • Class 9 (except PCBs and asbestos)	• Used oil as defined by the Used Oil Regulations • Waste hydrocarbon fuels • Used oil filters • Oily rags • Oily sludges • Oily solids • Waste glycols • Floor dry • Oily Debris • Waste waters

The facility is fully permitted and operational as a Used Oil Collection and Storage operation, under Approval No. 2001-024626-R10, effective December 31 2010, expiring December 31, 2020. Renewal for this Approval will be sought in 2020.

2.1.1 Potential Releases to Air

Potential releases to air are addressed in detail in Appendix B Section 5.4.2, *Mixing of Incompatible Materials and Vapour Releases*. In the unlikely event of a vapour release, the emergency response plan will be initiated immediately.

2.1.2 Worst-Case Incident for All Releases (Solid, Liquid, Vapour, and Mixing of Incompatible Materials)

Potential worst-case incidents for all releases (solid, liquid, vapour, and mixing of incompatible materials) are addressed in detail in Appendix B Section 5.4, *Worst-Case Incident*.

Containment Capacity

Should a drum rupture occur on the apron that caused all the contents of one drum to leak out, the maximum spill volume would be 205 Liters (L). If, during the loading process an entire pallet was damaged or dropped on the apron, the maximum volume of the resulting spill would be 820 L (1,000 L if container is a tote). The spill containment berm around the perimeter of the apron will contain any spilled contents on the apron. Based on the apron dimensions and the height of the berm, the apron can contain approximately 7,200 L and is thus capable of more than adequately containing a spill. Secondary containment features are discussed in detail in Section 2.3.1 below with engineered drawings appended.

In the unlikely event that a pallet was damaged or dropped within the shelter resulting in 820 L of spilled material, these contents will adequately be contained based on the total storage capacity as contained by the perimeter wall is 23,378L. Secondary containment features are discussed in detail in Section 2.3.1 below with engineered drawings appended. There is no probable worst case scenario in which all storage contents within the shelter could spill.

Secondary containment will be checked regularly as detailed in Appendix C, the Site Drainage, Storm Water, and Surface Water Management Plan. Any spills identified in secondary containment will be immediately cleaned up and removed.

Availability of Spill Response Resources

As Envirosystems provides emergency response services professionally to their client base that are focused on containing, cleaning up, and minimizing the potential health and environmental effects of hazardous materials and chemicals; the site is well-equipped with staff and equipment to manage potential spills effectively. Should any spill or leakage occur, the material will be removed from primary or secondary containment within the apron or the shelter and be removed and disposed of in accordance with all applicable handling regulations.

Spills and leaks typically can be handled with trained personnel and spill response equipment from onsite inventory such as shovels, floor dry, rags/wipes, etc., cleaning up the material released and packaging the recovered material in an empty drum. For larger spills and clean up, on site vacuum truck and mobile wash equipment may be utilized to recover the product and wash down the affected area. The recovered product and resultant wash water will be offloaded into the existing onsite tank storage, if non-hazardous, or decanted into 1000-L IBC totes or 205-L drums, if hazardous. All wastes, including spill clean-up wastes, shall be transported to appropriate and approved final disposal sites.

Spills, Incompatible Reactions, Vapours

Should a release occur causing an incompatible materials reaction, the emergency response plan shall be initiated immediately. Emergency evacuation of the area may be required if the chemical reaction causes a release of vapors. Air monitoring and gas testing will be completed to evaluate the hazard before entering the area for cleanup. When it is safe to do so, the spread of liquids will be controlled by existing containments and/or additional spill response measures such as containment booms or floor dry. Acids and bases will be neutralized with spill response reagents onsite, and clean up residues will be collected and disposed of, and the affected area and equipment will be fully decontaminated in accordance with environmental hazards.

2.2 Handling and Spill Prevention

"Provide detailed information for the handling of compressed gases, solids, and asbestos waste including handling and spill prevention of all substance types"

Handling procedures and spill prevention for all substance types are addressed in detail in Appendix B Section 5.2, *Handling and Release Prevention of Liquids and Solids,* and Section 5.3, *Handling and Release Prevention of Compressed Gases* and described below.

Asbestos will not be handled or stored on site.

2.3 Detailed Site Designs

"Provide a detailed site design including: all spill containment features prepared and signed by a professional engineer; a site drainage, stormwater and surface water management plan; and technical information on the proposed fabric shelter"

The conceptual design drawings for the proposed spill containment features as designed by a professional engineer are included as Appendix D and described below in Section 2.3.1. The Site Drainage, Storm Water, and Surface Water Management Plan is included as Appendix C and outlined below in Section 2.3.2. Technical information on the proposed fabric shelter including compatibility with stored materials and the capacity of the shelter to protect materials from weather-related factors is included as Appendix E and described in Section 2.3.3.

2.3.1 Spill Containment Features Prepared and Signed by a Professional Engineer

Spill Containment Features for the Proposed Loading/Unloading Apron

The conceptual design drawings for the proposed spill containment features as designed by a professional engineer are included as Appendix D. The loading/unloading apron for the proposed structure will have a containment berm with a storage capacity for 7,200 L and is thus capable of more than adequately containing a spill during the loading process if an entire pallet was damaged or dropped on the apron (820L). The loading and unloading area concrete pad will have a drain and piping network to convey rainwater to the existing storm drainage system on site to the stormwater outfall pipe. The piping network will include a valve that will isolate flow from the storm system during loading and unloading. During loading and unloading the valve will always be closed in case of a leakage or spill to prevent contaminated water from flowing into the storm drainage system. If a spill were to occur, it would be cleaned up before the valve was opened again and water was allowed to flow into the drainage system. Figure 1 provides the site plan context and identifies the features described here.

Spill Containment Features for the Proposed Storage Shelter

Level One spill containment controls within the shelter include containment berms around the interior foundation perimeter, as well as a portable containment berm that will facilitate spill segregation between waste types. The total storage capacity as contained by the perimeter wall is 23,378L. As

discussed above, in the unlikely event that a pallet was damaged or dropped within the shelter resulting in 820 L of spilled material, these contents will adequately be contained based on the total storage capacity listed above. Figure 2 in Appendix D presents the engineered drawing for the proposed concept of these containment features.

Level Two spill containment controls within the shelter footprint include a sub-slab secondary containment interstitial liner, anchored to footer/frost wall, with a minimal containment capacity equal to 121,565.6L. The substrate will be graded to a common point sump during construction. The sump will be designed to function as an observation point for visual inspection for leakage. The interstitial layer will direct any potential contaminant leakage to the sump. In the event of a spill or leakage, cleanup can occur through this sump. Figure 3 in Appendix D presents the engineered drawing for the proposed concept of these containment features. Based on segregated storage within the shelter, and daily, quarterly, and annual shelter and apron inspections as detailed in *Inspections and Monitoring* in Appendix C, as well as Level One containment controls; the mixing of incompatible materials in the sump is highly unlikely. In the unlikely event of this occurrence, worst-case incidents and response procedures are detailed in Appendix B.

2.3.2 Site Drainage, Stormwater and Surface Water Management Plan

The Site Drainage, Storm Water, and Surface Water Management Plan is included as Appendix C of this document. The general surface drainage in the vicinity of the site is northeast to southwest/south from areas of higher relief to lower and trending eventually to the Bedford Basin over one kilometer (km) from the site. The site is within an industrial park setting with municipal infrastructure (via storm drains and ditches) that controls and limits the amount of runoff entering the site. The Site is serviced by municipal water and there are no known ecological receptors or domestic wells or water users within 2 km of the facility.

Existing and proposed stormwater and surface water controls, as well as proposed monitoring and inspections for each are detailed in Appendix C. Environmental effects assessment, including potential interaction with the surrounding environment and human health, and related mitigation measures are provided in Appendix B Section 5.6.

2.3.3 Technical Information on the Proposed Fabric Shelter

The following section outlines technical information on the proposed shelter with respect to the capacity of shelter to protect stored materials from weather including temperature fluctuations, and compatibility of fabric with materials being stored in it and vapours/gases (if any) that may be emitted.

Weather Protection

The proposed fabric shelter, NovaShield® RU88X-6 (FR), is an industry standard commonly used for storing waste industrial goods. The Certificate of Design and Manufacturing Conformance, in accordance with the Canadian Standards Association (CSA), and consistent with the National Building Code of Canada, is included as Appendix E. The Certificate provides detailed technical specifications on all aspects of the building's design regarding weather-related stability including temperature variation, snow, rain, and ice loading, wind loads, and combined loading of these factors occurring simultaneously. The fabric is stable under continuous UV exposure.

Compatibility of Fabric with Stored Materials

The fabric is tested and rated as fire retardant according to CSA standards. The fabric is resistant to liquid hydrocarbons and acids in situations of limited contact. As such, operational procedures include regular inspections of the shelter to limit opportunity for spill to occur and so that any leakage can be detected or spill can be cleaned up and prolonged contact does not occur. The probability of materials coming into contact with the fabric is low. In the unlikely event of a forklift accidentally dropping a container or knocking one from a shelf, it is more likely that container contacts would come into contact with the concrete floor or foot-high perimeter wall and be contained via Level One and Two containment features. Adequate spacing between storage rows and between pallets and the fabric walls have been incorporated into the design so that potential spills are directed to Level One and Two concrete containment within the shelter.

All materials in shelter are in sealed barrels or drums and are not opened, sampled, or processed on site or in the shelter. Emergency evacuation of the area is required if any chemical reaction causes a release of vapors. The chemical reactions leading to generation of vapors may cause a hazardous atmosphere in enclosed areas. Air monitoring, ventilation, and gas testing will be completed to evaluate the hazard before entering the area for cleanup.

All of Which is Respectfully Submitted,

Peter Oram, P.Geo.
Project Manager, GHD

Appendices

Appendix A
Minister's Request for Additional Information

NOVA SCOTIA
Environment
Office of the Minister

PO Box 442, Halifax, Nova Scotia, Canada B3J 2P8 • www.novascotia.ca/nse

SEP 26 2019

Our File number:
40100-30-297
10700-40-55126

Scott Sangster
Vice President, Environmental Affairs - Eastern Canada
Envirosystems Incorporated
11 Brown Avenue
Dartmouth NS B3B 1Z7

Dear Scott Sangster:

Re: Environmental Assessment - Envirosystems Incorporated
Waste Dangerous and Non-Dangerous Goods Temporary Storage Facility
Halifax County, Nova Scotia

The environmental assessment of the proposed Waste Dangerous and Non-Dangerous Goods Temporary Storage Facility in Halifax County, Nova Scotia has been completed.

This letter is to advise that, pursuant to Section 13 (1)(a) of the Environmental Assessment Regulations, I have determined that the Registration Document provided is insufficient to allow me to make a decision, and that I require additional information. Specifically, the review determined that the following additional information is required in order to evaluate potential environmental effects that may be caused by the undertaking:

- In consultation with Nova Scotia Environment (NSE), prepare a contingency plan that meets NSE's Contingency Planning Guidelines and addresses:
  - Potential releases to air. The Plan must detail the potential worst-case incident for all releases (solid, liquid, vapour, and mixing of incompatible materials), and ensure the resources are available to respond.
- Provide detailed information for the handling of compressed gasses, solids and asbestos waste including handling and spill prevention of all substance types (liquid, gas, solid).
- Provide a detailed site design including:
  - all spill containment features prepared and signed by a professional engineer;
  - a site drainage, stormwater and surface water management plan; and
  - technical information on the proposed fabric shelter.

This information must be submitted by Envirosystems Incorporated within one year, as an addendum to the original Registration Document. Upon submission of the information, I will have 50 days to make my decision. If you have any questions regarding this decision, please contact Helen MacPhail, Supervisor, Environmental Assessment Branch, at (902) 483-2696 or via email at Helen.MacPhail@novascotia.ca .

Sincerely,

Gordon Wilson, MLA
Minister of Environment

c: Helen MacPhail, Nova Scotia Environment

Appendix B
Contingency Plan

Contingency and Emergency Response Plan

Terrapure Environmental

Brown Service Centre

11 Brown Ave

Dartmouth, NS B3B 1Z7

Originated by: Taber Burn

Approval			Distribution		
Required*		**Signature**	**Copy #**		****
-	VP EHS		Original	Environmental, Health & Safety Management System Manual (EHSMS)	x
-	EHS Manager		1		
-	EHS Advisor		2		
x	Branch Manager				
-	Operations Supervisor				
-					
-					
-					

Reviewed and released for implementation in the branch.

Representative: _____ Date: _____

The holder of each manual is responsible for keeping the manual updated with that latest issues of specifications / procedures

* Functions requiring approval are denoted by “x”. Functions not requiring approval are denoted by “-“.

** Associates who are document holders are identified by “x”. Those who are not document holders are identified by “-“.

Amendment Sheet

Amendment Description	Rev #	By	Page #	Issue Date	Comments
	01		All		

Table of Contents

1. INTRODUCTION

This Contingency and Emergency Response Plan provides operating guidelines to meet those foreseeable emergencies which may arise during the operation of the Brown facility in Dartmouth, Nova Scotia.

The objectives of the Contingency and Emergency Response Plan is to enable Envirosystems/Terrapure Environmental, owner/operator of the facility, to respond to all emergency situations, and to minimize Envirosystems/Terrapure Environmental exposure to loss and any impact on the environment from such situations. The objective will be met by providing for:

- The safety of employees, contractors, visitors, customers, and the public
- Continued security of the facility
- An effective incident reporting system
- Minimizing damage to the environment
- Identify what emergency situations are likely to occur
- Reduce disruption and confusion created by emergencies
- Minimize the time and effort to regain control
- Minimize the potential for injury or other types of losses
- Prevent fatalities and injuries
- Reduce damage to buildings and equipment
- Accelerating the resumption of normal operation
- Determine the appropriate response
- Establish communication channels both inter-company and extra-company
- Identify jurisdictions
- Reduce recovery time
- Reduce time to affect remedial plans
- Keep public confidence.

2. BROWN FACILITY DETAILS

Facility Address

Terrapure Environmental
Brown Waste Service Centre
11 Brown Ave
Dartmouth NS B3B 1Z7

Telephone: (902) 481-8008
Contact: Mark MacLeod - Branch Manager

Operations Office Address

Terrapure Environmental
Dartmouth Corporate Office
11 Brown Ave
Dartmouth NS B3B 1Z7

Telephone: (902) 481-8008
Contact: Mark MacLeod – Branch Manager
Ashlee Hanratty – Safety Advisor Nova Scotia

Head Office Address

Terrapure Environmental
1100 Burloak Drive, Suite 500
Burlington, Ontario, L7L 6B2

Telephone: (800) 263-8602
Contact: Michael Jovanovic – Vice President Environmental Affairs
Grant Dunham – Senior Health and Safety Manager

A driving map showing the route to the facility will be provided to the list below.

- Fire Department
- Ambulance
- Police/RCMP.

A Google map image of the facility (Appendix 1) and the Facility Site Plan (Appendix 2) are available at the facility. Also, a map showing the local businesses and residents has been made up and is available at the facility (Appendix 3).

2.1 Emergency Numbers and Statement

This page is to be posted beside all phones. It lists the emergency phone numbers and gives written instructions on the route to the facility.

EMERGENCY NUMBERS AND STATEMENT

EMERGENCY 911

POISON CENTRE (902) 428-8161 or 1-800-565-8161

TERRAPURE 24 HOUR (902) 468-9011

GIVE THIS STATEMENT IN AN EMERGENCY:

THIS IS AN EMERGENCY!

MY NAME IS: (STATE NAME)

THE LOCATION OF THE EMERGENCY IS: TERRAPURE 11 BROWN AVE, DARTMOUTH NS AND THE DIRECTIONS ARE:

THE PROBLEM IS (person hurt, fire, explosion)

WE REQUIRE (air ambulance, ambulance, fire equipment etc.)

THE PHONE NUMBER HERE IS (902) 481-8008

Level 0 incidents – (First Aid) – Call Operations Supervisor/Branch Manager
Level 1 incidents – (Medical Treatment) – Call Operations Supervisor/Branch Manager
Level 2 incidents – (Restricted Work and/or Lost Time) – Call Operations Supervisor/Branch Manager
Level 3 incidents – (Serious Injury/Death) – Call General Manager then make courtesy call to Operations Supervisor/Branch Manager

2.2 Terrapure Management Contacts

Mark MacLeod	Branch Manager	Office (902) 481-8008 Cell (902) 817-4052
Darren Zwicker	Vice-President - Atlantic	Office (902) 481-8008 Cell (902) 835-8078
Jordan Poste	General Manager	Office (902) 481-8008 Cell (902) 266-7113
Grant Dunham	Senior Health and Safety Manager	Office (902) 481-8008 Cell (902) 835-8078
Scott Sangster	Vice-President, Environmental Affairs – Eastern Canada	Office (902) 481-8008 Cell (902) 222-617
Darlene Whelan	Health & Safety Manager	Office (709) 834-7350 Cell (902) 237-9558
Ashlee Hanratty	Safety Advisor	Office (902) 481-8008 Cell (902) 718-9313
Jasna Krstic	Environmental Affairs Advisor - Atlantic	Office (902) 481-8008 Cell (902) 802-8007
24 Hour Emergency		(902) 468-9011

2.3 Emergency Authorities Contacts

RCMP	HRM	911
Fire Department	HRM	911
Ambulance	HRM	911
Hospital	HRM	(902) 465-8300
Poison Control Central		(902) 428-8161
NS Environment	Halifax	(902) 424-7773
Department of Transportation	Halifax	(902) 424-2297
NS OH&S	Halifax	1-800-952-2687
Worker Compensation Board	Halifax	1-800-870-3331
Canadian Coast Guard	Halifax	1-800-565-1633

2.4 Provincial Authorities Contacts

Nova Scotia

Environmental Emergencies	1-800-565-1633
Department of Environment (DOE)	1-877-936-8476
Department of Labour (DOL)	1-800-952-2687
Department of Transportation (DOT)	1-888-432-3233
Emergency Measures Organization (EMO)	1-866-424-5620
Poison Control Centre	1-800-565-8161
WorkSafe NS	1-866-415-8690

Federal Authorities

CANUTEC	(613) 996-6666

CANUTEC is the **Canadian Transport Emergency Centre** operated by Transport Canada to assist emergency response personnel in handling dangerous goods emergencies. This national bilingual advisory centre has the mandate to regulate the handling, offering for transport and the transport of dangerous goods by all modes in order to ensure public safety. CANUTEC has set up a scientific data bank on chemicals manufactured, stored and transported in Canada and is staffed by professional scientists specialized in emergency response and experienced in interpreting technical information and providing advice and recommend actions to be taken and those to avoid in dangerous goods emergencies. CANUTEC staff does not go to the site of an incident. Advice and information are provided by telephone. CANUTEC can also provide communication links with the appropriate industry, government or medical specialists.

3. CONTACT NAMES OF EMPLOYEES AT FACILITY

The full list of employees, emergency contacts and phone numbers is available at the facility.

Employee	Emergency Contact Name	Phone Number	Alternate Contact Name	Phone Number

4. PUBLIC/MEDIA AFFAIRS

The Public Affairs/Media Liaison Contacts for Terrapure are:

Greg Jones – Level 3 Incident

Managing Director Corporate Communications & Community Relations
Office (905) 315-2229
Cell (905) 630-3991

Darren Zwicker

Vice President, Atlantic
Office (902) 481-8008
Cell (902) 802-9765

5. HAZARD ASSESSMENT

The facility has been designed to minimize any potential hazards that have been identified in its daily procedures. All reasonable and practical measures have been introduced to control these potential hazards and prevent releases.

5.1 TDG Regulated and Non-Regulated Goods

Storage areas associated with facility operations are identified in the Site Plan of the Facility (Appendix 2).

Material	UN Number (if applicable)	Maximum Release Quantity*	Maximum Storage Capacity
Storage Area: Waste Dangerous and Non-Dangerous Goods Storage Facility			
Class 2	Various gases	100 lb	5,000 L
Class 3	Various flammable liquids	205 L	61,500 L
Class 4	Various flammable solids	205 L	10,250 L
Class 5	Various oxidizing substances	205 L	10,250 L
Class 6.1	Various toxic substances	205 L	10,250 L
Class 8	Various corrosive substances	205 L	20,500 L
Class 9 except PCBs	Miscellaneous substances	205 L	10,250 L
Non-hazardous material – vacuum truck sludge clean out, waste oil, rags	Non-TDG regulated	205 L	20,000 kg
Septic sludge	Non-TDG regulated	205 L	20,000 kg
Note: We expect majority of containers to be 205 L drums; however from time to time a 1,000 L tote can be used.			
Storage Area: Chemical Storage Area			
Class 3 Dlimonene	UN2052	205 L	205 L
Class 5.1 Hydrogen peroxide, Sodium nitrate	UN2014, UN1498	20 L	100 L
	UN1498	25 kg	375 kg
Class 8	UN1727,UN1760, UN1789, UN1791, UN1805, UN1824, UN1960, UN2031, UN2672, UN2796, UN3260	205 L	1,591 L
	UN2031	2 kg	2 kg
Class 9 Thiourea	UN3077	20 L	40 L

Storage Area: Storage in Shop			
Class 3(6.1) Window wash	UN1230	1,000 L	4,000 L
Hydraulic oil	Non-TDG regulated	1,000 L	2,000 L
Engine oil	Non-TDG regulated	1,000 L	1,000 L
Class 8 Degreaser	UN1760	205 L	205 L
Class 6.1(3) H_2S scavenger	UN2929	220 L	1,320 L
Class 2 Propane, Acetylene, Oxygen, Airgas cylinders	UN1978, UN1001, UN1072	100 lb	820 lb
Storage Area: Anasol Storage			
Class 3 Anasol	UN1993	220 L	22,000 L
Storage Area: Petroleum Distillates Storage			
Class 3 Petroleum distillates	UN1268	100 L	1,000 L
Tank Farm			
Used Oil	Non-TDG regulated	45,460 L	1,018,304 L
Fueling Pad			
Diesel	UN1202	10,000 L	10,000 L
Outside of Shop			
Fuel Oil	UN1202	9,711 L	9,711 L

*Maximum release quantity is based upon anticipated failure of largest single container.

Safety Data Sheets (SDS) for all dangerous goods stored on-site will be maintained at the designated storage area with the material being stored.

Incompatible materials will be segregated in the storage area and will not be loaded or unloaded in the receiving are the same time. Acids, caustics and oxidizers will be segregated using individual spill pallets or other means of separate secondary containment.

All fire extinguishers on site are ABC class and they are compatible with materials being stored with the exception of hydrogen-peroxide and sodium-nitrate stored in the chemical storage area. For these two chemicals water is recommended as a fire suppressant.

5.2 Handling and Release Prevention of Liquids and Solids

All hazardous substances, including regulated and non-regulated wastes, and clean products will be handled and managed in a way that prevent release. The following requirements will be followed:

- Container Management
    - All dangerous goods containers will be in good condition and compatible with the materials stored within.
    - All dangerous goods containers will be accessible and spacing between containers will provide sufficient access to perform periodic inspections and respond to releases.
    - Empty containers will have all markers and labels removed.
    - Any spills on the exterior of the container will be cleaned immediately.
    - Waste containers will not be overfilled. Headspace must remain to allow for expansion.
    - All containers will be stored upright and kept off the floor.
- Container Integrity

Each container will be inspected prior to loading to ensure it is of good integrity. A visual inspection is to be completed which includes but is not limited to checking:

- Open top containers (drums/pails) have lids in place that fit properly, are properly secured (closed) and gaskets complete and in place where necessary.
- All containers (drums/pails/totes) fully inspected to ensure there are no holes, punctures or other damage to the container that could result in a spill.
- All containers (drums/pails/totes) fully inspected for visible rust or weakening of exterior that could rupture/break during transport and result in a spill.

If a container is found to be of poor or questionable integrity during inspection it will be either re-packaged into another container of good integrity or left for pick up at an alternate time when necessary packaging/equipment can be supplied to ensure material does not/cannot spill.

- Good Housekeeping
    - All containerized waste dangerous goods will be stored inside building.
    - All containers will be closed.
    - All containers will be stored upright and kept off the floor. All products and dangerous goods will be stored in accordance with manufacturers specifications.
    - Sufficient aisle space will be provided between containers/drums to allow the unobstructed movement of people, transfer equipment, fire protection equipment, and spill control equipment.
    - All small spills or leaks will be immediately cleaned up and properly managed.
    - Storage areas will be periodically inspected to ensure leaks or spills are not occurring.
    - Signage will be used to identify dangerous goods or waste dangerous goods storage areas.
    - All work areas and storage areas must be kept clean and in good general condition.
- Secondary Containment
    - All containerized waste dangerous goods will be stored within appropriate secondary containment.

- Secondary containment will be checked periodically. Any spills identified in secondary containment will be immediately cleaned up and removed.

- Marking/Labeling
  - All storage areas, containers and tanks containing products or dangerous goods will be labelled to clearly identify their contents.

- Loading and Securing
  - Incompatible waste dangerous goods shall not be loaded or unloaded in the receiving are at the same time.
  - Proper segregation of any incompatible materials will be in place.

Waste types will be segregated in storage and handling to prevent the mixing of incompatible materials if a spill were to occur. The drums of waste will be elevated on pallets and stored in a protected area.

Company policy mandates that only fully trained and certified operators may operate forklift equipment. Skilled operators further reduce the potential for an incident occurring during loading/unloading procedures. Forklift operators will be certified. All employees directly involved with the drum handling operations will be TDG certified.

5.3 Handling and Release Prevention of Compressed Gases

Oxygen cylinders, full or empty, shall not be stored in the same vicinity as flammable gases. The proper storage for oxygen cylinders requires that a minimum of 50 feet be maintained between flammable gas cylinders and oxygen cylinders or the storage areas be separated, at a minimum, by a fire wall 5 feet high with a fire rating of 0.5 hours. Greasy and oily materials shall never be stored around oxygen; nor will oil or grease be applied to fittings. Where the possibility of flow reversal exists, the cylinder discharge lines will be equipped with approved check valves to prevent inadvertent contamination of cylinders connected to a closed system. “Sucking back” is particularly troublesome where gases are used as reactants in a closed system. A cylinder in such a system will be shut off and removed from the system when the pressure remaining in the cylinder is at least 172 kPa (25 psi/in2). If there is a possibility that the container has been contaminated it will be labelled and returned to the supplier. The cylinders that contain compressed gases are primarily shipping containers and will not be subjected to rough handling or abuse. Such misuse can seriously weaken the cylinder and render it unfit for further use or transform it into a rocket having sufficient thrust to drive it through masonry walls.

- To protect the valve during transportation, the cover cap will be screwed on hand tight and remain on until the cylinder is in place and ready for use.
- Cylinders will never be rolled or dragged.
- When moving large cylinders, they will be strapped to a properly designed wheeled cart to ensure stability.
- Only one cylinder will be handled (moved) at a time.
- Placards are required when transporting compressed gas cylinders.

5.4 Worst-Case Incident

5.4.1 Liquids and/or Solids Releases

The risk of spills from leaking containers are minimal since all containers will be visually inspected at the customer site prior to being picked up by the driver. Any containers in a questionable condition will be rejected and the materials transferred into another container that is in a condition suitable for transport or use an "over-pack salvage container". Upon receipt at the facility, all transportation containers will be immediately inspected again. If any transportation containers are found to be in a questionable condition, they will be placed in over-pack containers or immediately have contents transferred to an approved container. Also, waste dangerous and non-dangerous goods storage facility is located at the back of our fenced facility away from vehicle traffic minimizing the danger of an accidental impact.

Should a drum rupture occur it might cause the all the contents to leak out, the spill would be less than 205 L. If during the loading process an entire pallet was damaged or dropped the maximum volume of the resulting spill would be 820 L or 1,000 L if container is a tote.

In the event of a tank leak within the tank farm, the spill could be up to a maximum of 45,460 L. If such a spill occurred, it would be contained within the berm located in the tank farm building. Spilled product, along with wash water generated through cleanup would be pumped into other tanks within the tank farm, based on available capacity. If available capacity is insufficient to store all spilled product and wash water, the remaining volume will be transported off site for disposal at an approved facility.

5.4.2 Mixing of Incompatible Materials and Vapour Releases

The risk of mixing of incompatible materials and vapour releases are minimal since waste types will be segregated in storage and handling to prevent the mixing of incompatible materials if a spill were to occur. Incompatible materials will not be loaded or unloaded in the receiving area at the same time. All waste dangerous goods that are accepted by the facility will be stored in drums/containers composed of materials which are compatible with the goods stored therein. The waste dangerous goods containers will not be opened, sampled or processed on site.

Should a release occur causing an incompatible materials reaction, the emergency response plan shall be initiated immediately. Emergency evacuation of the area may be required if the chemical reaction causes a release of vapours. The chemical reactions leading to generation of vapours may cause a hazardous atmosphere in enclosed areas. Air monitoring and gas testing will be completed to evaluate the hazard before entering the area for cleanup. When it is safe to do so, the spread of liquids will be controlled by existing containments and/or additional spill response measures such as containment booms or floor dry. Acids and bases will be neutralized with spill response reagents

onsite, clean up residues will be collected and disposed of, and the affected area and equipment will be fully decontaminated in accordance with environmental hazards.

If H_2S is encountered while processing a delivery of product at the tank farm, the product will not be accepted until it has been treated. Gas monitors are used to ensure H_2S levels are within allowable limits. If higher than expected levels are encountered, activity is shut down, the area is ventilated and the product containing H_2S is isolated. The product will either be treated, or transported to an approved facility for disposal.

5.5 Types of Emergencies

This Contingency and Emergency Response Plan addresses the following emergencies that might reasonably be expected to occur, both on-site and off-site, based on the dangerous goods handled and the daily activities conducted.

- Product spills on-site during loading/unloading
- Product spills inside the drum/container storage and tank storage structures
- Losses due to containment failure
- Fire and/or explosion
- Injury
- H_2S or gas release
- Property damage
- Natural disasters
- Bomb threat.

5.6 Environmental Effects Assessment and Mitigation Measures

TANK FARM			
Aspect	**Potential Adverse Effects**	**Mitigation Measures**	**Probability**
Fire	Air contamination. Discharge point: area source. Soil and water contamination - particulate deposits, fire suppression runoff. Discharge points: Soil/Groundwater – any areas not covered with asphalt/concrete. Surface water – on-site drainage system.	Low flash (< 38ºC) product will not be received at the tank farm. Safe grounding and bonding procedures are implemented. Fire extinguishers are placed throughout the tank farm and readily accessible in the event of a fire. All fire extinguishers are properly maintained and regularly inspected. Building is equipped with LEL (Lower Explosive Limit) gas monitors which are used to monitor hazardous levels of a combustible gas or vapour in air on a continuous basis. Smoking is allowed only in the designated smoking area located at NE corner of property. Safe work permits including Hot work permits must be issued for any activity that falls outside of normal operating procedures. Good housekeeping.	After mitigation measures are, implemented probability is expected to be low.

H_2S release	Low concentrations irritate the eyes, nose, throat and respiratory system. Asthmatics may experience breathing difficulties. Moderate concentrations can cause more severe eye and respiratory irritation, headaches, dizziness, nausea, vomiting, staggering and excitability. Discharge point: area source.	Product will be tested at the source to determine if H_2S is present. If H_2S is present it will be treated with H_2S scavenger. Product will not be accepted until it has been treated. If product cannot be treated it will be transported to an approved facility for disposal. Tank farm building is equipped with fixed H_2S detector with pre-set points for flashing lights and alarm sound. All workers in the tank farm wear personal gas detectors.	After mitigation measures are, implemented probability is expected to be low.
Spill/leak	Surface water and/or groundwater contamination. Discharge points: Groundwater – any areas not covered with asphalt/concrete. Surface water – on-site drainage system.	Any spill or leak within the tank farm would be contained within the berm located in the tank farm building. Spilled product, along with wash water generated through clean up would be pumped into other tanks within tank farm or transported off site for disposal at an approved facility.	After mitigation measures are, implemented probability is expected to be low.
WASTE DANGEROUS GOODS RECEIVING/SHIPPING APRON			
Aspect	**Potential Adverse Effects**	**Mitigation Measures**	**Probability**
Fire	Air contamination. Discharge point: area source. Soil and water contamination - particulate deposits, fire suppression runoff. Discharge points: Soil/Groundwater – any areas not covered with asphalt/concrete. Surface water – on-site drainage system.	No smoking at any time around the truck or unloading/loading area.	After mitigation measures are, implemented probability is expected to be low.
Vapour release	Toxic vapours may cause serious health problems. Vapours from flammable liquids/solids may form explosive mixtures with air. Discharge point: area source.	Incompatible waste dangerous goods shall not be loaded or unloaded in the receiving area at the same time. All dangerous goods containers will be in good condition. Each container will be inspected prior to loading to ensure there are no holes, punctures or other damage to the container, no visible signs of rust or weakening of exterior and if open top containers - properly closed.	After mitigation measures are, implemented probability is expected to be low.

Spill/leak	Surface water and/or groundwater contamination. Discharge points: Groundwater – any areas not covered with asphalt/concrete. Surface water – on-site drainage system.	All dangerous goods containers will be in good condition. Each container will be inspected prior to loading to ensure there are no holes, punctures or other damage to the container, no visible signs of rust or weakening of exterior and if open top containers - properly closed. Only fully trained and certified operators may operate forklift equipment. During loading and unloading activities, the drain valve will be closed which will isolate the apron from storm sewer piping and provided there was no precipitation during loading/unloading, the drain will be re-opened when the loading/unloading activities are finished. Anytime there is precipitation during the loading/unloading activities, the accumulated storm water will be visually inspected prior to re-opening the valve. If there is a sheen on surface water, or there has been a spill on the apron, the liquid will be vacuumed up and the apron will be cleaned before re-opening the drain valve.	After mitigation measures are, implemented probability is expected to be low.
WASTE DANGEROUS GOODS STORAGE			
Aspect	**Potential Adverse Effects**	**Mitigation Measures**	**Probability**
Fire	Air contamination. Discharge point: area source. Soil and water contamination - particulate deposits, fire suppression runoff. Discharge points: Soil/Groundwater – any areas not covered with asphalt/concrete. Surface water – on-site drainage system.	Only intrinsically safe and non-sparking tools/equipment will be used in the storage building. Good housekeeping. All containers containing products or dangerous goods will be labelled to clearly identify their contents. Proper segregation of any incompatible materials will be in place. Fire extinguishers are placed throughout the storage facility and readily accessible in the event of a fire. All fire extinguishers are properly maintained and regularly inspected. Smoking is allowed only in designated smoking area located at NE corner of property. Safe work permits including Hot work permits must be issued for any activity that falls outside of normal operating procedures.	After mitigation measures are, implemented probability is expected to be low.

Vapour release	Toxic vapours may cause serious health problems. Vapours from flammable liquids/solids may form explosive mixtures with air. Discharge point: area source.	All dangerous goods containers will be compatible with the materials stored within. Proper segregation of any incompatible materials will be in place. The waste dangerous goods containers will not be opened, sampled or processed on site. All dangerous goods containers will be in good condition and accessible when in storage to allow periodic inspections and timely response to potential releases. All containers will be closed and stored upright and kept off the floor. Containers are not to be overfilled; headspace must remain to allow for expansion. All products will be stored in accordance with manufacturers specifications.	After mitigation measures are, implemented probability is expected to be low.
Spill/leak	Surface water and/or groundwater contamination. Discharge points: Groundwater – any areas not covered with asphalt/concrete. Surface water – on-site drainage system.	All dangerous goods containers will be in good condition and accessible when in storage to allow periodic inspections and timely response to potential releases. All containers will be closed and stored upright and kept off the floor. Containers are not to be overfilled; headspace must remain to allow for expansion. All products will be stored in accordance with manufacturers specifications. Sufficient aisle space will be provided between containers/drums to allow the unobstructed movement od people, transfer equipment, spill control and fire protection equipment. All containerized waste dangerous goods will be stored within appropriate secondary containment. Secondary containment will be checked periodically. Any spills identified in secondary containment will be immediately cleaned up. All small spills/leaks or any spills on the exterior of the container will be cleaned immediately. The inside of the building will be inspected daily to ensure there are no leaks/spills from the containers stored inside the building. The observation sump/manhole will be inspected every quarter to determine any liquid is accumulating in the interstitial layer between the concrete and the liner.	After mitigation measures are, implemented probability is expected to be low.

6. EMERGENCY ASSESSMENT AND NOTIFICATION PROCEDURES

Terrapure Environmental policies regarding releases, fire and injury are to limit damage to people, environment and property to the fullest extent possible. Given these policies, emergencies will be declared if any of the following occur:

- A major leak or spill
- Fire or explosion
- Serious injury or loss of life
- Major H_2S release.

Minor incidents typically involve incidents where no danger exists outside of company property and where the situation can be handled entirely by Terrapure personnel.

Major incidents usually involve situations where safe operating control has been lost, resulting in or potentially resulting in fatalities, serious injury to Terrapure personnel, contractors or the public, serious property damage, serious impacts to the environment, or major impact to surrounding communities. Emergency response plans will require implementation.

Appropriate emergency procedures will be initiated immediately after discovery that an emergency exists.

The main person responsible for dealing with any emergency will be the Site Emergency Coordinator.

In the event that the Site Emergency Coordinator is not on duty, the individual discovering the emergency will notify the next available individual on 6.2 Site Emergency Coordinator List or Section 6.3 Crisis Communication Schedule.

Level 1 incident typically involves incidents without off-site risk to the public or the environment and where the situation can be handled entirely by Terrapure personnel. Level 1 incidents may include but are not limited to discharges (spills, emissions) which can be cleaned up immediately, property damage ($1,000 – $5,000) including vehicle accidents, public complaints (substantiated), regulatory inspections (minor deficiencies), first aid, near miss Level 1 and regulatory/system non-conformances. Level 1 incidents will be reported to Head Office within 24 hours using the Terrapure incident report form.

Level 2 incidents typically involve situations where there is no immediate danger or significant adverse effect to off-site property or the environment, but the potential exists for the situation to effect property or the environment beyond site limits. Level 2 incidents include spills which are not contained with the potential to have an adverse environmental or public impact, property damage ($5,001 – $50,000) including vehicle accidents (no spill or injury), off-site emissions (public nuisance), regulatory inspections/investigations (major deficiencies), lost time injuries, restricted work injuries, medical treatment injuries and process/operation interruptions ($10,000 – $50,000). Level 2 incidents will be reported to Head Office immediately.

Level 3 incidents may involve situations where safe operating control has been lost, resulting in or potentially resulting in fatalities, serious injury to Terrapure personnel, contractors or the public, significant property damage, serious impacts to the environment, or impact to surrounding communities. Level 3 incidents may include but are not limited to off-site spills (resulted in adverse

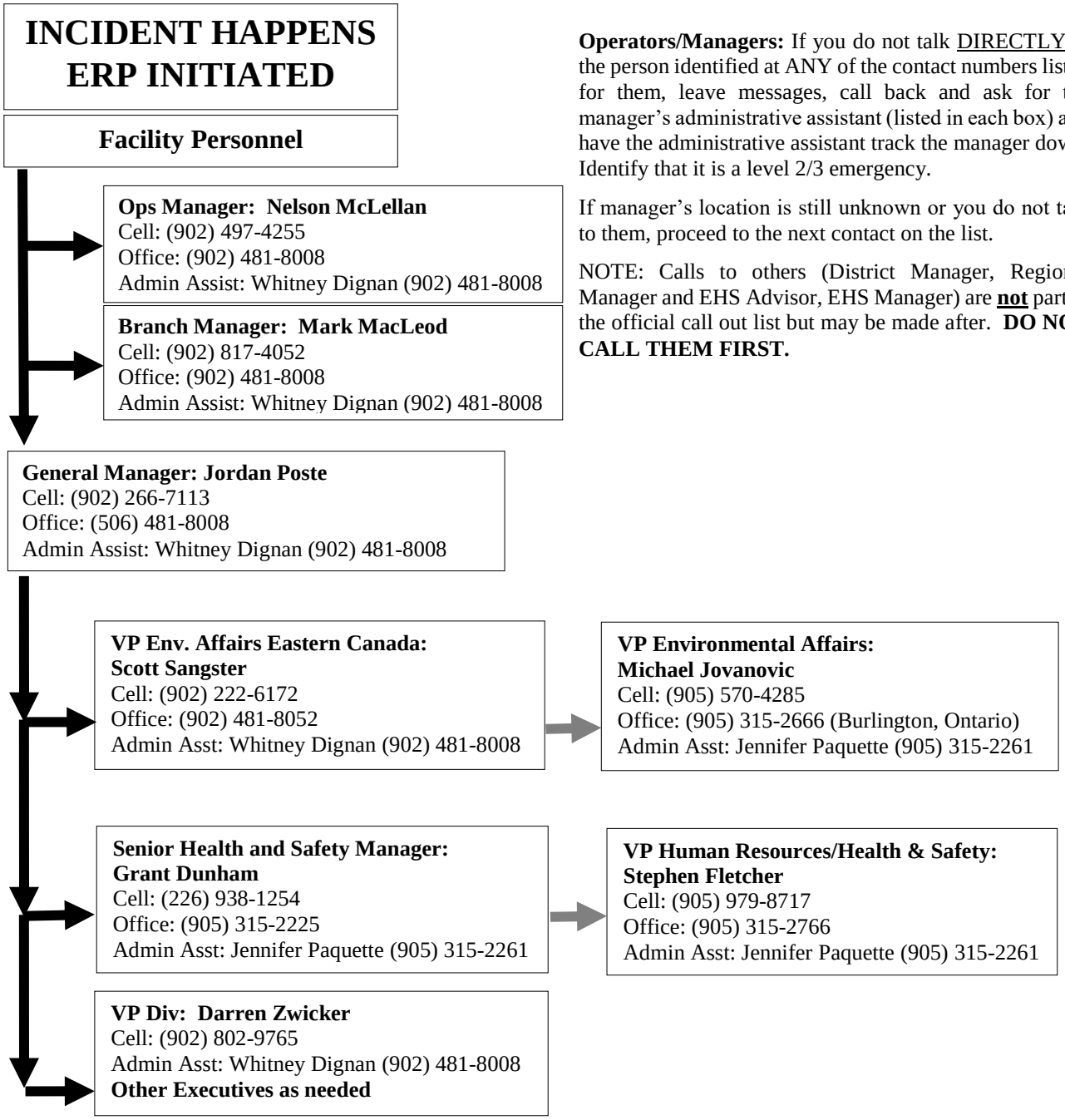
environmental impact or public health impact and would typically require the assistance of external agencies), property damage ($50,000+), vehicle accidents (with spill or injury), off-site emissions (public safety input), regulatory inspections/investigations resulting in suspension of operations, lost time injuries, fatalities, major fires or explosions and process/operation interruptions ($50,000+). All level 3 incidents will be reported immediately. In the case of Level 3 incidents, Contingency and Emergency Response Plan may require implementation.

Appropriate emergency procedures will be initiated immediately after discovery that an emergency exists.

This Plan is a facility specific plan for dealing with emergencies and shall be implemented immediately whenever there is a fire, explosion, release of a hazardous substance that threatens human health or the environment, or any other emergency situation requiring action.

6.1 Call Out for Level 2 and 3 Incidents (Level 1 – internal call out system)

ERP Call-Out for Level 2 and 3 Incidents - Brown



Operators/Managers: If you do not talk DIRECTLY to the person identified at ANY of the contact numbers listed for them, leave messages, call back and ask for the manager's administrative assistant (listed in each box) and have the administrative assistant track the manager down. Identify that it is a level 2/3 emergency.

If manager's location is still unknown or you do not talk to them, proceed to the next contact on the list.

NOTE: Calls to others (District Manager, Regional Manager and EHS Advisor, EHS Manager) are **not** part of the official call out list but may be made after. **DO NOT CALL THEM FIRST.**

6.2 Site Emergency Coordinator

The supervisor on site at the time of any emergency is charged with the evaluation and immediate response to rectify the situation or activate the emergency response procedures.

In the event of the Site Emergency Coordinator leaving the site for any reason other than the end of his shift, he will notify the next available individual to assume the responsibilities of Site Emergency Coordinator.

The designated Site Emergency Coordinator for this facility is Nelson McLellan, Operations Manager. In the event that this person is not available the Alternate Site Emergency Coordinator will be Mark MacLeod, Branch Manager, and Aaron Hiscock, Operations Supervisor.

Site Emergency Coordinator

Name: Nelson McLellan
Title: Operations Manager, Industrial Services
Office Phone Number: (902) 481-8008
Cell Phone Number: (902) 497-4255

Alternate Site Emergency Coordinator

Name: Mark MacLeod
Title: Branch Manager
Office Phone Number: (902) 481-8008
Cell Phone Number: (902) 817-4052

Alternate Site Emergency Coordinator

Name: Aaron Hiscock
Title: Operations Supervisor, Industrial Services
Office Phone Number: (902) 481-8008
Cell Phone Number: (902) 802-5932

6.3 Crisis Communication Schedule

In the event of an emergency, the Site Emergency Coordinator will notify the following people. Each person notified will discuss the situation with the person providing notice, and the two will jointly decide if the notification process shall escalate, and who will be responsible for proceeding with further notification.

Mark MacLeod	Branch Manager	Office (902) 481-8008 Cell (902) 817-4052
Jordan Poste	General Manager	Office (902) 481-8008 Cell (902) 266-7113

Darren Zwicker	Vice-President	Office (902) 481-8008 Cell (902) 835-8078
Scott Sangster	Vice-President, Environmental Affairs - Atlantic	Office (902) 481-8008 Cell (902) 222-6172
Grant Dunham	Senior Health & Safety Manager	Office (905) 315-2225 Cell (226) 938-1254
Darlene Whelan	Health & Safety Manager	Office (709) 834-7350 Cell (902) 237-9558
Ashlee Hanratty	Safety Advisor	Office (902) 481-8008 Cell (902) 718-9313
Jasna Krstic	Environmental Affairs Advisor - Atlantic	Office (902) 481-8008 Cell (902) 802-8007

6.4 Personal Protective and Emergency Response Equipment

The following personal protective and emergency response equipment apply to each TDG Class.

- Wear full or half face respirator.
- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighter's protective clothing provides limited protection in fire situations only; it is not effective in spill situations where direct contact with the substance is possible.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.
- Wear rubber boots/chemical resistant overshoes or boots, chemical resistant gloves and safety goggles/face shield.
- Use non-sparking hand tools, absorbent pads, brooms, and plastic dustpans.
- If spill is large (greater than 50 L), use mobile wash and vacuum truck.

Full list of emergency response equipment can be found in Section 13.

6.5 Resources

Terrapure Environmental specializes in chemical and hazardous waste spill response and remediation. The key response personnel consist of people with diverse technical and first response backgrounds. In addition, Terrapure Environmental has a large number of people available with various related skills – mechanics, vacuum truck operations, pipe fitting & cleaning and confined space entry.

6.6 Security

The site is protected by a security alarm, fire alarm and suppression system.

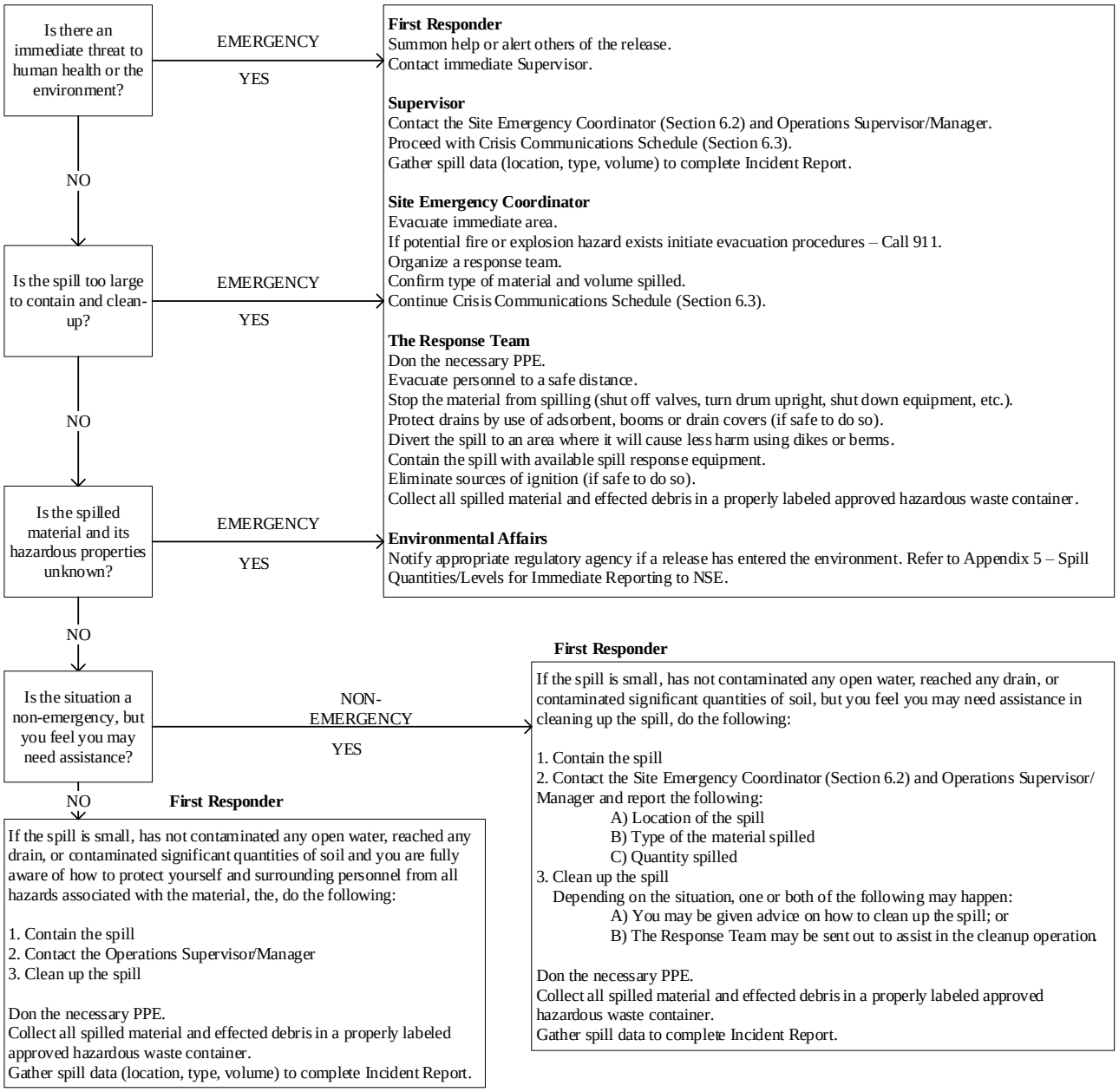
Security Alarm System

The security alarm is active whenever there are no Terrapure Environmental employees in the buildings or in the yard. The system is to be activated by the last employee to leave the building. It is monitored by outside security, Power Security, who will immediately contact the Terrapure Environmental office to report an incident. The Terrapure Environmental office will have the opportunity to declare the alarm false by giving a password and deactivating the alarm. However, if the alarm is real, the police department will be contacted immediately.

Fire Alarm and Suppression System

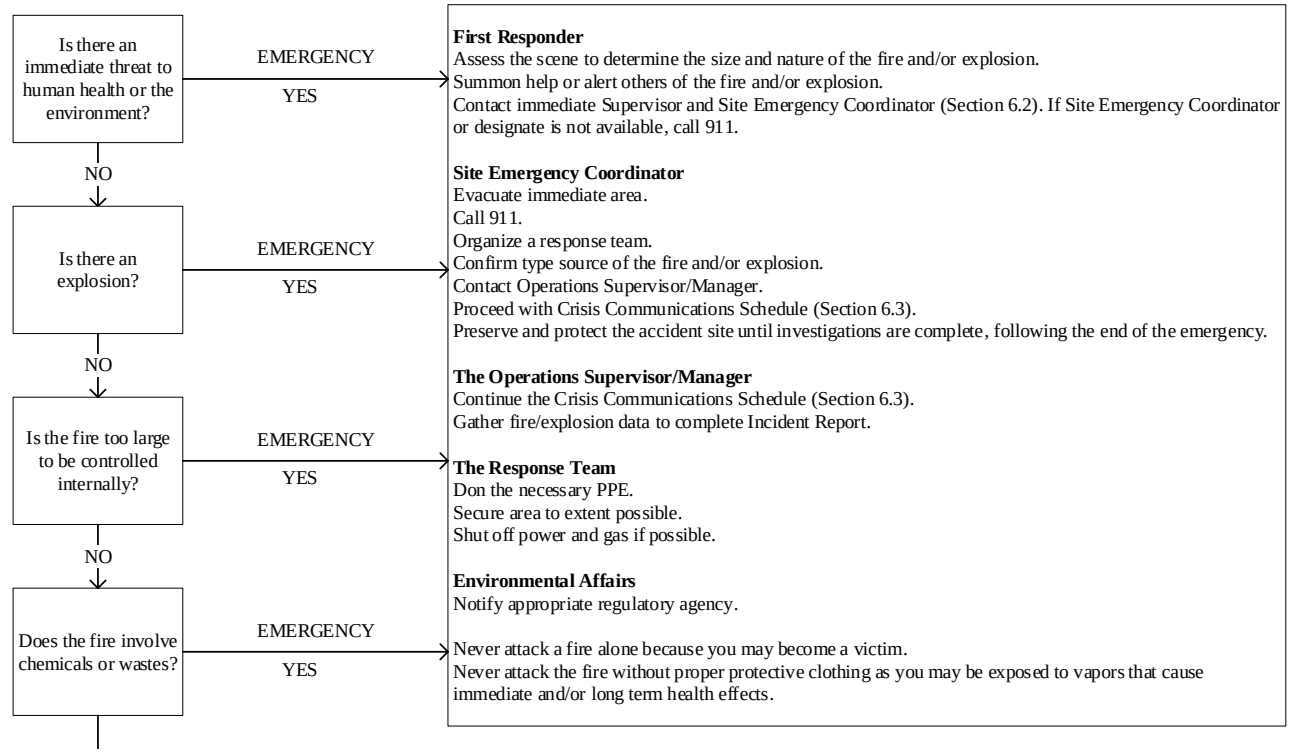
There are number of fire alarm pull stations located in the office area, maintenance shop and in the tank farm building. Upon activation an audible alarm sounds notifying employees to evacuate the building to the Master Station. Upon alarming the outside security company Power Security that monitors our facility is notified and they can request assistance from local Fire Department.

6.7 Spill Response



PPE: full or half face respirator, positive pressure self-contained breathing apparatus (SCBA), chemical protective clothing, thermal protective clothing (when handling refrigerated/cryogenic liquids), runner boots, chemical resistant gloves, safety goggles/face shield.

6.8 Fire/Explosion Response



- A Fire hydrant is located on Brown Avenue, across from the main entrance.
- A Fire hydrant is located on Brown Avenue, across from the rear parking area.

6.9 Injury Response

6.9.1 Minor Injury

Injured Person

- Report to immediate Supervisor/Site Lead.
- Apply first aid as necessary.

Supervisor/Site Lead

- Contact Safety Advisor, HR and Operations Supervisor/Manager.
- Help the injured person by applying first aid.
- Take injured person to medical help, if necessary.
- Complete Incident Report.

6.9.2 Major Injury

Injured Person/Site Lead

- Report to immediate Supervisor and call 911 if needed.
- Apply first aid as necessary.

Note: For serious injury, contact General Manager then Supervisor.

Supervisor

- Contact Operations Supervisor/Manager, Safety Advisor and HR.
- Take injured person to medical help, if necessary.
- Ensure unobstructed access for emergency response personnel to the accident site, if necessary.
- Receive and direct emergency response personnel to the accident site, if necessary.
- Preserve and protect the accident site until investigations are complete.
- Complete Incident Report.

Operations Supervisor/Manager

- Contact Crisis Communication Schedule – Branch Manager (section 6.3).

Branch Manager

- Continue the Crisis Communication Schedule (Section 6.3).
- Notify injured person’s family.

Safety Advisor

- Contact Department of Labor, if required.

6.9.3 Fatality

Supervisor/Site Lead

- Call 911.
- Contact General Manager, then immediate Supervisor.

Supervisor

- Contact Operations Supervisor/Manager, Safety Advisor and HR.
- Ensure unobstructed access for emergency response personnel to the accident site.
- Receive and direct emergency response personnel to the accident site.
- Preserve and protect the accident site until investigations are complete.
- Complete Incident Report.

Operations Supervisor/Manager

- Contact Crisis Communication Schedule – Branch Manager (section 6.3).

Branch Manager

- Continue the Crisis Communication Schedule (Section 6.3).

NOTE: Authorities will notify family members.

6.10 H_2S Alarm, H_2S or Gas Release

First Responder

- Shut down all operating equipment.
- Evacuate area and proceed to meeting point upwind away from hazardous area.
- Contact immediate Supervisor.

Supervisor

- Organize a Response Team.
- Proceed with Crisis Communication Schedule – contact Branch Manager (Section 6.3).
- Complete Incident Report.

Branch Manager

- Continue the Crisis Communication Schedule, if required (Section 6.3).

Response Team

- Don the necessary PPE.
- Contain source of H_2S release.
- Assess the situation - Do a head count and consider other hazards.

Monitor site and surrounding area outside of the accident site.

6.11 Major Property Damage

Operator

- Shut down equipment and processes of effected area, if safe to do so.
- Stay clear of effected area.
- Contact Site Emergency Coordinator (Section 6.2).

The Site Emergency Coordinator shall:

- Organize response team to stabilize effected area to allow for continued operation of facility, if possible.
- If not possible, use lockout procedures and cordon off effected area until repair can be made.

The Operations Supervisor shall:

- Complete Incident Report (Appendix 4).
- Contact management within 24 hours or next working day (Section 2.2).

The Response Team shall:

- Don the necessary personal protective equipment.
- Help with stabilizing the affected area.
- Do lockout procedures and cordon off affected area.

6.12 Natural Disasters

6.12.1 Lightning Storm

Prepare

- Shut down equipment and processes.

Action

- During electrical storm, work activity (i.e. tank washing, tank sampling, etc.) immediately around facility will be temporarily stopped until danger has passed.

6.12.2 Hurricane Warning

Prepare

- Shut down equipment and processes.
- Inspect all drums inside storage facility.
- Ensure loading/unloading pad is empty of drums and concrete is clean.

Action

- In the event of a public announced hurricane watch, facility staff is to be notified by supervisor.

- Work activities to be conducted in recognition of short notice stoppage.
- In the event of a public announced hurricane warning employee to take cover.
- Off duty staff will not go to plant to advise others.

6.12.3 Flood

Prepare

- Secure facility.
- Empty out/reduce tanks of oil and fill tanks with water.
- Empty sumps and underground tanks.
- Secure equipment and office equipment.
- Shut off power and gas.
- Remove/secure chemical barrels to higher levels.
- Build up berm around plant.

Action

- Close gate and evacuate to safe area.

6.12.4 Grass/Forest Fires

Prepare

- Contact fire department to protect the plant from the fire.
- Secure facility upon warning/alert.
- Ensure no open hydrocarbons.
- Close hatches.
- Shut down equipment and processes.
- Cover and protect equipment to extent feasible.

Action

- Evacuate employees to nearest safe area.

6.12.5 High Winds, Hail

Prepare

- Secure light objects.
- Protect equipment.

Action

- Take cover.

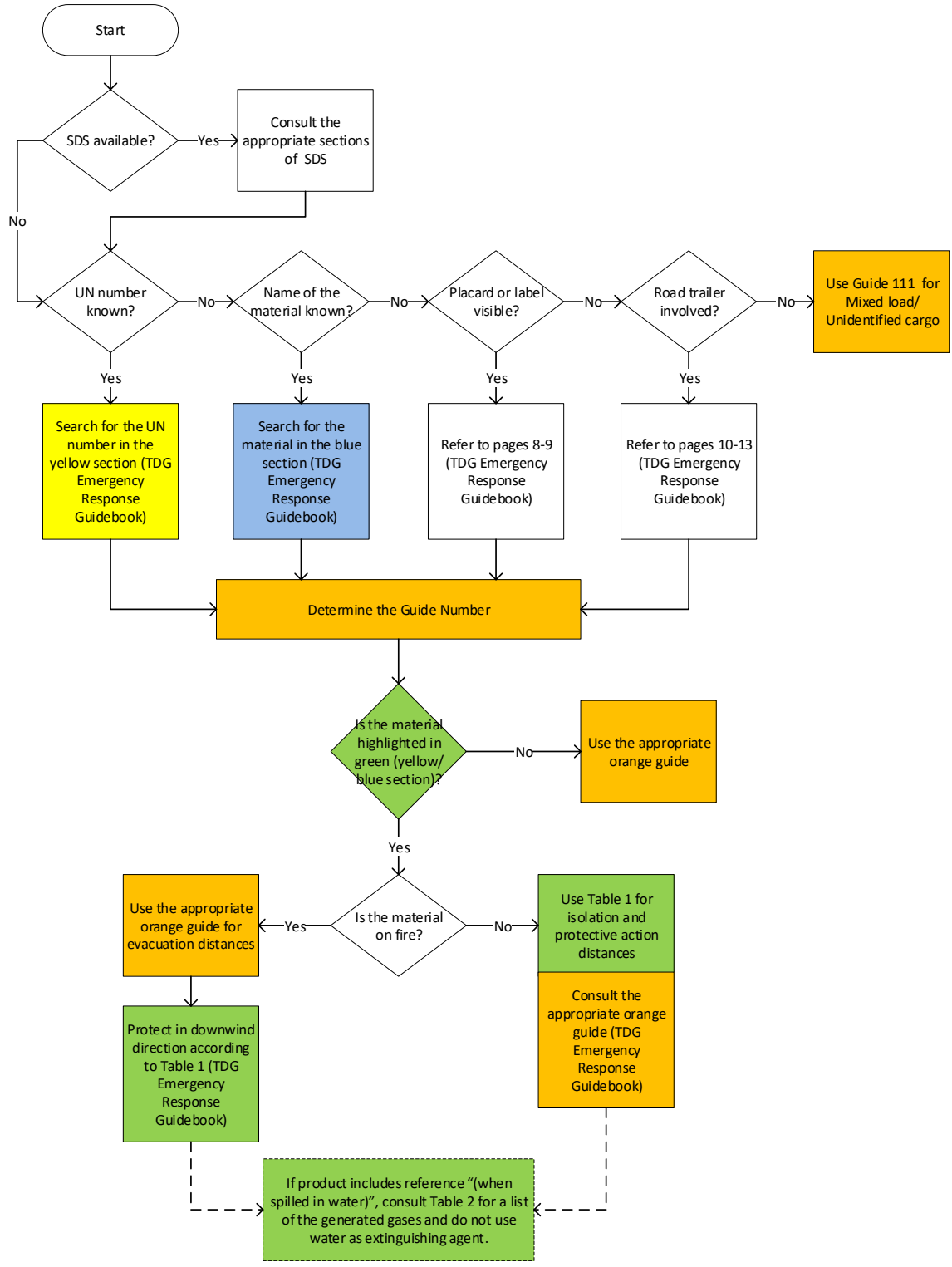
6.13 Bomb Threat

WHAT TO LISTEN FOR

When a Bomb threat is received, the following will be used:

- The Operations Manager or Lead Hand (if after hours) will most likely be the only person talking to the caller. While talking to the caller, they will record:
  - Time of call
  - Male/Female caller
  - Accent in voice
  - What was said
  - Background noises
  - Why this company is targeted
  - Who is calling
  - Caller upset/joking around
  - What time will the bomb go off
  - Any other specifics that relate to the identification of caller.
- Immediately following the call, notify the most senior person on site. If after hours, notify one of the management team members using the Terrapure Management Contacts List (Section 2.2).
- Call 9-1-1 and inform the operator of the situation and the need for the Bomb Squad.
- Activate the nearest emergency plant shutdown button and begin evacuation procedures.
- When police and other responding teams arrive, assist them in any way they may require.

7. EMERGENCY RESPONSE GUIDE



7.1 Emergency Response for Class 2

Class 2 - Gases
POTENTIAL HAZARDS
Fire or Explosion
Flammable gases will be easily ignited by heat, sparks or flames and will form explosive mixtures with air.
Toxic-flammable/flammable-corrosive gases may be ignited by heat, sparks or flames and may form explosive mixtures with air.
Oxidizing gases do not burn but will support combustion and may ignite combustibles (wood, paper, oil, clothing, etc.).
Some oxidizing gases may react explosively with fuels.
Some toxic and/or corrosive and compressed or liquefied gases may burn but none ignite readily.
Vapours from liquefied gas are initially heavier than air and spread along ground and may travel to source of ignition and flash back (if gases are flammable).
Toxic and/or corrosive oxidizing gases are strong oxidizers and will react vigorously or explosively with many materials including fuels.
Toxic-flammable and oxidizing gases runoff may create fire or explosion hazard.
Some flammable-corrosive, toxic-flammable and corrosive gases may react violently with water.
Some oxidizing gases will react violently with air, moist air and/or water.
Cylinders exposed to fire may vent and release toxic and/or flammable and/or corrosive gas through pressure relief devices.
Containers may explode when heated.
Ruptured cylinders may rocket.
Health
Vapours may cause dizziness or asphyxiation without warning.
Some may be toxic or irritating if inhaled at high concentrations.
Some toxic, flammable and/or corrosive gases are extremely hazardous or toxic and may be fatal if inhaled or absorbed through skin.
Initial odor (toxic-flammable gases) may be irritating or foul and may reduce your sense of smell.
Flammable-corrosive gases vapours are extremely irritating and may be corrosive.
Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
Fire may produce irritating, corrosive, and/or toxic gases.
Some runoff from fire control may cause pollution.
PUBLIC SAFETY
As an immediate precautionary measure, isolate spill or leak for at least 100 meters in all directions.
Keep unauthorized personnel away.
Stay upwind, uphill and/or upstream.
Many gases are heavier than air and will spread along ground and collect in low or confined areas.
Ventilate closed spaces before entering.
EVACUATION
Large spill - Consider initial downwind evacuation for at least 100 meters (inert gases), 500 meters (oxidizing and compressed or liquefied gases) and 800 meters (flammable, flammable-corrosive gases).
Spills involving vapours toxic by inhalation – Consider TDG Initial Isolation and Protective Action Distances.

EMERGENCY RESPONSE

Fire

Do not extinguish a leaking gas fire unless leak can be stopped.

Move containers from fire area if you can do it without risk.

Damaged cylinders should be handled only by specialists.

Do not get water inside containers.

Gases	Dry chemical	CO_2	Water spray	Fog	Regular foam	Alcohol-resistant foam
Flammable	SF - ✓	SF - ✓	LF - ✓	LF - ✓		
Flammable-corrosive	SF - ✓	SF - ✓	LF - ✓	LF - ✓	LF - ✓	
Toxic-flammable (extreme hazard)	SF - ✓	SF - ✓	SF - ✓ LF - ✓	LF - ✓	SF - ✓ LF - ✓	
Toxic-flammable	SF - ✓	SF - ✓	SF - ✓ LF - ✓	LF - ✓		SF - ✓ LF - ✓
Oxidizing gases	SF - ✓	SF - ✓	LF - ✓	LF - ✓	LF - ✓	
Toxic and/or corrosive	SF - ✓	SF - ✓	LF - ✓	LF - ✓	LF - ✓	
Toxic and/or corrosive - oxidizing	✗	✗	SF - ✓	SF - ✓		
Compressed or liquefied	SF - ✓	SF - ✓	LF - ✓	LF - ✓	LF - ✓	

SF – Small fire; LF – Large fire

Toxic and/or corrosive – oxidizing - These materials do not burn but will support combustion. Some will react violently with water. Contain fire and let burn. If fire must be fought, water spray or fog is recommended.

Inert gases - Use extinguishing agent suitable for type of surrounding fire.

Spill or Leak

Flammable gases - Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area).

Flammable gases - All equipment used when handling the product must be grounded.

Oxidizing gases – Keep combustibles (wood, paper, oil, etc.) away from spilled material.

Do not touch or walk through spilled material.

Stop leak if you can do it without risk.

Do not direct water at spill or source of leak.

Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.

If possible, turn leaking containers so that gas escapes rather than liquid.

Prevent entry into waterways and sewers.

Isolate area until gas has dispersed.

Ventilate the area.

First Aid

Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Move victim to fresh air.

Call 911 or emergency medical services.

Give artificial respiration if victim is not breathing.
Toxic-flammable, flammable-corrosive, toxic and/or corrosive gases – Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
Administer oxygen if breathing is difficult.
Remove and isolate contaminated clothing and shoes.
Clothing frozen to the skin should be thawed before being removed.
In case of contact with toxic-flammable gas, immediately flush skin or eyes with running water for at least 20 minutes.
In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
Keep victim calm & warm and under observation.
Effect of contact or inhalation may be delayed.

7.2 Emergency Response for Class 3

Class 3 – Flammable Liquids
POTENTIAL HAZARDS
Fire or Explosion
Highly flammable – Will be easily ignited by heat, sparks or flames.
Vapours may form explosive mixtures with air.
Vapours may travel to source of ignition and flash back.
Most vapours are heavier than air. They will spread along ground and collect in low or confined areas.
Vapour explosion and/or poison (if toxic flammable liquid) hazard indoors, outdoors or in sewers.
Runoff to sewer may create fire or explosion hazard.
Containers may explode when heated.
Many liquids are lighter than water.
Flammable water-immiscible liquid substances may be transported hot.
Health
Noxious flammable liquids may cause toxic effects if inhaled or absorbed through skin.
Toxic flammable liquids may be fatal if inhaled, ingested or absorbed through skin.
Corrosive flammable liquids may cause toxic effects if inhaled or ingested/swallowed.
Inhalation or contact with material may irritate or burn skin and eyes.
Fire may produce irritating, corrosive and/or toxic gases.
Vapours may cause dizziness or suffocation.
Runoff from fire control or dilution water may cause pollution.
PUBLIC SAFETY
As an immediate precautionary measure, isolate spill or leak area for at least 50 meters in all directions.
Keep unauthorized personnel away.
Stay upwind, uphill and/or upstream.

Ventilate closed spaces before entering.

EVACUATION

Large spill – Consider initial downwind evacuation for at least 300 meters.

EMERGENCY RESPONSE

Fire

All these products have a very low flash point; Use of water spray when fighting fire may be inefficient.

For fire involving alcohols, alcohol-resistant foam should be used.

For mixtures containing alcohol or polar solvent, alcohol-resistant foam may be more effective.

Some of corrosive flammable liquid materials may react violently with water.

Flammable liquids	Dry chemical	CO_2	Water spray	Fog	Regular foam	Alcohol-resistant foam
Water-miscible Water-miscible/noxious Toxic Corrosive	SF - ✓	SF - ✓	SF - ✓ LF - ✓	LF - ✓		SF - ✓ LF - ✓
Water-immiscible Water-immiscible/noxious	SF - ✓	SF - ✓	SF - ✓ LF - ✓	LF - ✓	SF - ✓ LF - ✓	

SF – Small fire; LF – Large fire

Large fire

Do not use straight streams.

Move containers from fire area if you can do it without risk.

Toxic and corrosive flammable liquids – Dike fire-control water for later disposal; do not scatter the material.

Corrosive flammable liquids – Do net get water inside containers.

Fire involving tanks or trailer loads

Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.

Cool containers with flooding quantities of water until well after fire is out.

Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.

Always stay away from tanks engulfed in fire.

For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

Spill or Leak

Toxic and corrosive flammable liquids – Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.

Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area).

All equipment used when handling the product must be grounded.

Do not touch or walk through spilled material.

Stop leak if you can do it without risk.

Prevent entry into waterways, sewers or confined areas.

A vapour-suppressing foam may be used to reduce vapours.

Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers for later disposal.

Use clean, non-sparking tools to collect absorbed material. Large spill Dike far ahead of liquid spill for later disposal. Water spray may reduce vapour, but may not prevent ignition in closed spaces.
First Aid
Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Move victim to fresh air. Call 911 or emergency medical services. Give artificial respiration if victim is not breathing. Toxic and corrosive flammable liquids – Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Administer oxygen if breathing is difficult. Remove and isolate contaminated clothing and shoes. In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes. Wash skin with soap and water. In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin. Keep victim calm and warm. Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

7.3 Emergency Response for Class 4

Class 4 - Flammable Solids; Substances Liable to Spontaneous Combustion; Substances that on Contact with Water Emit Flammable Gases (Water-Reactive Substances)
POTENTIAL HAZARDS
Fire or Explosion
Flammable/combustible material. Self-reactive substances – Self-decomposition, self-polymerization, or self-ignition may be trigger by heat, chemical reaction, friction or impact. May be ignited by friction, heat, sparks or flames. Some may burn rapidly with flare-burning effect. Powders, dusts, shavings, borings, turnings or cuttings may explode or burn with explosive violence. Substances may be transported in a molten form at temperature that may be above its flash point. May re-ignite after fire is extinguished. Containers may explode when heated. Some react vigorously or explosively on contact with water. Some may decompose explosively when heated or involved in a fire. **Toxic and/or corrosive flammable solids** – When heated, vapours may form explosive mixtures with air; Contact with metals may evolve flammable hydrogen gas.

Runoff may create fire or explosion hazard.

Spontaneously combustible - toxic and/or corrosive (air-reactive) substances – Extremely flammable; will ignite itself if exposed to air; burn rapidly, releasing dense, white, irritating fumes.

Water-reactive substances – Produce flammable (and toxic) gases on contact with water; May ignite on contact with water or moist air.

Self-reactive substances – May burn violently. Decomposition or polymerization may be self-accelerating and produce large amounts of gases.

Self-reactive/temperature controlled substances – Self-accelerating decomposition may occur if the specific control temperature is not maintained. These materials are particularly sensitive to temperature rises. Above a given "control temperature" they decompose or polymerize violently and may catch fire.

Water-reactive substances and metals - Some are transported in highly flammable liquids.

Self-reactive substances and metals – Vapours, dusts or fumes may form explosive mixtures with air.

Health

Toxic flammables solids – Inhalation, ingestion or skin contact with material may cause severe injury or death.

Spontaneously combustible substances – Inhalation of decomposition products may cause severe injury or death.

Spontaneously combustible – toxic and/or corrosive (air-reactive) substances – Ingestion of substances or inhalation of decomposition products will cause severe injury or death. Some effects may be experienced due to skin absorption.

Water-reactive (emitting flammable and toxic gases) substances – Highly toxic: contact with water produces toxic gas, may be fatal if inhaled.

Water-reactive and self-reactive substances – Inhalation or contact with vapours, substance or decomposition products may cause severe injury or death. May produce corrosive solutions on contact with water.

Metals (powders, dusts, shavings, borings, turnings, or cuttings, etc.) – Oxides from metallic fires are a severe health hazard. Inhalation or contact with substance or decomposition products may cause severe injury or death.

Fire may produce irritating, corrosive and/or toxic gases.

Contact with substance may cause burns to skin and eyes.

Contact with molten substance may cause severe burns to skin and eyes.

Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

PUBLIC SAFETY

As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters for liquids and at least 25 meters for solids.

Keep unauthorized personnel away.

Stay upwind, uphill and/or upstream.

Ventilate the area before entry.

Self-reactive/temperature controlled substances – Do not allow the substance to warm up. Obtain liquid nitrogen, dry ice or ice for cooling. If this is not possible or none can be obtained. Evacuate the area immediately.

EVACUATION

Large Spill

Consider initial downwind evacuation for at least 100 meters for flammable solids, 300 meters for spontaneously combustible (air-reactive) substances, 250 meters for self-reactive substances and 50 meters for metals (dusts, powders, etc.).

EMERGENCY RESPONSE

Fire

Move containers from fire area if you can do it without risk.

Large fire

When using water spray or fog, do not use straight streams and do not get water inside containers.

Dike fire-control water for later disposal; do not scatter the material.

Spontaneously combustible – toxic and/or corrosive (air-reactive) substances – Do not scatter spilled material with high-pressure water streams.

Self-reactive substances – Flood area with water from a distance.

Self-reactive/temperature controlled substances – The temperature of the substance must be maintained at or below "control temperature" at all times.

Metals (powders, dusts, cuttings, etc.) – Do not use water, foam or CO_2. Dousing metallic fires with water will generate hydrogen gas, an extremely dangerous explosion hazard, particularly if fire is in a confined environment. Use dry sand, graphite powder, dry sodium chloride-based extinguishers, G-1 or Met-L-X powder. Confining and smothering metal fires is preferable rather than applying water.

For chlorosilanes, do not use water; use AFFF alcohol-resistant medium-expansion foam; do not use dry chemicals, soda ash or lime on chlorosilane fires as they may release large quantities of hydrogen gas that may explode.

	Dry chemical	CO_2	Soda ash	Lime	Dry sand	Wet sand/ earth	Sand, earth	Water spray	Fog	Regular foam	Alcohol-resistant foam
Flammable solids	SF - ✓	SF - ✓					SF - ✓	SF - ✓ LF - ✓	LF - ✓	SF - ✓ LF - ✓	
Flammable solids – toxic and/or corrosive	SF - ✓	SF - ✓						SF - ✓ LF - ✓	LF - ✓		SF - ✓ LF - ✓
Spontaneously combustible	SF - ✓ LF - ✓	✗	SF - ✓ LF - ✓	SF - ✓ LF - ✓	SF - ✓ LF - ✓			✗		✗	
Spontaneously combustible (air-reactive)						SF - ✓		SF - ✓ LF - ✓	LF - ✓		
Water-reactive	SF - ✓ LF - ✓		SF - ✓ LF - ✓	SF - ✓ LF - ✓	LF - ✓		SF - ✓	✗		✗	
Self-reactive	SF - ✓	SF - ✓						SF - ✓ LF - ✓		SF - ✓	
Metals		✗			SF - ✓ LF - ✓			✗		✗	

SF– Small fire; LF – Large fire

Exception - For Xanthates, UN3342 and for Dithionite (Hydrosulfite) UN1384, UN1923 and UN1929, use flooding amounts of water from small and large fires to stop the reaction. Smothering will not work for these materials, they do not need air to burn. Caution: UN3342 when flooded with water will continue to evolve flammable Carbon disulfide vapours.

Spill or Leak

Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.

Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area).

Do not touch or walk through spilled material.

Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Stop leak if you can do it without risk.

Prevent entry into waterways, sewers, or confined areas.

Flammable solids: Small dry spill - With clean shovel, place material into clean, dry container and cover loosely; move containers from spill area. Large spill - Wet down with water and dike for later disposal.

Spontaneously combustible substances: Cover with dry earth, dry sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain. **Exception**: For spills of Xanthates, UN3342 and for Dithionite (Hydrosulfite) UN1384, UN1923 and UN1929, dissolve in 5 parts water and collect for proper disposal. **Caution**: UN3342 when flooded with water will continue to evolve flammable Carbon disulfide vapours.

Toxic and/or corrosive (air-reactive) spontaneously combustible substances: Small spill – Cover with water, sand or earth; shovel into metal container and keep material under water. Large spill – Dike for later disposal and cover with wet sand or earth.

Water-reactive (emitting flammable gases) substances: Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material. Do not get water on spilled substance or inside containers. Small spill: Cover with dry earth, dry sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain. Dike for later disposal; do not apply water unless directed to do so. Powder spill: Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry. Do not clean-up or dispose of, except under supervision of a specialist. For chlorosilanes, use AFFF alcohol-resistant medium-expansion foam to reduce vapours.

Self-reactive substances: Pick up with inert, damp, non-combustible material using clean, non-sparking tools and place into loosely covered plastic containers for later disposal. Temperature controlled substances - Do not clean-up or dispose of, except under supervision of a specialist.

First Aid

Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Move victim to fresh air.

Call 911 or emergency medical service.

Give artificial respiration if victim is not breathing.

Toxic and/or corrosive flammable solids and **Water-reactive (emitting flammable and toxic gases) substances** – Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Administer oxygen if breathing is difficult.

Remove and isolate contaminated clothing and shoes.

In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

For minor skin contact, avoid spreading material on unaffected skin.

Removal of solidified molten material from skin requires medical assistance.

Spontaneously combustible – toxic and/or corrosive (air-reactive) substances – Remove and isolate contaminated clothing and shoes at the site and place in metal container filled with water. Fire hazard if allowed to dry.

Keep victim calm and warm.

Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

7.4 Emergency Response for Class 5

Class 5 – Oxidizing Substances and Organic Peroxides
POTENTIAL HAZARDS
Fire or Explosion
These substances will accelerate burning when involved in a fire. Some may decompose explosively when heated or involved in a fire. May explode from heat or contamination. **Heat, contamination and friction sensitive organic peroxides** – May explode from heat, shock, friction or contamination. **Heat and contamination sensitive/temperature controlled organic peroxides** – May explode from heat, contamination or loss of temperature control. These materials are particularly sensitive to temperature rises. Above a given "control temperature" they decompose violently and catch fire. May ignite spontaneously if exposed to air. Some may burn rapidly. Some will react explosively with hydrocarbons (fuels). May ignite combustibles (wood, paper, oil, clothing, etc.). **Organic peroxides** – May be ignited by heat, sparks or flames. May burn rapidly with flare-burning effect. **Water-reactive oxidizers** – React vigorously and/or explosively with water. Produce toxic and/or corrosive substances on contact with water. Some may produce flammable hydrogen gas upon contact with metals. Containers may explode when heated. Runoff may create fire or explosion hazard.
Health
Toxic oxidizers – Toxic by ingestion. Inhalation of dust is toxic. Inhalation, ingestion or contact (skin, eyes) with vapours or substance may cause severe injury, burns or death. Fire may produce irritating, corrosive and/or toxic gases. **Toxic (liquid) and unstable oxidizers** – Toxic or flammable fumes or dust may accumulate in confined areas. Runoff from fire control or dilution water may cause pollution.
PUBLIC SAFETY
As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters for liquids and at least 25 meters for solids. Keep unauthorized personnel away. Stay upwind, uphill and/or upstream. Ventilate closed spaces before entering. **Organic peroxides (heat and contamination sensitive/temperature controlled)** – Do not allow the substance to warm up. Obtain liquid nitrogen (wear thermal protective clothing), dry ice or ice for cooling. If this is not possible or none can be obtained, evacuate the area immediately. EVACUATION <u>Large spill</u> Consider initial downwind evacuation for at least 100 meters for oxidizers and at least 250 meters in all directions for organic peroxides.

EMERGENCY RESPONSE

Fire

Large fire

Flood area with water from a distance – all except water-reactive oxidizers.

Water-reactive oxidizers – Do not use water or foam.

Organic peroxides – Use water spray or fog; do not use straight streams.

Do not move cargo or vehicle if cargo has been exposed to heat.

Move containers from fire area if you can do it without risk.

Unstable oxidizers – Do net get water inside containers, a violent reaction may occur.

	Dry chemical	CO_2	Water spray	Soda ash	Lime	Dry sand	Fog	Regular foam
Oxidizers	✘		SF- ✓ LF - ✓					✘
Water-reactive oxidizers	SF- ✓ LF - ✓		✘	SF- ✓ LF - ✓	SF- ✓ LF - ✓	LF - ✓		✘
Organic peroxides	SF - ✓	SF - ✓	SF- ✓ LF - ✓				SF- ✓ LF - ✓	SF - ✓

SF– Small fire; LF – Large fire

Spill or Leak

Keep combustibles (wood, paper, oil, etc.) away from spilled material.

Do not touch or walk through spilled material.

Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Stop leak if you can do it without risk

Do not get water inside containers.

Prevent entry into waterways, sewers or confined areas.

Toxic (liquid) oxidizers – Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.

Toxic (liquid) and unstable oxidizers – Use water spray to reduce vapours or divert vapour cloud drift.

Water-reactive oxidizers and organic peroxides – Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area).

Water-reactive oxidizers – Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material. Do not get water on spilled substance or inside containers.

Organic peroxides – Keep substance wet using water spray.

Oxidizers - Small dry spill

With clean shovel, place material into clean, dry container and cover loosely; move containers from spill area.

Oxidizers - Small liquid spill

Use a non-combustible material like vermiculite or sand to soak up the product and place into a container for later disposal.

Oxidizers - Large spill

Dike far ahead of liquid spill for later disposal.

Following product recovery, flush area with water.

Unstable oxidizers - Small spill

Flush area with flooding quantities of water.

Water-reactive oxidizers - Small spill

Cover with dry earth, dry sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.

Unstable oxidizers and water-reactive oxidizers - Large spill

Do not clean up or dispose of, except under supervision of a specialist.

Organic peroxides – Small spill

Pick up with inert, damp, non-combustible material using clean, non-sparking tools and place into loosely covered plastic containers for later disposal.

Organic peroxides – Large spill

Wet down with water and dike for later disposal. Do not cleanup or dispose of, except under supervision of a specialist.

First Aid

Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Move victim to fresh air.

Call 911 or emergency medical service.

Give artificial respiration if victim is not breathing.

Toxic (liquid) and water-reactive oxidizers – Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Administer oxygen if breathing is difficult.

Remove and isolate contaminated clothing and shoes.

Contaminated clothing may be a fire risk when dry.

In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

Keep victim calm and warm and under observation.

Effects of contact or inhalation may be delayed.

7.5 Emergency Response for Class 6.1

Class 6.1 – Toxic Substances

POTENTIAL HAZARDS

Fire or Explosion

Toxic and/or corrosive non-combustible substances - Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. Some are oxidizers and may ignite combustibles (wood, paper, oil, etc.).

Toxic and/or corrosive combustible substances – Combustible material, may burn but does not ignite readily. Substances may be transported in a molten form. When heated, vapours may form explosive mixtures with air.

Toxic and/or corrosive (combustible, non-combustible, water-sensitive (combustible, flammable, non-combustible)) substances – Contact with metals may evolve flammable hydrogen gas.

Toxic and/or corrosive flammable/water-sensitive substances – Highly flammable, will be easily ignited by heat, sparks or flames.

Toxic and/or corrosive water-sensitive (flammable and combustible) substances – Vapours form explosive mixtures with air. Most vapours are heavier than air. They spread along ground and collect in low or confined areas. Vapours may travel to source of ignition and flash back.

Toxic and/or corrosive water-sensitive (flammable, combustible and non- combustible) substances – Substance will react with water (some violently) releasing flammable, toxic and/or corrosive gases and runoff.

Containers may explode when heated or if contaminated with water (water-sensitive substances).

Runoff may pollute waterways.

Health

Highly toxic; inhalation, ingestion or contact (skin, eyes) with vapours, dusts or substance may cause severe injury, burns or death.

Toxic and/or corrosive combustible and non-combustible substances – Contact with molten substance may cause severe burns to skin and eyes.

Toxic and/or corrosive water-sensitive (flammable, combustible and non- combustible) substances – Reaction with water or moist air will release toxic, corrosive or flammable gases. Reaction with water may generate much heat that will increase the concentration of fumes in the air.

Avoid any skin contact.

Effects of contact or inhalation may be delayed.

Fire may produce irritating, corrosive and/or toxic gases.

Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

PUBLIC SAFETY

As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters for liquids and at least 25 meters for solids.

Keep unauthorized personnel away.

Stay upwind, uphill and/or upstream.

Ventilate enclosed areas.

EVACUATION

Spill

Increase, in the downwind direction, as necessary, the isolation distance - at least 50 meters for liquids and at least 25 meters for solids.

Sodium cyanide (when spilled in water)

Small spills			Large spills		
First isolate in all directions	Then protect persons downwind during		First isolate in all directions	Then protect persons downwind during	
	Day	Night		Day	Night
30 m	100 m	200 m	100 m	400 m	1,400 m

EMERGENCY RESPONSE

Fire

Move containers from fire area if you can do it without risk.

Dike fire-control water for later disposal; do not scatter the material.

Use water spray or fog; do not use straight streams.

	Dry chemical	CO_2	Water spray	Fog	Regular foam	Alcohol-resistant foam	Dry sand
Toxic combustible and non-combustible	SF - ✓	SF - ✓	SF - ✓ LF - ✓	LF - ✓	LF - ✓		
Toxic and/or corrosive combustible and non-combustible	SF - ✓ LF - ✓	SF - ✓ LF - ✓	SF - ✓ LF - ✓			LF - ✓	
Water-sensitive	SF - ✓	SF - ✓	LF - ✓	LF - ✓		SF - ✓ LF - ✓	SF - ✓
Sodium cyanide	SF - ✓	✗	LF - ✓	LF - ✓		SF - ✓ LF - ✓	SF - ✓

SF – Small fire; LF – Large fire

Spill or Leak

Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area).

Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Stop leak if you can do it without risk.

Prevent entry into waterways, sewers or confined areas.

Cover with plastic sheet to prevent spreading or contact with rain.

Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.

Do not get water inside containers.

Water-sensitive substances – All equipment used when handling the product must be grounded. A vapour-suppressing foam may be used to reduce vapours. Do not get water on spilled substance or inside containers. Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material. Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

First Aid

Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Move victim to fresh air.

Call 911 or emergency medical device.

Give artificial respiration if victim is not breathing

Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Administer oxygen if breathing is difficult.

Remove and isolate contaminated clothing and shoes.

In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

For minor skin contact, avoid spreading material on unaffected skin.

Keep victim calm and warm.

Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

7.6 Emergency Response for Class 8

Class 8 - Corrosives
POTENTIAL HAZARDS
Fire or Explosion
Corrosive combustible, water-reactive substances and corrosive gases – May burn but do not ignite readily. Some may ignite combustibles (wood, paper, oil, clothing, etc.).
Corrosive non-combustible substances and mercury- Substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. Some may ignite combustibles (wood, paper, oil, clothing, etc.).
Corrosive flammable/water-sensitive substances - Highly flammable; will be easily ignited by heat, sparks or flames.
Corrosive spontaneously combustible (air-reactive) substances - Extremely flammable; will ignite itself if exposed to air. Burn rapidly, releasing dense, white, irritating fumes. May re-ignite after fire is extinguished.
Corrosive flammable liquids and solids – Flammable/combustible material. May be ignited by heat, sparks or flames.
Water-reactive (emitting flammable gases) substances - Produce flammable gases on contact with water. May ignite on contact with water or moist air. Some react vigorously or explosively on contact with water. May be ignited by heat, sparks or flames. May re-ignite after fire is extinguished.
Oxidizers - These substances will accelerate burning when involved in a fire. Some may decompose explosively when heated or involved in a fire. May explode from heat or contamination. May ignite combustibles (wood, paper, oil, clothing, etc.). Some will react explosively with hydrocarbons (fuels).
Combustible, flammable/water-sensitive, combustible/water-sensitive substances, flammable liquids and solids - Vapours may form explosive mixtures with air.
Water-sensitive and water-reactive substances - Substance will react with water (some violently) releasing flammable, toxic or corrosive gases and runoff.
Corrosive gases - Some of these materials may react violently with water. Cylinders exposed to fire may vent and release toxic and/or corrosive gas through pressure relief devices. Containers may explode when heated. Ruptured cylinders may rocket.
Flammable liquids and substances emitting flammable gases - Runoff may create fire or explosion hazard.
Combustible, non-combustible, water-sensitive, water-reactive, flammable solids and air-reactive substances - Contact with metals may evolve flammable hydrogen gas.
Combustible, non-combustible, air-reactive substances, flammable liquids and solids, and oxidizers - Containers may explode when heated.
Water-sensitive and water-reactive substances - Containers may explode when heated or if contaminated with water.
Combustible, water-reactive and air-reactive substances - May be transported in a molten form.
Water-reactive (emitting flammable gases) - Some are transported in highly flammable liquids.
Most vapours are heavier than air. They will spread along ground and collect in low or confined areas. Vapours may travel to source of ignition and flash back.
Runoff from fire control or dilution water may cause pollution.
Health
Toxic; inhalation, ingestion or contact (skin, eyes) with vapours, dusts or substance may cause severe injury, burns or death.
Contact with substance may cause severe burns to skin and eyes.
Avoid skin contact.
Water-sensitive substances - Reaction with water or moist air will release toxic, corrosive or flammable gases. Reaction with water may generate much heat that will increase the concentration of fumes in the air.

Corrosive gases - Vapours are extremely irritating and corrosive. Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.

Flammable liquids - Vapours may cause dizziness or suffocation.

Combustible and non-combustible substances and oxidizers - Fire may produce irritating, corrosive and/or toxic gases.

Water-sensitive, water-reactive, and air-reactive substances, corrosive gases, flammable liquids and solids, and mercury - Fire will produce irritating, corrosive and/or toxic gases.

Effects of contact or inhalation may be delayed.

Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

PUBLIC SAFETY

As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters for liquids and mercury, 25 meters for solids, and 100 meters for corrosive gases.

Keep unauthorized personnel away.

Stay upwind, uphill and/or upstream.

Ventilate enclosed areas.

EVACUATION

Spill

Combustible, non-combustible, water-sensitive, water-reactive substances and flammable corrosive liquids - Increase, in the downwind direction, as necessary, the isolation distance - at least 50 meters for liquids and at least 25 meters for solids.

Flammable corrosive solids, oxidizers and corrosive gases – Consider initial downwind evacuation for at least 100 meters.

Air-reactive substances – Consider initial downwind evacuation for at least 300 meters.

Mercury – Large spill: Consider initial downwind evacuation for at least 100 meters; Fire: When any large container is involved in a fire, consider initial evacuation for 500 meters.

Sodium cyanide (when spilled in water)

Small spills			Large spills		
First isolate in all directions	Then protect persons downwind during		First isolate in all directions	Then protect persons downwind during	
	Day	Night		Day	Night
30 m	100 m	200 m	100 m	400 m	1,400 m
When spilled in water sodium cyanide will produce large amount of hydrogen cyanide (toxic gas).					

Nitric acid (red fuming)

Small spills			Large spills		
First isolate in all directions	Then protect persons downwind during		First isolate in all directions	Then protect persons downwind during	
	Day	Night		Day	Night
30 m	100 m	100 m	150 m	200 m	400 m

EMERGENCY RESPONSE

Fire

Move containers from fire area if you can do it without risk.

Dike fire-control water for later disposal; do not scatter the material.

Water-sensitive substances – Some foams will react with the material and release corrosive/toxic gases. Large fire: Use water spray or fog; do not use straight streams.

Water-reactive substances – When material is not involved in fire, do not use water on material itself. Large fire: Flood fire area with large quantities of water, while knocking down vapours with water fog. If insufficient water supply: knock down vapours only.

Corrosive gases – Large fire: Do not get water inside containers. Damaged cylinders should be handled only by specialists.

Flammable corrosive liquids – Some of these materials may react violently with water. Do not get water inside containers.

Flammable corrosive solids – Large fire: Use water spray or fog; do not use straight streams. Do not get water inside containers.

Air-reactive substances – Large fire: Do not scatter spilled material with high-pressure water streams.

Water-reactive (emitting flammable gases) substances – Do not use water or foam. Fire involving metals or powders: Use dry chemical, dry sand, sodium chloride powder, graphite powder or Met-L-X powder.

Oxidizers – Large fire: Flood area with water from a distance. Do not move load or vehicle if load has been exposed to heat.

Mercury – Use extinguishing agent suitable for type of surrounding fire. Do not direct water at the heated metal.

	Dry chemical	CO_2	Water spray	Fog	Regular foam	Alcohol-resistant foam	Dry sand	Wet sand or wet earth	Soda ash or lime
Combustible Non-combustible	SF - ✓ LF - ✓	SF - ✓ LF - ✓	SF - ✓ LF - ✓			LF - ✓			
Water-sensitive	SF - ✓	SF - ✓	LF - ✓	LF - ✓		SF - ✓ LF - ✓	SF - ✓		
Sodium cyanide	SF - ✓	✗	LF - ✓	LF - ✓		SF - ✓ LF - ✓	SF - ✓		
Water-reactive	SF - ✓	SF - ✓	LF - ✓						
Corrosive gases	SF - ✓	SF - ✓	LF - ✓	LF - ✓	LF - ✓				
Flammable liquids and solids	SF - ✓	SF - ✓	SF - ✓ LF - ✓	LF - ✓		SF - ✓ LF - ✓			
Air-reactive			SF - ✓ LF - ✓	LF - ✓				SF - ✓	
Water-reactive (emitting flammable gases)	SF - ✓ LF - ✓						SF - ✓ LF - ✓		SF - ✓ LF - ✓
Oxidizers	✗	SF - ✓	SF - ✓ LF - ✓		✗				

SF – Small fire; LF – Large fire

Spill or Leak

Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area).

Do not touch or walk through spilled material.

Do not touch damaged or spilled material unless wearing appropriate protective clothing.

Stop leak if you can do it without risk.

Prevent entry into waterways, sewers or confined areas.

Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.

Do not get water inside containers.

Water-sensitive – All equipment used when handling the product must be grounded. A vapour-suppressing foam may be used to reduce vapours. Do not get water on spilled substance. Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.

Water-reactive – Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire. Use water spray to reduce vapours; do not put water directly on leak, spill area or inside container. Keep combustible (wood, paper, oil, etc.) away from spilled material.

Water-sensitive and water-reactive - Small spill: Cover with dry earth, dry sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain. Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

Corrosive gases - Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire. If possible, turn leaking containers so that gas escapes rather than liquid. Do not direct water at spill or source of leak. Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material. Isolate area until gas has dispersed.

Flammable liquids - Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire. All equipment used when handling the product must be grounded. A vapour-suppressing foam may be used to reduce vapours. Absorb with earth, sand or other non-combustible material and transfer to containers. Use clean, non-sparking tools to collect absorbed material. Large spill: Dike far ahead of liquid spill for later disposal. Water spray may reduce vapour, nut may not prevent ignition in closed spaces.

Flammable solids – Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire. Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

Air-reactive - Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire. Small spill: Cover with water, sand or earth. Shovel into metal container and keep material under water. Large spill: Dike for later disposal and cover with wet sand or earth.

Water-reactive (emitting flammable gases) – Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material. Do not get water on spilled substance or inside containers. Small spill: Cover with dry earth, dry sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain. Dike for later disposal; do not apply water unless directed to do so. Powder spill: Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry. Do not clean-up or dispose of, except under supervision of a specialist.

Oxidizers – Keep combustibles (wood, paper, oil, etc.) away from spilled material. Small dry spill: With clean shovel, place material into clean, dry container and cover loosely; move containers from spill area. Small liquid spill: Use a non-combustible material like vermiculite or sand to soak up the product and place into a container for later disposal. Large spill: Dike far ahead of liquid for later disposal. Following product recovery, flush area with water.

Mercury – Do not use steel or aluminum tools or equipment. Cover with earth, sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain. Use a mercury spill kit. Mercury spill areas may be subsequently treated with calcium sulfide or with sodium thiosulfate wash to neutralize any residual mercury.

First Aid

Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Move victim to fresh air.

Call 911 or emergency medical device.

Give artificial respiration if victim is not breathing

Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Administer oxygen if breathing is difficult.

Remove and isolate contaminated clothing and shoes.

In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

For minor skin contact, avoid spreading material on unaffected skin.

Keep victim calm and warm and under observation.

Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

Corrosive gases – In case of contact with liquefied gas, thaw frosted parts with lukewarm water.

Air-reactive substances – Removal of solidified molten material from skin requires medical assistance. **Oxidizers** – Contaminated clothing may be a fire risk when dry.

7.7 Emergency Response for Mixed Load/Unidentified Cargo

Mixed Load/Unidentified Cargo
POTENTIAL HAZARDS
Fire or Explosion
May explode from heat, shock, friction or contamination. May react violently or explosively on contact with air, water or foam. May be ignited by heat, sparks or flames. Vapours may travel to source of ignition and flash back. Containers may explode when heated. Ruptured cylinders may rocket.
Health
Inhalation, ingestion or contact with substance may cause severe injury, infection, disease or death. High concentration of gas may cause asphyxiation without warning. Contact may cause burns to skin and eyes. Fire or contact with water may produce irritating, toxic and/or corrosive gases. Runoff from fire control may cause pollution.
PUBLIC SAFETY
As an immediate precautionary measure, isolate spill or leak area for at least 100 in all directions. Keep unauthorized personnel away. Stay upwind, uphill and/or upstream. EVACUATION <u>Fire</u> If tank or tank truck is involved, isolate for 800 meters in all directions; also, consider initial evacuation for 800 meters in all directions.
EMERGENCY RESPONSE
Fire
Material may react with extinguishing agent. Move containers from fire area if you can do it without risk. <u>Fire involving tanks</u> Cool containers with flooding quantities of water until well after fire is out. Do not get water inside containers. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. Always stay away from tank engulfed in fire.

Mixed load/unidentified cargo	Dry chemical	CO_2	Water spray	Fog	Regular foam
	SF - ✓	SF - ✓	SF - ✓ LF - ✓	LF - ✓	SF - ✓ LF - ✓

SF – Small fire; LF – Large fire

Spill or Leak

Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area).

Do not touch or walk through spilled material.

All equipment used when handling the product must be grounded.

Keep combustible (wood, paper, oil, etc.) away from spilled material.

Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.

Prevent entry into waterways, sewers or confined areas.

Do not touch damaged or spilled material unless wearing appropriate protective clothing.

Stop leak if you can do it without risk.

Small spill

Pick up with sand or other non-combustible absorbent material and place into containers for later disposal.

Large spill

Dike far ahead of liquid spill for later disposal.

First Aid

Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Move victim to fresh air.

Call 911 or emergency medical device.

Give artificial respiration if victim is not breathing

Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Administer oxygen if breathing is difficult.

Remove and isolate contaminated clothing and shoes.

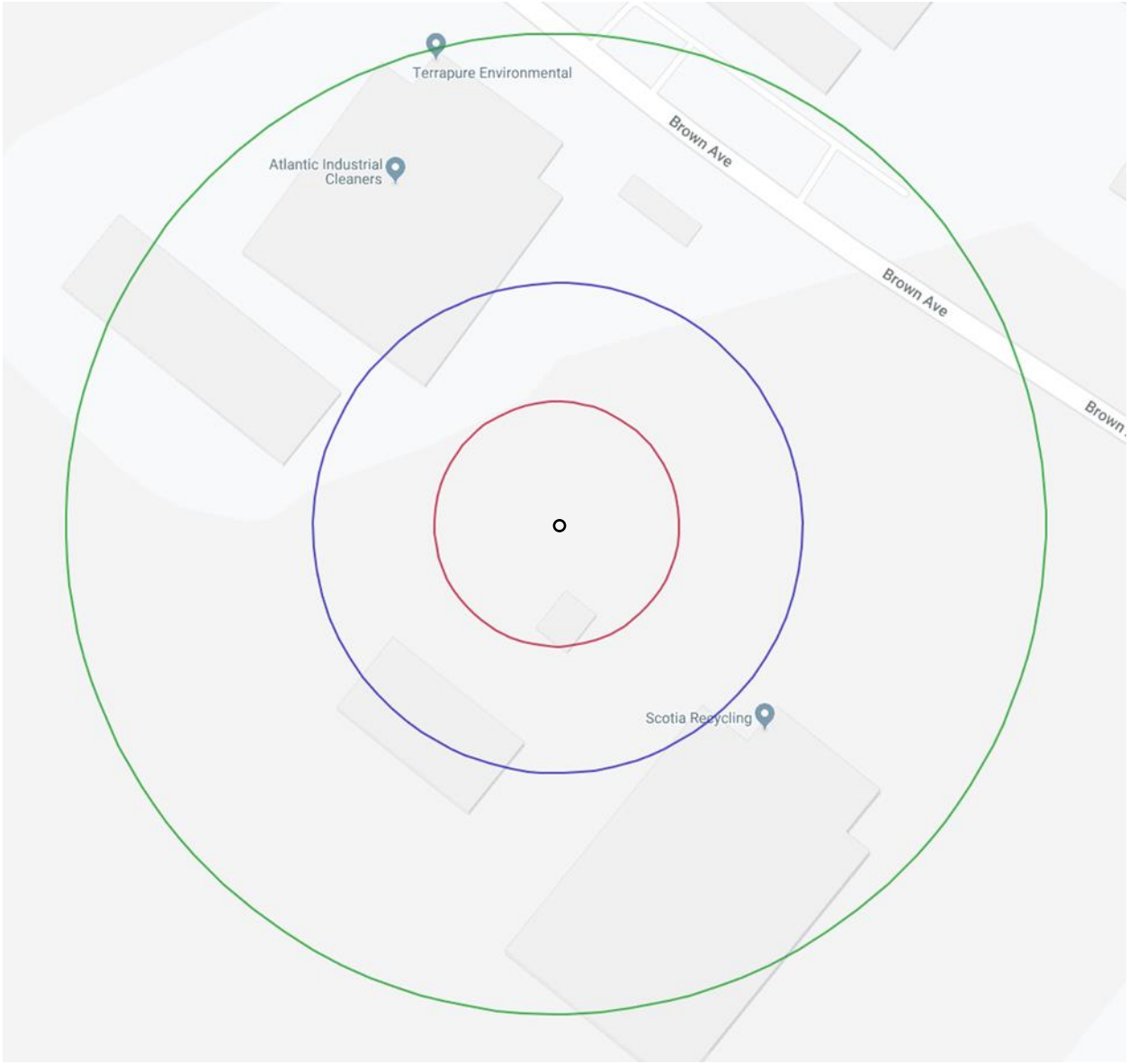
In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

Shower and wash with soap and water.

Keep victim calm and warm and under observation.

Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

7.8 Spill or Leak – Isolation Distances



Legend:
Solids – 25 meters
Liquids and mercury – 50 meters
Gases – 100 meters

7.9 Large Spill – Evacuation Distances

Legend:
Metals, toxic substances, corrosives – 50 meters
Inert gases, flammable solids, oxidizers, mercury, corrosive gases – 100 meters
Self-reactive substances, organic peroxides – 250 meters
Flammable liquids, spontaneously combustible (air-reactive) substances – 300 meters
Oxidizing and compressed or liquefied gases – 500 meters
Flammable gases, flammable-corrosive gases – 800 meters

8. EVACUATION PLAN

All employees, customers, visitors, and contractors will immediately leave the work area and report to the facility evacuation meeting point. The office is the first meeting point, but if there is a hazard around the office, then go to the second meeting point, which is the main gate. The facility evacuation meeting points are posted. Refer to Google Map Image of Facility (Appendix 1). In the event of alarm or announcement of evacuation.

The Site Emergency Coordinator shall:

- Take all work permits and visitor sign-in book
- Report to the office main gate
- Account for all personnel
- Organize a response team, if required
- Contact authorities, if required; (Section 2.3)
- Proceed with Crisis Communication Schedule, if required; (Section 6.3).

The employees shall:

- Advise all visitors, customers, and contractors of alarm, if possible
- Shut down facility of operating equipment and processes, if possible
- Report to office or main gate.

No person shall be allowed to return to his or her respective work areas until an “all clear” has been given by the Site Emergency Coordinator.

9. REHABILITATION

The restoration of the site following an incident and decontamination of personnel and equipment is an integral part of the Contingency and Emergency Response Plan.

The intent is to restore the affected area to the same condition as before the spill. Site restoration will follow the following steps and pertains to spills inside and outside the facility both on and off the containment areas:

- Contain and clean-up the spill in accordance with spill clean-up procedures.
- Containerize all clean-up and waste material.
- Sample ground of affected surfaces to determine effectiveness of clean-up and disposal requirements.
- Continue to remove soil and infrastructure until analysis prove non detect of contaminants.
- Perform civil and landscape as required to get area back to pre-spill condition.
- Site rehabilitation may be required to be approved as complete by NSE or Site Professional.

10. DISPOSAL

The method of handling and disposal of waste materials during the course of the response is dependent on a number of conditions. For example:

- Volume of material
- Physical properties – liquid, solids, mixtures of both
- Chemical properties – acid, base, solvent, etc.

Depending on the volume, liquids will be either containerized in drums or collected in vacuum truck. Storage at site will follow the present waste handling procedures. The drums will temporarily be stored within the Waste Dangerous and Non-Dangerous Goods Storage Facility prior to shipment to internal and external disposal/treatment outlets utilized by Terrapure Environmental. Large volume liquids will be transferred via tanker truck to disposal/treatment outlets.

Similarly, solids handling depends on the amounts of material. Drummed material will be stored within the Waste Dangerous and Non-Dangerous Goods Storage Facility. Larger volumes will be contained within appropriate sludge bins and kept in the solids consolidation area for shipment to the appropriate facility.

Transport will be performed using Terrapure Environmental transport in approved and licensed vehicle or contracted out to approved service providers.

Disposal/treatment will be through approved methods and outlets and will be typical to those utilized for wastes normally received on site. All wastes shipped off site will be approved by the Branch Manager and appropriate waste shipping documents completed.

11. TRAINING AND PRACTICE DRILLS

All employees will receive orientation within one week of hiring and any employee who changes duties will be upgraded immediately. All records of training will be held in the employee's file.

11.1 Training Requirements

All personnel will be trained in the following:

- Fire Safety and Extinguisher Use
- Transportation of Dangerous Goods Act and Regulations (TDG)
- Workplace Hazardous Materials Information System (WHMIS 2015)
- First Aid – Emergency First Aid
- Chemical Hazards
- H_2S Alive
- Respirator Fit Test (Full Face)
- Pulmonary Test
- Confined Space
- Confines Space Rescue
- SCBA/SABA

- Incident/ Accident Investigation
- Hazard Identification
- HAZWOPER Training (40-hr course)
- Safety Data Sheet (SDS) Review
- Emergency Response Plan
- Personal Protective Equipment (PPE)
- Standard Operating Procedures (SOP)
    - High Pressure Water Blasting
    - Compressed Gas Cylinders
    - Hydrogen Sulfide (H_2S)
    - Lock Out & Tag Out (LOTO)
    - Respiratory Protective Equipment
    - Vacuum Truck Operation
    - Lift Truck Operation
    - Confined Space Management
    - Cleaning of Corrosive Substances
    - Vacuum (specific) - dry, corrosive, non-corrosive, flammable, etc.
    - Mobile Wash Operation

11.2 Practice Drills

A desktop and a simulated exercise shall be conducted at a minimum of twice a year. From these exercises the following evaluation shall be determined:

- Practicality of the plan (structure and organization)
- Adequacy of communication and interaction amount parties
- Emergency equipment effectiveness
- Donning and doffing SABA and SCBA equipment
- Adequacy of first aid and rescue procedures
- Adequacy of emergency personnel response training
- Public Relations skills
- Evacuation and personnel count procedures.

12. PLAN EVALUATION AND UPDATES

This Plan shall be reviewed and immediately amended whenever:

- Annual review is due
- The plan fails in an emergency
- The facility changes in its design, construction, operation, maintenance, or other circumstances in a way that increases the potential for fire, explosions, or release of a hazardous substance
- The list of emergency contacts change, or
- The list of emergency equipment changes.

13. INVENTORY OF EMERGENCY RESPONSE EQUIPMENT

13.1 Fire Response Equipment

Inventory	Description				Location		Serial #
Unit #	Size	Type	Class	Mfd/H*	Floor	Area – Shop - Office	#
1	20	DC	ABC	2017	1	shop exit	442673
2	20	DC	ABC	2009	1	shop boiler room	662120
3	20	DC	ABC	2017	1	shop electrical room	99479681
4	20	DC	ABC	2018	1	shop wall by stairs	221088
5	20	DC	ABC	2018	1	shop wall by AED	625444
6	20	DC	ABC	2015	1	shop post	34835707
7	20	DC	ABC	2014	1	shop storage cage	777927
8	20	DC	ABC	2008	1	shop storage cage	790835
9	20	DC	ABC	2016	1	shop wall by vending machine	12351164
10	20	DC	ABC	2015	1	shop wall by exit	91977029
11	20	DC	ABC	2013	1	forklift - entrance	67260
12	20	DC	ABC	2015	1	shop middle (tire rack)	34835711
13	20	DC	ABC	2018	1	shop between bay doors	76801359
14	20	DC	ABC	2015	1	shop middle (post)	91977022
15	20	DC	ABC	2014	1	shop back exit	777928
16	5	DC	ABC	2013	2	upstairs class/lunchroom	365827
17	5	DC	ABC	2014	2	upstairs outside lunch room	190080
18	5	DC	ABC	2014	2	upstairs hall	443084
19	5	DC	ABC	2008	1	entrance	017215
20	10	DC	ABC	2008	1	spare	77849
21	5	DC	ABC	2013	1	hall exit	387863
22	5	DC	ABC	2013	2	upstairs hallway - above shop	365832
Unit #	Size	Type	Class	Mfd/H*	Floor	Area – Tank Farm	#
1	20	DC	ABC	2014	1	entrance	306352
2	20	DC	ABC	2018	1	back	113503
3	20	DC	ABC	2019	1	exit door	113831
4	20	DC	ABC	2014	1	exit door	000595
5	20	DC	ABC	2018	1	exit door	790345
6	20	DC	ABC	2009	1	exit door	207304
7	20	DC	ABC	2016	1	electrical room	582946
*Mfd/H = Manufacture or last hydro date							

13.2 Containment Equipment

Item	Inventory	Location
Spill Kit	1	All Transport Units
Spill Kit	1	Spill Response Trailer
Spill Kit	1	Shop – Store Room
4’ x 4’ Containment Berms	4	Shop – Store Room
Shovels	2	Wash Pad
Shovels	2	Shop – Store Room
Squeegees	4	Shop – Store Room
Absorbent	5	Shop – Store Room

13.3 Communication System

Item	Inventory	Location
PA system (Office Phones)	1	Ext. 8050
Fixed Phones (Office Phones)	40	Each Office
Cell Phones	6	Operations Supervisors
Hytera Digital Radio – Model PD562	R185140285	Shop – Store Room
Hytera Digital Radio – Model PD562	R185140286	Shop – Store Room
Hytera Digital Radio – Model PD562	R185140471	Shop – Store Room
Hytera Digital Radio – Model PD562	R185140472	Shop – Store Room
Hytera Digital Radio – Model PD562	R185140473	Shop – Store Room
Hytera Digital Radio – Model PD562	R185140474	Shop – Store Room
Hytera Digital Radio – Model PD562	R185140475	Shop – Store Room
Hytera Digital Radio – Model PD562	R185140476	Shop – Store Room
Hytera Digital Radio – Model PD562	R185140479	Shop – Store Room
Hytera Digital Radio – Model PD562	R185140480	Shop – Store Room

13.4 Decontamination Equipment

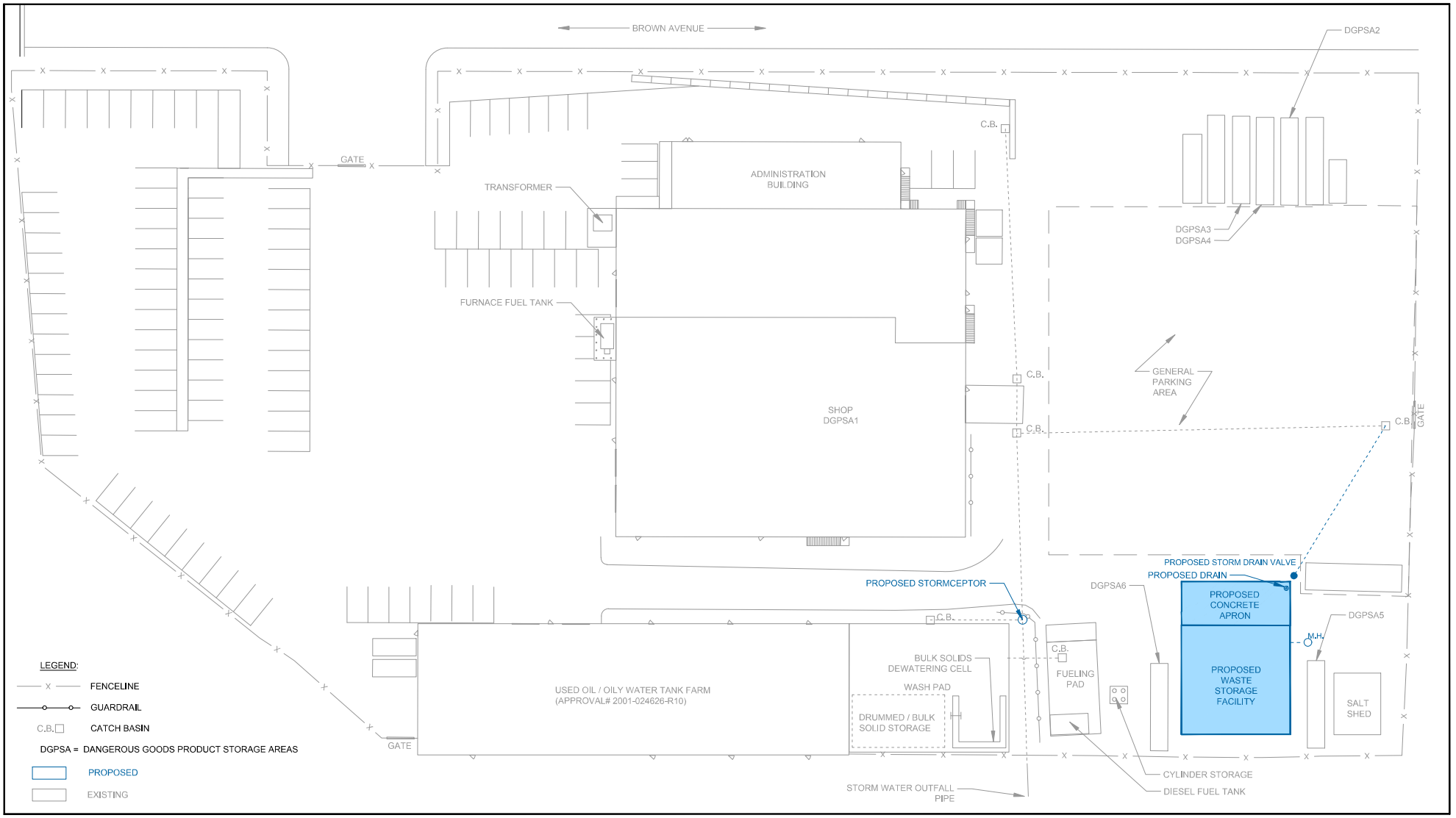
Item	Inventory	Location
Emergency Shower/Eye Wash	1	Tank Farm
Emergency Shower/Eye Wash	1	Shop (adjacent to rear bay door)
Emergency Eyewash Bottles	5	Shop – Store Room

13.5 First Aid Equipment

Item	Inventory	Location
Standard First Aid Kit	Standard First Aid Kit (regular)	1st floor shop wall by AED
Standard First Aid Kit	Standard First Aid Kit (regular)	2nd Floor Kitchen
Standard First Aid Kit	Standard First Aid Kit (Large)	1st floor shop (Washroom)
Standard First Aid Kit	Standard First Aid Kit (Large)	1st floor shop (Store Room)
Standard First Aid Kit	Standard First Aid Kit (Large)	1st Floor Tank Farm
Fire Blanket	1	Store Room – 1st floor - Main
Burn Kit	1	Store Room – 1st floor - Main
Respirator	6	Store Room – 1st floor - Main
SCBA	3	Store Room – 1st floor - Main
SABA	3	Store Room – 1st floor - Main
Stretcher	3	Store Room – 1st floor - Main

Appendix 1 – Google Map Image of Facility

Appendix 2 – Facility Site Plan



0 5 10 15m

Coordinate System:
UTM ZONE 20 NAD83 (CSRS)

ENVIROSYSTEMS INCORPORATED
11 BROWN AVENUE, DARTMOUTH, NOVA SCOTIA
EXISTING AND PROPOSED FACILITIES

SITE PLAN

11193548-01
Jul 29, 2019

FIGURE 2

CAD File: I:\Drafting\8-chars\11-----\1119----\111935--\11193548\11193548-REPORTS\11193548-Rpt-1\11193548-01(001)GN-HX001.dwg

Appendix 3 – Map Showing Businesses and Residences Within 2 km Radius of Facility

Appendix 4 – Incident Reporting

ENVIROSYSTEMS

INCIDENT/NEAR MISS REPORT

- Report to be completed and entered into Intelex within 24 hours
- Fax or email copy of report to HSE Team within 24 hours
- Original to Division Manager
- All applicable sections must be completed

☐ INCIDENT ☐ NEAR MISS

Incident #:

Estimated Incident Cost: $

Actual Severity
☐ Minor ☐ Moderate ☐ Major

Potential Severity:
☐ Minor ☐ Moderate ☐ Major

Incident Date:	Incident Time:	Date Reported:	Reported By:

Division Responsible for Incident:

Incident Location: ☐ Division Site ☐ Customer Site ☐ Other

_____ / _____ / _____
DIVISION or CUSTOMER NAME SITE NAME UNIT NAME

EMPLOYEES INVOLVED:	# Hours Worked Prior	# of Continuous days worked Prior	Years of Service
Person Involved: ☐ Check if Injured Last Name First Name Division Name			
Person Involved: ☐ Check if Injured Last Name First Name Division Name			
Supervisor: Last Name First Name Division Name			

DESCRIPTION OF INCIDENT (stick to facts and include what, where, how):

Unit#	Division:	Unit#	Division:

Type of Unit: 01 Pick Up 02 High Pressure 03 Mobile Wash 04 Vacuum 05 Hydro Excavator 06 Sewer Flusher 07 Chemical 08 Forklift/Bobcat 09 Dredge 10 Tractor Trailer 11 Waste Processing 99 Other

INCIDENT CATEGORY (circle one)	INCIDENT CHARACTER (circle one)
01 Injury → 02 Illness →	01 Struck By or Against 02 Caught on or Between 03 Exposed 04 Slip 05 Trip 06 Fall 07 Contact With 08 Over Exertion 09 Foreign Body 99 Other:_____ ☐ Report Only ☐ First Aid ☐ Medical Treatment ☐ Restricted Work ☐ Lost Time Type of Injury:_____ Body Part(s) Injured:_____ Side Of Body:_____
03 Property/Equipment Damage	01 Backing Up 02 Fire 03 Explosion 04 Unreported Damage 05 Malfunction 06 Struck By 99 Other_____
04 Motor Vehicle	01 Single Vehicle 02 Third Party 03 Animal Struck 99 Other_____
05 Spill / Release To	01 Containment 02 Soil 03 Water 04 Air 99 Other_____
06 Regulatory Violation	01 Act/Regulation 02 Permit/Approval 99 Other_____
07 Security	01 Theft 02 Vandalism 03 Lost 04 Arson 99 Other_____
08 Life Support Equipment	01 Helmet Damage 02 Pigtail 03 Harness 04 Umbilical 05 Module 06 Egress Regulator 07 Helmet Malfunction 08 Egress Cylinder 09 Gas Detection 99 Other_____
09 Near Miss	01 Injury 02 Illness 03 Property/Equipment Damage 04 Motor Vehicle 05 Spill 99 Other_____
10 Quality Non Conformance	01 Personnel 02 Material 03 Inadequate Procedure 04 Not Following Procedure 05 Workmanship 06 Environmental 07 Complaint 99 Other_____

MOTOR VEHICLE ACCIDENTS OR INSURANCE CLAIMS

Other Vehicle or Property

Name of Driver:	Phone #:	
Address:	Driver's License #:	Province/State:
Name of Passenger(s):		
Injuries? ☐ Yes ☐ No Description		
Model:	Make:	Year: Colour:
License Plate #:	Province/State of Registration:	
Owner / Company Name:	Phone #:	
Insurance Company Name:	Policy #:	
Contact Name:	Phone #:	
Description of Damage:		

Our Vehicle or Property

Driver	Driver's License #	License Class	Province/State
Passenger(s)			
License Plate #	Unit #	Make:	Year:
Description of Damage			
Visibility: ☐ Clear ☐ Fog ☐ Rain ☐ Snow ☐ Bright ☐ Dim ☐ Dark		Road Surface: ☐ Dry ☐ Wet ☐ Slippery ☐ N/A	
Police Advised? ☐ Yes ☐ No	Police Report #	Officers Name:	
Charges Laid? ☐ Yes ☐ No If yes, what, to whom:			
Witness Name:_____ Phone#:_____		Witness Name:_____ Phone #:_____	

RECOMMENDATIONS / ACTION ITEMS

Corrective Action:	Person Responsible:	Target Completion Date:

Incident Review / Approval

Employee Name:	**Date:**	**Signature:**
Supervisor Name:	**Date:**	**Signature:**
JOHSC/JHSC Review (if applicable)h:	**Date:**	**Signature:**

TO BE COMPLETED BY THE HEALTH AND SAFETY DEPARTMENT

☐ Recordable ☐ WCB Filed Province/State_____ WCB Claim #_____ Date Returned to Work_____

Government Notification Required? Yes ☐ No ☐ If Yes, Office Reported to _____ Phone #: _____

Government Officer(s) Name:_____ Date and Time Reported:_____

Appendix 5 – Spill Quantities/Levels for Immediate Reporting to NSE

TDG Class	Description of Substance	Reportable Release Amount
1	Explosive	any amount
2.1	Compressed gas (flammable)	> 100 L
2.2	Compressed gas (non-corrosive, non-flammable)	> 100 L
2.3	Compressed gas (toxic)	any amount
3	Flammable liquid	> 100 L
4.1	Flammable solid	> 25 kg
4.2	Spontaneously combustible solid	> 25 kg
4.3	Water reactant solid	> 25 kg
5.1	Oxidizing substance	> 50 L or > 50 kg
5.2	Organic peroxide	> 1 L or > 1 kg
6.1	Poisonous substance	> 5 L or > 5 kg
6.2	Infectious substance	any amount
7	Radioactive substance	any amount
8	Corrosive substance	> 5 L or > 5 kg
9 (in part)	Miscellaneous product or substance, excluding PCB mixtures and environmentally hazardous substances	> 25 L or > 25 kg
9 (in part)	PCB mixture of 50 or more ppm	> 0.5 L or > 0.5 kg
9 (in part)	Environmentally hazardous substance	> 1 L or > 1 kg
N/A	Asbestos waste	> 50 kg
N/A	Used oil	> 100 L
N/A	Contaminated used oil	> 5 L
N/A	Pesticide in concentrated form	> 5 L or > 5 kg
N/A	Pesticide in diluted form	> 70 L
N/A	Unauthorized sewage discharge into fresh water or sensitive marine water	> 100 L
N/A	Ozone-depleting substance	> 25 kg

Appendix 6 – Tank Volumes and Contents

Tank Number	Volume, litres	Content
2004-044245-001	45,460	Bunker/Used Oil
2004-044245-002	45,460	Bunker/Used Oil
2004-044245-003	45,460	Bunker/Used Oil
2004-044245-004	45,460	Bunker/Used Oil
2004-044245-005	45,460	Bunker/Used Oil
2004-044245-006	45,460	Bunker/Used Oil
2004-044245-007	45,460	Bunker/Used Oil
2004-044245-008	45,460	Bunker/Used Oil
2004-044245-009	45,460	Bunker/Used Oil
2004-044245-010	45,460	Bunker/Used Oil
2004-044245-011	45,460	Bunker/Used Oil
2004-044245-012	45,460	Bunker/Used Oil
2004-044245-013	45,460	Bunker/Used Oil
2004-044245-014	45,460	Bunker/Used Oil
2004-044245-015	45,460	Bunker/Used Oil
2004-044245-016	45,460	Bunker/Used Oil
2004-044245-017	36,368	Used Oil
2004-044245-018	36,368	Used Oil
2004-044245-019	36,368	Used Oil
2004-044245-020	36,368	Used Oil
2004-044245-021	36,368	Used Oil
2004-044245-022	36,368	Used Oil
2004-044245-023	36,368	Used Oil
2004-044245-024	36,368	Used Oil
2004-044245-025	9,213	Diesel
2004-044245-026	9,711	Fuel Oil

Appendix C
Site Drainage, Stormwater and Surface Water Management Plan

terrapure
CHANGING WASTE FOR GOOD

Storm Water/Surface Water Management Plan
Envirosystems Brown Avenue Facility

Introduction

This plan provides details on the storm water and surface water infrastructure and management systems in place currently and proposed for the Site. The facility currently operates in compliance with existing approvals from Nova Scotia Environment (NSE) as outlined in the Environmental Assessment Registration Document.

Existing Conditions

The general surface drainage near the site is northeast to southwest/south from areas of higher relief to lower and trending eventually to the Bedford Basin over one kilometer from the Site. The Site is within an industrial park setting with municipal infrastructure (via storm drains and ditches) that controls and limits the amount of runoff entering the Site. The Site is serviced by municipal water and there are no known ecological receptors, domestic wells, or water users within 2 kilometers of the facility.

Storm Water/Surface Water Controls – Existing

Storm water and surface drainage is therefore limited to that which falls via precipitation on the Site. As indicated on Figure 1 and described below, there are three (3) main surface drainage patterns at the Site:

1. The western portion of the Site has an asphalt surface used primarily for employee parking and access to Brown Avenue. Precipitation and surface drainage across this portion of the Site is overland and flows generally towards the southwest where it discharges off-site as overland flow. The proposed undertaking is not located within this surface drainage pattern.
2. The Wash Pad and Fueling Pad are located along the south boundary of the Site, between the Tank Farm and the proposed Waste Storage Facility. Both pads have a concrete surface and concrete perimeter curbing which contains any accumulated precipitation. The Fueling Pad is east and up gradient of Wash Pad and there is a drain connecting the Fueling Pad to the Wash Pad. Precipitation and surface drainage on either pad flows west/northwest and enters the Tank Farm building and stored in a storage tank for subsequent treatment/disposal at an approved facility. The proposed undertaking is not located within this surface drainage pattern.

3. The eastern portion of the Site has a hard packed gravel surface. Precipitation and surface drainage across this portion of the Site is directed to west/northwest into a series of catch basins which are piped together and directs the surface drainage to the south side of the Site (between the Wash Pad and the Fueling Pad), where the water is discharge off-site as overland flow. **The proposed undertaking is located within this surface drainage pattern.**

Storm Water/Surface Water Controls – Proposed

The proposed Waste Storage Facility and Apron will be constructed to an elevation such that any precipitation that falls onto the surrounding hardpack gravel area will be directed away from the new Facility/Apron and will continue to be directed to the west/northwest towards the existing catch basins (minus any infiltration). The proposed Waste Storage Facility and Apron will add two (2) new drainage patterns to the southeast corner of the Site as described below:

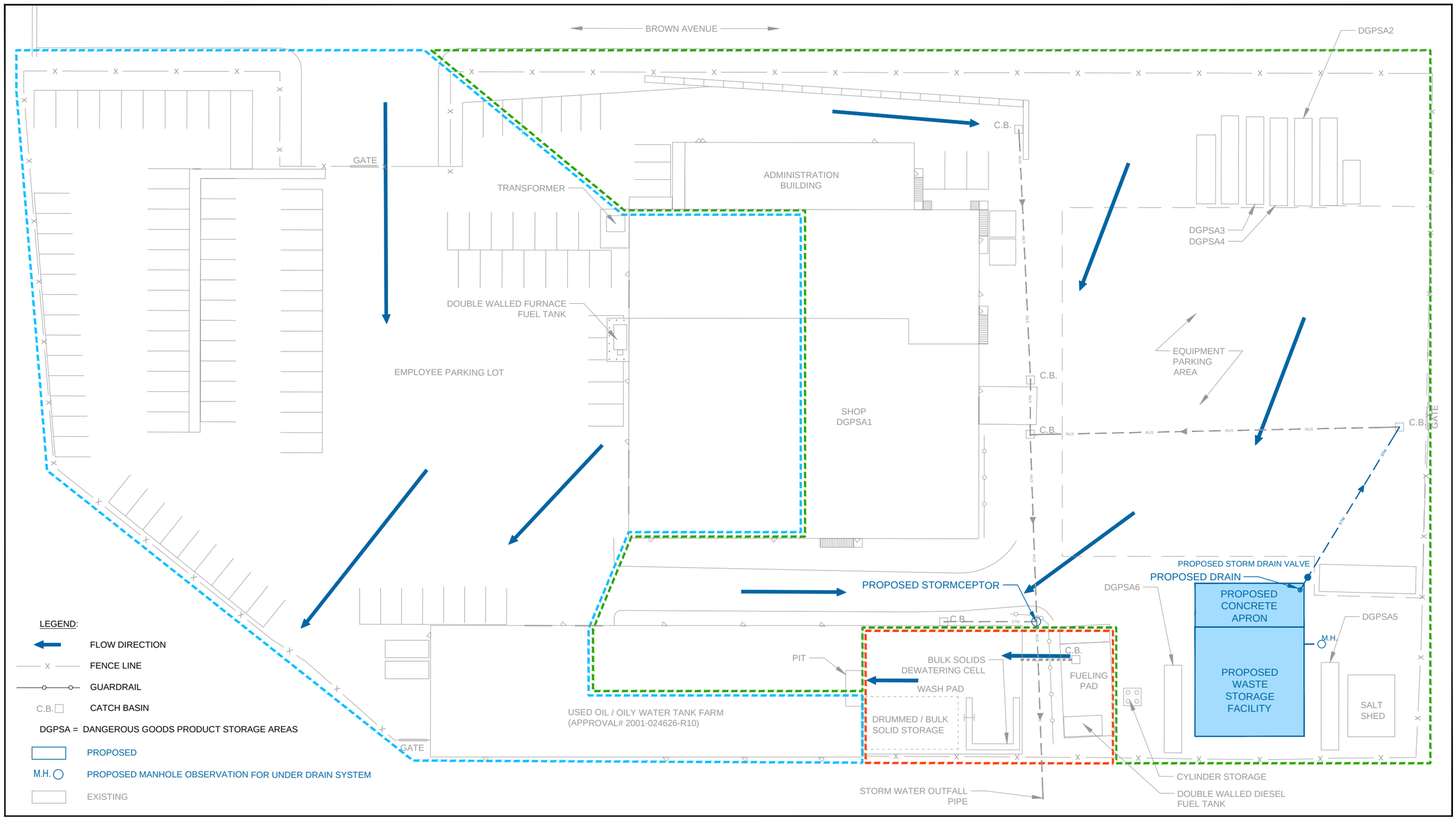
1. The proposed Waste Storage Facility will have an engineered fabric cover over top of the facility. Any precipitation that falls on to the fabric cover will be directed to either side of the facility and flow overland onto the hard pack gravel and will flow west/northwest towards the existing catch basins (minus any infiltration). Activities inside the facility will be limited to storage of waste only (i.e. there will be no opening of waste containers or processing of waste materials, therefore the potential for a spill will be very low. However, if there were a spill of material inside the proposed facility during operation, the slope of the interior floor and the raised/rounded curb at the entrance would prevent any of the spilled material from leaving the facility and entering the surface drainage system of the apron (discussed in #2 below). The primary and secondary containment capacity for potential spills inside the facility will equal a minimum 10% of the total aggregate that can be stored in the facility.
2. The proposed apron will have a concrete surface and concrete perimeter curbing which will contain any accumulated precipitation from exiting onto the hard packed gravel area. The apron will be sloped away from the proposed facility towards a drain located in the east corner of the apron. The drain (and drain valve) will connect via piping to the existing catch basin at the east property boundary. During loading and unloading activities on the apron, the valve will be closed which will isolate the apron from storm sewer piping. Provided there was no precipitation during the loading/unloading activities, the valve will be re-opened when the loading/unloading activities are finished. Anytime there is precipitation during the loading/unloading activities, the accumulated storm water will be visually inspected prior to re-opening the valve. Provided there are no sheens or other signs of impact, the valve will be re-opened, discharging the storm water into the storm sewer piping. If there is a sheen on surface water, or there has been a spill on the apron, the liquid will vacuumed up using our onsite vacuum truck and the apron will be cleaned before re-opening the drain valve. The primary and secondary containment capacity for potential spills on the apron will equal a minimum 10% of the total aggregate that can be placed on the apron.

In order to control overall storm water discharge quality from the eastern portion of the Site, a Stormceptor will be installed immediately upstream of the storm sewer outfall which will prevent potential runoff contaminants (e.g. hydrocarbons from parked equipment) from being discharged into the environment. This is a proven mitigation system in place at a number of facilities and municipal units in Nova Scotia. It works using filters and granular activated carbon to adsorb contaminants should they enter the storm sewer. Sizing of the pipes has been examined and the system as described can accommodate the proposed undertaking volumes.

Storm Water/Surface Water Inspections/Monitoring – Proposed

The following monitoring activities will be undertaken to ensure the control measures identified in the previous section remain effective:

1. Proposed Waste Storage Facility:
    i. Daily Inspections – The inside of the facility will be inspected daily to ensure there are no leaks/spills from the containers stored inside the facility. The fabric roof will be inspected to ensure there are no rips/tears in the fabric.
    ii. Quarterly Inspections – The observation sump/manhole will be inspected every quarter to determine if any liquid is accumulating in the interstitial layer between the concrete and the liner.
    iii. Annual Inspections – The facility will be emptied and cleaned annually and inspected to ensure there are no cracks in the concrete.
2. Proposed Apron:
    i. Daily Inspections – The apron will be inspected daily for evidence of spills or sheens that may accumulate with precipitation.
    ii. Annual Inspections - The apron will be cleaned annually and inspected to ensure there are no cracks in the concrete.
3. Storm Sewer Discharge (from Eastern Portion of the Site):
    i. Quarterly Monitoring - The storm sewer outfall will be monitored and sampled on a quarterly basis, or as otherwise directed by NSE to ensure compliance with applicable criteria and guidelines.
4. Stormceptor:
    i. The Stormceptor will be operated and maintained in accordance with the manufacturer's specifications and recommendations.



0 5 10 15m

Coordinate System:
UTM ZONE 20 NAD83 (CSRS)

EAST DRAINAGE AREA

WEST DRAINAGE AREA

WASH PAD/FUELING PAD DRAINAGE AREA

GHD

ENVIROSYSTEMS INCORPORATED
11 BROWN AVENUE, DARTMOUTH, NOVA SCOTIA
STORM AND SURFACE WATER MANAGEMENT PLAN

11193548-01

Dec 16, 2019

SITE DRAINAGE

FIGURE 1

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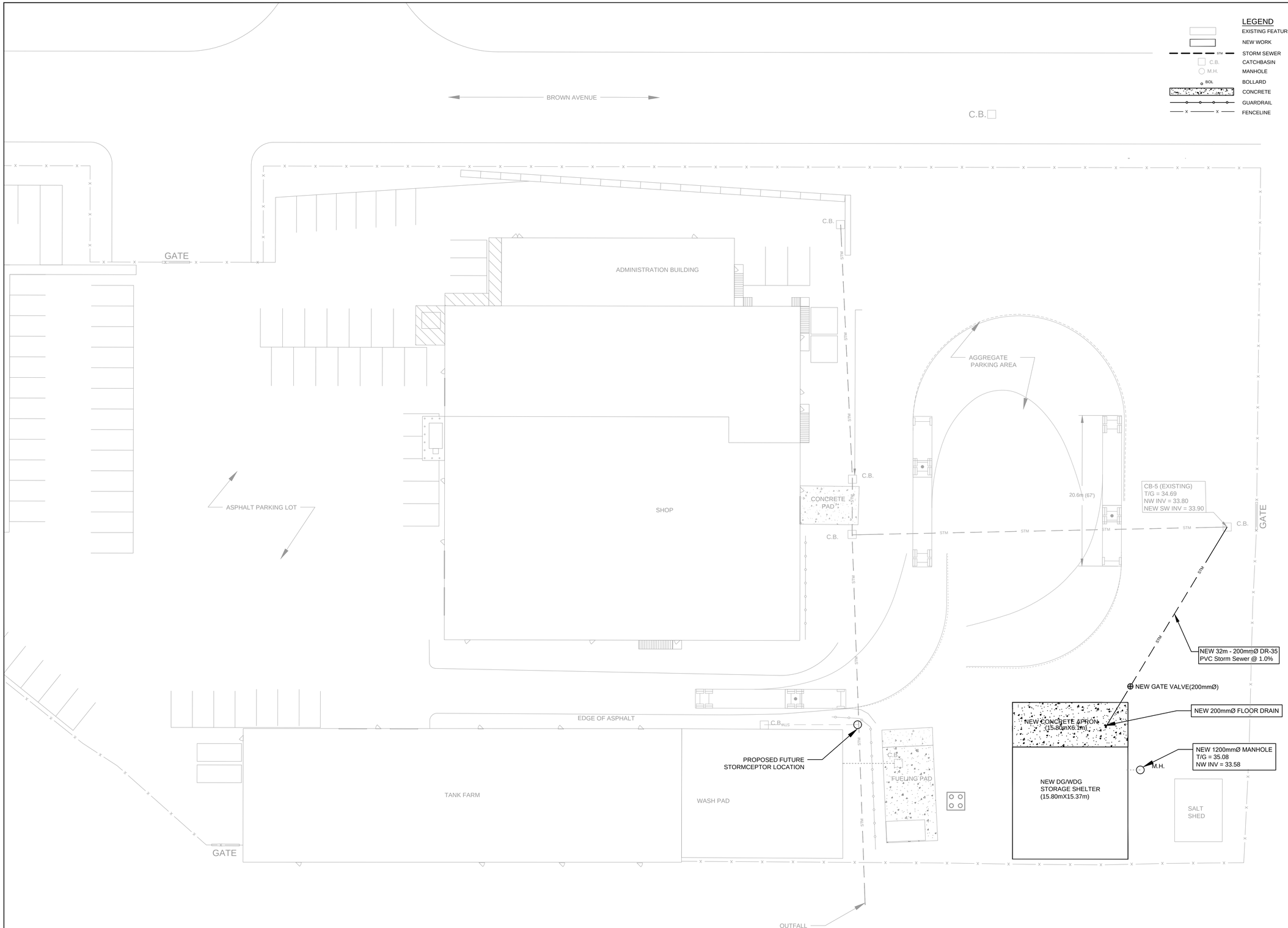
Appendix D
Spill Containment Engineered Drawings



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0 2.5 5 7.5m

NOTE:

SURVEY COMPLETED BY AZIMUTH CONSULTING LTD. (JUNE 2019)

REFERENCE DRAWING PROVIDED BY TERRAPURE (AUG 2015)

Client
TERRAPURE
11 BROWN AVE, DARTMOUTH, NS

Project
NEW STORAGE BUILDING CONCEPTUAL DESIGN

No.	Issue	Drawn	Approved	Date
03	DRAFT FOR CLIENT REVIEW	T.B.	C.S.	Dec 17/2019
02	DRAFT FOR CLIENT REVIEW	C.P.	C.S.	Nov 7/2019
01	FOR REVIEW	T.B.	C.S.	July 3/2019

Drawn	T. BRIAND	Designer	C. SINCLAIR
Drafting Check	T. BRIAND	Design Check	M. GALLAHUE
Project Manager	C. SINCLAIR	Date	December 17, 2019
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Original Size	ANSI D	Bar is 20mm on original size drawing	0 20mm

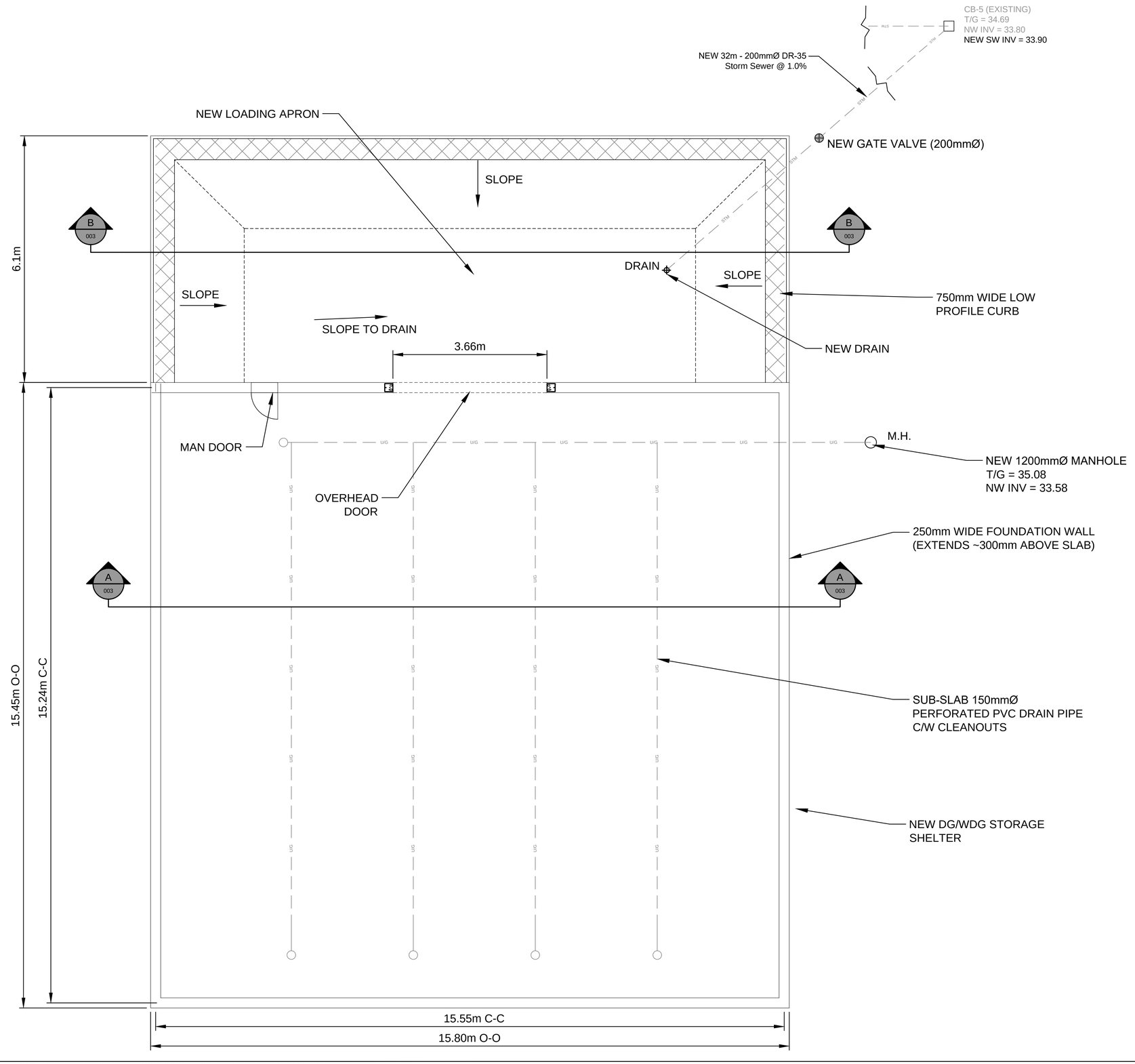
Project No. **11193548-04**

Title
SITE PLAN

Sheet No.
001

Sheet **1** of **3**

Plot Date: 17 December 2019 - 1:27 PM Plotted By: Teri-Lynne Briand CAD File: I:\Drafting\8-chars\11-----\1119---\111935--\111193548\11193548-PRES\11193548-Presentation-1\111193548-01(PRES001)GN-HX001.dwg



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Project
NEW STORAGE BUILDING DESIGN

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02	DRAFT FOR CLIENT REVIEW	C.P.	C.S.	Nov 7/2019
01	FOR REVIEW	T.B.	C.S.	July 3/2019

Drawn	**T. BRIAND**	Designer	**C. SINCLAIR**
Drafting Check	**T. BRIAND**	Design Check	**M. GALLAHUE**
Project Manager	**C. SINCLAIR**	Date	**December 17, 2019**
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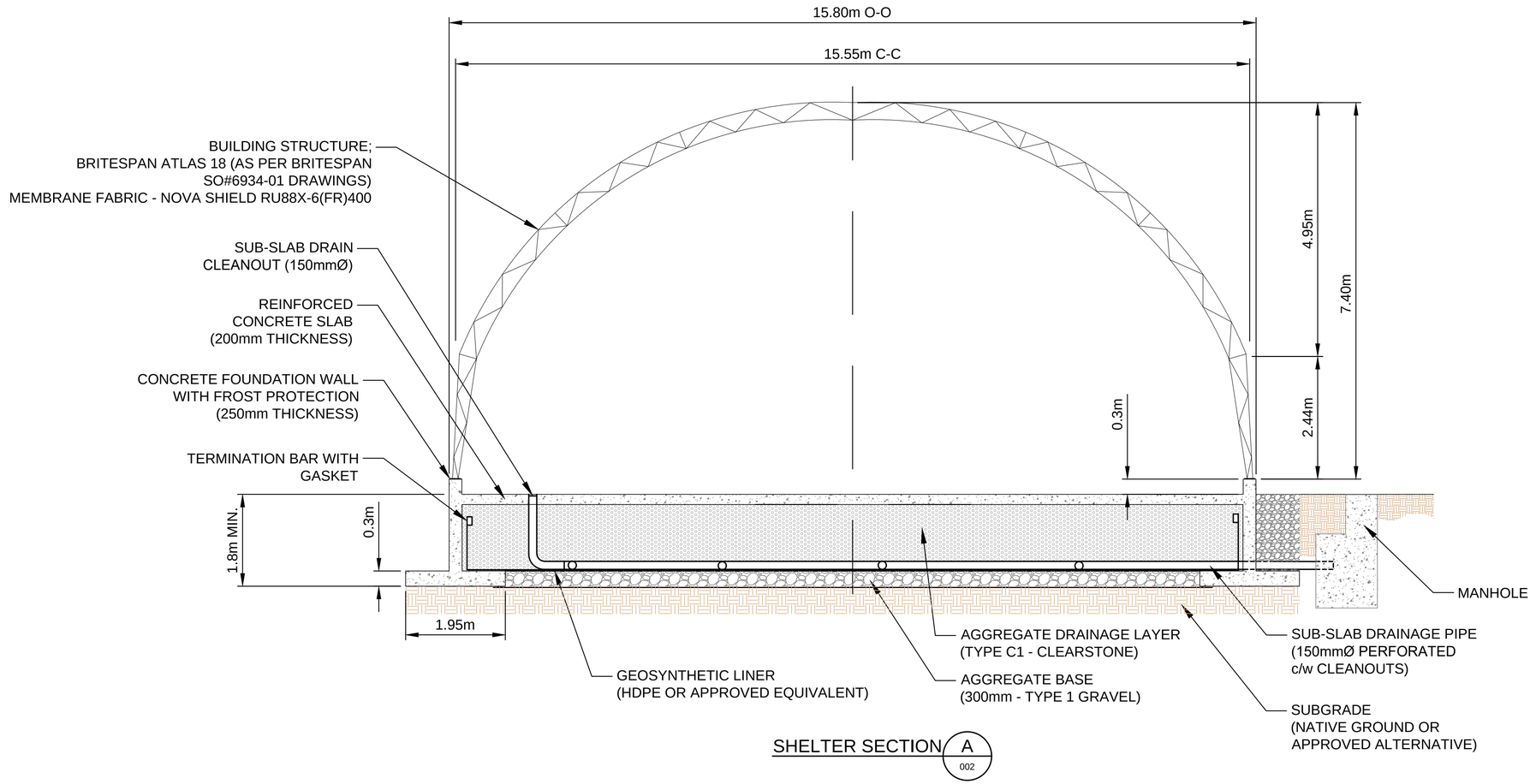
Project No. **11193548-04**

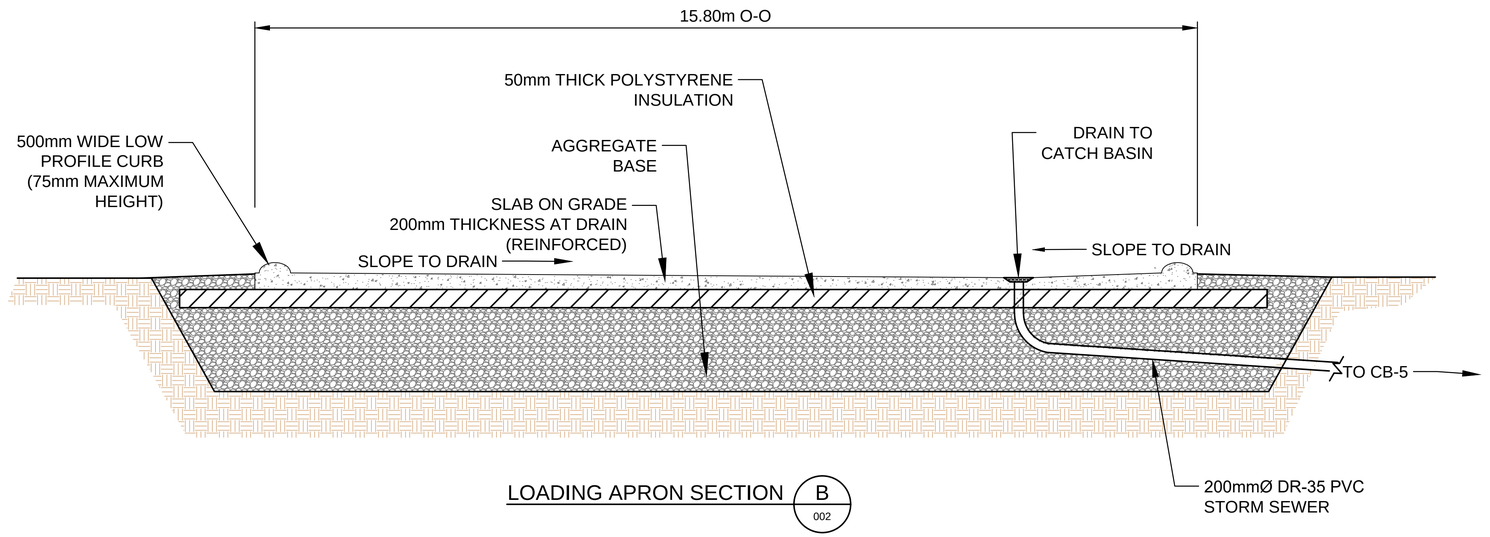
Title
NEW DG/WDG STORAGE SHELTER & LOADING APRON PLAN VIEW

Sheet No.
002

Sheet **2** of **3**



SHELTER SECTION A / 002



LOADING APRON SECTION B / 002

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Project
NEW STORAGE BUILDING CONCEPTUAL DESIGN

No.	Issue	Drawn	Approved	Date
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02	DRAFT FOR CLIENT REVIEW	C.P.	C.S.	Nov 7/2019
01	FOR REVIEW	T.B.	C.S.	July 3/2019

Drawn	T. BRIAND	Designer	C. SINCLAIR
Drafting Check	T. BRIAND	Design Check	M. GALLAHUE
Project Manager	C. SINCLAIR	Date	December 17, 2019
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Original Size	ANSI D	Bar is 20mm on original size drawing	0 — 20mm
Project No.	11193548-04		

Title
SECTIONS FOR NEW WORK

Sheet No.
003

Sheet **003** of **3**

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CAD File: I:\Drafting\8-chars\11-----\1119----\111935--\11193548\11193548-PRES\11193548-Presentation-1\11193548-01(PRES001)GN-HX003.dwg

Appendix E
Storage Shelter Certificate of Design and Manufacturing Conformance

© Canadian Standards Association *Certification of manufacturers of steel building systems*

CERTIFICATE OF DESIGN AND MANUFACTURING CONFORMANCE

THIS CERTIFICATE IS TO AFFIRM THAT ALL COMPONENTS OF THE STEEL BUILDING SYSTEM DESCRIBED BELOW, TO BE SUPPLIED BY THE NAMED MANUFACTURER CERTIFIED IN ACCORDANCE WITH CSA A660, HAVE BEEN OR WILL BE DESIGNED AND FABRICATED IN ACCORDANCE WITH THE FOLLOWING STANDARDS TO CARRY THE LOADS AND LOAD COMBINATIONS SPECIFIED.

1. DESCRIPTION

MANUFACTURER'S NAME AND ADDRESS:	BRITESPAN BUILDING SYSTEMS INC.
MANUFACTURER'S CERTIFICATE NO. UNDER CSA A660:	OLYMPO
CUSTOMER ORDER NUMBER:	BRITESPAN SO# 6934-01
BUILDING TYPE AND SIZE:	ATLAS 18 - 52' WIDE X 50' LONG, 10' TRUSS SPACING
INTENDED USE AND OCCUPANCY:	EQUIPMENT STORAGE [COMMERCIAL]
IMPORTANCE CATEGORY [NBCC, SENTENCE 4.1.2.1(3)]:	0.8, LOW
SITE LOCATION:	11 BROWN AVENUE, DARTMOUTH, NS. B3B 1Z7
APPLICABLE BUILDING CODE:	NBCC 2015 AS OUTLINED BELOW
BUILDER'S NAME AND ADDRESS:	TREELINE PROJECT MANAGEMENT LTD. 1075 CLARENCE ROAD, R.R.#1 BRIDGETOWN, NS. B0S 1C0
OWNER'S NAME AND ADDRESS:	TERRAPURE ENVIRONMENTAL STEVE NEWMAN 11 BROWN AVENUE DARTMOUTH, NS. B3B 1Z7
ENGINEER'S INITIALS*	

2. DESIGN STANDARDS

NATIONAL BUILDING CODE OF CANADA, 2015, PART 4: STRUCTURAL DESIGN

CSA S16-09, DESIGN OF STEEL STRUCTURES

CSA S136-07, NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS

3. MANUFACTURING STANDARDS

(A) FABRICATION HAS BEEN OR WILL BE IN ACCORDANCE WITH CSA S16 AND CSA S136, AS APPLICABLE.

(B) WELDING HAS BEEN OR WILL BE PERFORMED IN ACCORDANCE WITH CSA W59 AND CSA S1 36, AS APPLICABLE.

(C) THE MANUFACTURER HAS BEEN CERTIFIED IN ACCORDANCE WITH CSA W47.1, FOR DIVISION 1 OR 2, AND/OR CSA W55.3, IF APPLICABLE.

(D) WELDERS HAVE BEEN QUALIFIED IN ACCORDANCE WITH CSA W47.1.

(E) FABRIC COMPLYING TO CSA S-367-12.

4. PURLIN STABILITY

PURLIN BRACES ARE PROVIDED IN ACCORDANCE WITH CSA S136, CLAUSE D3 AND APPENDIX B, CLAUSE D3.2.3. IN PARTICULAR, FOR A STANDING SEAM ROOF SUPPORTED ON MOVABLE CLIPS, BRACES PROVIDING LATERAL SUPPORT TO BOTH TOP AND BOTTOM PURLIN FLANGES HAVE BEEN OR WILL BE PROVIDED. THE NUMBER OF ROWS IS DETERMINED BY ANALYSIS BUT IN NO CASE IS IT LESS THAN 1 FOR SPANS UP TO 7 M INCLUSIVE OR LESS THAN 2 FOR SPANS GREATER THAN 7 M.

5. LOADS

(A) SNOW, ICE, AND RAIN LOAD

1-50 YEAR GROUND SNOW LOAD, Ss =	1.9 (kPa)
1-50 YEAR ASSOCIATED RAIN LOAD, Sr =	0.6 (kPa)
IMPORTANCE FACTOR, Is =	0.8

BASIC ROOF SNOW LOAD FACTOR: Cb = 0.8; Ca = 1 (CASE 2 FOR UNBALANCED LOADING)

ROOF SNOW LOAD, S = VARIES DUE TO PROFILE

DRIFT LOAD (NBCC, SUB-SECTION 4.1.6.2.8)

SPECIFIED RAIN LOAD (NBCC, CLAUSE 4.1 .6.4)

(B) FULL AND PARTIAL SNOW LOAD

(I) APPLIED ON ANY ONE AND ANY TWO ADJACENT SPANS OF CONTINUOUS PURLINS

(II) APPLIED ON ANY ONE AND ANY TWO ADJACENT SPANS OF MODULAR RIGID FRAMES WITH CONTINUOUS ROOF BEAMS

(III) APPLIED AS DESCRIBED FOR THE BUILDING GEOMETRY IN NBCC, PART 4, AND IN THE USER'S GUIDE- NBCC 2015: STRUCTURAL COMMENTARIES (PART 4), COMMENTARY G: SNOW LOADS

(C) WIND LOAD

1-50 YEAR REFERENCE VELOCITY PRESSURE:	0.58 (kPa)
IMPORTANCE FACTOR, Iw =	0.8
EXPOSURE, Ce =	0.94
ENCLOSURE=	ENCLOSED

(D) WIND LOAD APPLICATION

(I) APPLIED IN ACCORDANCE WITH NBCC, PART 4, SECTION 4.1.7

(II) PRESSURE COEFFICIENTS IN ACCORDANCE WITH USER'S GUIDE- NBCC 2015: STRUCTURAL COMMENTARIES (PART 4), COMMENTARY 1: WIND LOADS, FIGURES 13 THROUGH 112

(III) BUILDING INTERNAL PRESSURE CATEGORY IN ACCORDANCE WITH USER'S GUIDE- NBCC 2015: STRUCTURAL COMMENTARIES (PART 4), COMMENTARY 1: WIND LOADS

(E) CRANE LOADS (WHERE APPLICABLE) ----- N/A

(F) MEZZANINE LIVE LOAD---------- N/A

(G) SEISMIC LOAD---------- N/A

(H) OTHER LIVE LOADS (SPECIFY) ---------- 0.8 kPa (MINIMUM ROOF LIVE LOAD)

(I) DEAD LOADS

DEAD LOAD OF BUILDING COMPONENTS IS INCORPORATED IN THE DESIGN AS SELF-WEIGHT OF THE BUILDING

COLLATERAL LOAD (MECHANICAL, ELECTRICAL, CEILING, SPRINKLERS, ETC.) = 0.012kPa

(J) LOAD COMBINATIONS

APPLIED IN ACCORDANCE WITH NBCC, PART 4, SECTION 4.1: YES

6. GENERAL REVIEW DURING CONSTRUCTION

THE MANUFACTURER DOES NOT PROVIDE GENERAL REVIEW DURING CONSTRUCTION FOR REGULATORY PURPOSES.

7. CERTIFICATION BY ENGINEER

I, MARTIN NICOLAU, AN ENGINEER REGISTERED OR LICENSED TO PRACTICE IN THE PROVINCE OR TERRITORY OF NOVA SCOTIA, HEREBY CERTIFY THAT I HAVE REVIEWED THE DESIGN AND MANUFACTURING PROCESS FOR THE STEEL BUILDING SYSTEM DESCRIBED. I CERTIFY THAT THE FOREGOING STATEMENTS, INITIALED BY ME, ARE TRUE.

BRITESPAN BUILDING SYSTEMS INC

TF: 800-407-5846
www.britespanbuildings.com

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DRAWN BY: TWF

CHECKED BY: CJM

REV #	CR #	DESCRIPTION:	DATE:
0		ISSUED FOR CONSTRUCTION	03.SEP.2019

DEALER:
TREELINE PROJECT MANAGEMENT LTD.
1075 CLARENCE ROAD, R.R.#1
BRIDGETOWN, NS. B0S 1C0

CUSTOMER:
TERRAPURE ENVIRONMENTAL
11 BROWN AVENUE
DARTMOUTH, NS. B3B 1Z7

PROJECT:
ATLAS 18
52'L8' x 50' - 420 GM
10' oc

ORDER ID:
SO# 6934-01

WIDTH-STEEL-FAB-HSS-HSSDROP:
52-420-320-12-//

DRAWING TITLE:
CERT. OF CONFORMANCE

SHEET NO.: CT-1

PAGE NO.: 001/14

REGISTERED PROFESSIONAL ENGINEER * PROVINCE OF NOVA SCOTIA *
DATE 9-3-2019
M. S. Nicolau
9340

This project has been designed and fabricated in accordance with the following:

1. DESCRIPTION

Customer's Name and Address:	TERRAPURE ENVIRONMENTAL STEVE NEWMAN 11 BROWN AVENUE DARTMOUTH, NS. B3B 1Z7
Site Location:	TERRAPURE ENVIRONMENTAL 11 BROWN AVENUE DARTMOUTH, NS. B3B 1Z7
Building Type:	ATLAS 18
Building Size:	52' X 50' @ 10' O.C. (15.850m X 15.240m @ 3.048m O.C.)
Applicable Building Code:	NBCC 2015
Intended Use and Occupancy:	EQUIPMENT STORAGE
Construction Type:	COMMERCIAL
Fabric Type:	RU88X-6 (FR) 400

2. DESIGN CRITERIA

Importance Category:	0.8 Low
Occupancy Classification:	F3

A) DEAD LOADS

I) Self-weight of building components

II) Collateral (hanging) load, not to exceed 0.25 psf (0.012 kPa) as an allowance for mechanical, electrical ceiling, sprinklers, etc, or any combination there of.

B) LIVE LOADS

Live loads determined in accordance with section 4.1.5 of NBCC 2015

Minimum roof live load	16.72 psf (0.8 kPa)

C) SNOW LOADS

Snow loads determined in accordance with section 4.1.6 of NBCC 2015 & Commentary G of NBCC 2015

Structural Commentaries	
Importance Factor, Is	0.8
Ground Snow Load, Ss	39.7 psf (1.9 kPa)
Associated Rain Load, Sr	12.5 psf (0.6 kPa)
Building Exposure	EXPOSED (Cw = 0.75)

D) WIND LOADS

Wind Loads determined in accordance with section 4.1.7 of NBCC 2015 & Commentary I of NBCC 2015

Structural Commentaries	
Importance Factors, Iw	0.8
Reference Wind Pressure, q (1/50)	12.1 psf (0.58 kPa)
Exposure Factor, Ce	0.94
Building Enclosure	ENCLOSED (ALL OPENINGS MUST BE RATED FOR SITE LOADS)

E) LOAD COMBINATIONS

Load combinations determined in accordance with section 4.1.3 of NBCC & Commentary A of the NBCC 2015 Structural Commentaries

3. BASE REACTIONS (UNFACTORED)

THE MAXIMUM FORCES AT THE FOUNDATION HINGE SUPPORTS, DUE TO THE LOADS LISTED ABOVE, ARE AS FOLLOWS:

	SIDE A				SIDE B			
	HORIZONTAL		VERTICAL		HORIZONTAL		VERTICAL	
LOAD CASE:	X_A (kips)	X_A (kN)	Y_A (kips)	Y_A (kN)	X_B (kips)	X_B (kN)	Y_B (kips)	Y_B (kN)
DEAD	0.09	0.39	0.25	1.10	-0.09	-0.39	0.25	1.10
LIVE	1.62	7.22	3.60	16.00	-1.62	-7.22	3.60	16.00
SNOW BALANCED	1.60	7.13	2.65	11.81	-1.60	-7.13	2.65	11.81
SNOW UNBALANCED	0.82	3.66	0.89	3.94	-0.82	-3.66	2.03	9.02
WIND: PERPENDICULAR	-0.70	-3.12	3.99	17.74	-1.54	-6.85	3.99	17.74
WIND:PARALLEL	-0.76	-3.38	-5.81	-25.84	0.67	3.00	-5.82	-25.89

Note:

Negative values of Y reactions indicates uplift forces.

4. MATERIAL SPECIFICATIONS

(a) Structural Steel

All steel shall be designed, fabricated & erected in conformance to CAN/CSA-S16-09 "Limit states design of steel structures."

Structural steel conforms to:

Plate	ASTM A572 GR 42 / 50 & CSA G40.20 300W / 350W
Rolled & HSS sections	ASTM A500 GRADE C / CSA G40.21 350W
Purlins	ASTM A500 GRADE C

COMPONENTS:

STD. Truss:	CH: 2.375" (60.3mm) DIA. x 12GA. wall	WB: 1.25" (31.8mm) DIA. x 14GA.
STR. Truss:	CH: 2.375" (60.3mm) DIA. x 12GA. & 10GA. (INNER) wall	WB: 1.25" (31.8mm) DIA. x 14GA.
Leg:	CH: 2.5" (63.5mm) SQ. X 0.125" (3.2mm) wall	WB: 1.25" (31.8mm) DIA. x 14GA.
Purlins:	2.875" (73mm) DIA. x 14GA.	

Structural steel round and square tubing, hot or cold formed and induction welded. Mill certs or test results are available from manufacturer to confirm the physical characteristics and composition of the supplied steel.

(b) Corrosion Protection

Product	Galvanizing Standard	Type	Coating Weight	Coating Thickness
Steel tube	CAN/CSA-G124	in-line	0.6 oz/ft²	1.0 mils *
Steel tube, plate & HSS	ASTM A123	hot dip	2.2 oz/ft²	3.4 mils
Cables	Federal spec. RR-W410D			

* Chromate conversion coating applied over the galvanized surface coat demonstrating the ability to withstand a minimum of 1000 hours of accelerated salt fog testing to the 5% red rust condition in accordance with ASTM B117. The repair to the truss at weld locations is completed using sprayed zinc (metallizing) in accordance with ASTM A 780 - 01. Surfaces to be reconditioned shall be blasted clean, dry and free of oil, grease, corrosion, flux residue and weld spatter in accordance with SSPC-SP5/NACE No. 1 to ensure that a smooth reconditioned coating can be completed. Surface preparation shall be extended into the surrounding undamaged galvanized coating. Field touch ups to damaged galvanizing protection is completed using 99.9% zinc rich spray paint.

(c) Bolts

Anchor bolt lengths and load transfer to the foundation are to be determined by others. Anchor bolt diameters are determined in accordance with CAN/CSA-S16-09 using FY = 36 Ksi (248 MPa). Anchor bolt projections (based on no grout) are Min. 2" (50.8mm) and Max. 3 1/2" (88.9mm). All structural bolt diameters less than 1" (25.4mm) conform to SAE J429 GR.5., be plated / galvanized or JS500 coated finish. All structural nut diameters less than 1" (25.4mm) conform to SAE J995 GR.8., be plated / galvanized or JS500 coated finish. All bolts larger than 1" (25.4mm) dia conform to ASTM A325. Bolts in connections not subject to tension loads, or where loosening due to vibration or load fluctuations are not design considerations need only be snug tightened to a tightness that exists when all plies in a joint are infirm contact. Bolts subject to tension loads require pre tensioning to minimum values shown in following table.

TABLE 4.1

Bolt Length (Measured from underside of the head to the extreme end of the bolt)	TURN
Up to and including 4 bolt diameters	1/3
Over 4 diameters and not exceeding 6 diameters or 8 inches	1/2
Exceeding 8 diameters or 8 inches	2/3

NOTE: NUT ROTATION IS ROTATION RELATIVE TO A BOLT REGARDLESS WHETHER THE NUT OR BOLT IS TURNED.
TOLERANCE ON ROTATION: 30° OR UNDER

Suggested Manufacturer's Assembly Torque Values

SIZE	GRADE 5					
DIA. in	Threads Per Inch	Tensile ksi Min.	Proof Load lbs.	Clamp Load lbs.	Torque Dry ft.-lbs.	Torque Lube ft.-lbs.
3/8	16	120	6600	4950	15	23
7/16	14	120	9050	6780	50	35
1/2	13	120	12100	9050	75	55
5/8	11	120	19200	14400	150	110
3/4	10	120	28400	21300	260	200
SIZE	A325					
1 1/4	7	105	71700	53800	1120	840
1 1/2	7	135	103000	77300	1775	1330

(d) CABLES

Diagonal Steel Cables as per Federal Spec. RR-W4100

Dia. (in)	Approx. Weight / 1000 ft. (lbs)	Break Strength Tons (tn)
3/16 (4.8mm)	65 (29.5 kg)	2.1 (1905.1 kg)
5/16 (7.9mm)	172 (78.0 kg)	4.9 (4485.1 kg)
1/2 (12.7mm)	521 (236.3 kg)	9.0 (8164.6 kg)

SHACKLES, TURNBUCKLES AND PINS TO BE GRADE 100-110 STEEL

(e) Membrane Fabric

All membrane will meet at a minimum the following:

Physical	Properties	Description
WEAVE	Woven HDPE scrim	
COATING	LDPE, 4 mil (95 g/m² /side)	
WEIGHT	12 oz/ yd² (407 g/m²) +/-5%	
THICKNESS	23 mil (0.59 mm)	ASTM D-1777
GRAB TENSILE	WARP 370 lb 1664 N WEFT 345 lb 1532 N	ASTM D-5034
STRIP TENSILE (N/5cm)	WARP 245 lb/in (2178) WEFT 235 lb/in (2086)	ASTM D-4851
STRIP TENSILE, standard deviation	WARP 9.8 / WEFT 12.4	ASTM D-4851
FACTORED MEMBRANE	WARP 145 lb/in (1287) WEFT 122lb/in (1083)	
RESISTANCE (Tr) (N/5cm)		
CSA-S367-12 where: φ_m =	WARP 0.88 / WEFT 0.83; H=1.0; U=0.75; V=0.8	ASTM D-4851
TONGUE TEAR	WARP 110 lb 488 N WEFT 100 lb 444 N	ASTM D-2261
TRAPEZOIDAL TEAR	WARP 95 lb 422 N WEFT 90 lb 400 N	ASTM D-4533
MULLEN BURST	655 psi (4512 kPa)	ASTM D-3786
LOW TEMPERATURE BEND	-60°C	ASTM D-2136
FR PERFORMANCE	NFPA 701 (1989), CAN/ULC S109-M87	ASTM E84-00a

5. BUILDING ERECTION

The builder and/ or erector is solely responsible for accurate, good quality workmanship in erecting this building in conformance with these drawings, details referenced in these drawings and industry standards as per CSA S16-09, pertaining to proper erection including the proper use of temporary bracing. BRITESPAN Building Systems, Inc. is not responsible for errors, omissions or damages incurred in the erection of the components shown on this drawing, or for the inspection of erected components to determine same. The erector must provide safe working conditions and practices conforming to safety regulations. All lifting devices are to be specifically designed to lift the various components. Slings and spreader bars are to be used to prevent permanent deformation of structural components. This building is not designed to be lifted as an assembled unit. BRITESPAN Building Systems, Inc. is not responsible for losses and/or damage as a result of lifting this building. If, however, it has been determined to lift this building it is the responsibility of the person, firm, or company contracted to lift the building to ensure the lift does not damage the building and to determine and finalize all aspects of the lift including all parts/connectors to be added to the building to facilitate the lift. Foundation must be level, square and smooth.

(a) Structural Steel

Assemble frames from truss components, then starting at a braced bay, erect and support frames using temporary bracing as required to ensure stability of the frames. Install purlins and cross bracing. Plumb and square frames in accordance with CAN/CSA-S16 and OSHA 29 CFR PART 1926 - Safety Standard for Steel Erection. Structural frames are considered plumb, level and aligned when the variance does not exceed 1:500. Ensure all purlins remain parallel. Purlins are not designed to carry additional hanging loads. Loads hung from purlins must be reviewed and approved in writing by BRITESPAN Building Systems, Inc. Severe damage to the building and accessories may result from failure to comply with this requirement. Finished floor elevations and underside of base plate is 100'-0" (30.48 m) unless noted. Holes required in HSS columns, headers or purlins for framed openings, door or window post connections to be by the erector. All grade entry framed opening posts to be attached to the foundation.

(b) Membrane Fabric

Membrane covers are not to be pulled onto the frame in high wind conditions. Membrane is to be installed using appropriate procedures and practices as set out in the applicable series installation manual. Exterior fabric will deflect under load; therefore all building accessories (Lighting, HVAC, Sprinklers etc.) must be located beneath the inner chord of the truss. Anything above this must be reviewed and approved in writing by BRITESPAN Building Systems, Inc. Severe damage to the building and accessories may result from failure to comply with this requirement.

(c) Delivery and Storage

BRITESPAN Building Systems, Inc. will not be held responsible for materials which are improperly protected after delivery. Galvanized, aluminum and colored materials are subject to corrosion and discoloration if they are improperly stored. Short term job site storage of components may be tolerated, provided care is taken to keep the materials dry at all times. When trusses are to be stored outdoors, they should be placed at an angle sufficient to promote good drainage. In addition, several inches of clearance must be provided between the lower end and the ground to allow ventilation.

(d) Interior Partition Walls

Field installation of partition walls to the underside of the truss frame member must allow for vertical building deflection. Contact BRITESPAN Building Systems, Inc. for required clearances.

6. MISCELLANEOUS

(a) Purlin braces are an integral part of the truss structural system and should be properly installed prior to installation of membrane roof or endwall panels. Removal or alteration of any bracing without authorization from BRITESPAN Building Systems, Inc. is prohibited.

(b) BRITESPAN Building Systems, Inc. does not provide review during construction without prior COMMITMENT TO REVIEW authorization.

7. CERTIFICATION BY BRITESPAN BUILDING SYSTEMS, INC.

This certification and engineering seal applies only to products designed by BRITESPAN Building Systems, Inc. for the loading conditions designated on these drawings. Concrete, foundations, anchor bolts, components BY OTHERS and erection are NOT the responsibility of BRITESPAN Building Systems, Inc. All doors, windows and roll-up curtains must be designed by others to support the site loading conditions and are relied upon to be closed in the event of high wind.

These drawings including information hereon, remains the property of BRITESPAN Building Systems, Inc. They are provided solely for erecting the building described, and shall not be modified, reproduced or used for any other purpose without prior written approval of BRITESPAN Building Systems, Inc.

*** MAINTENANCE REQUIREMENTS FOR THE STRUCTURE ***

Years 1 - 2 every 12 months - 100% of all cable tensioning inspected and reported to in writing to BRITESPAN and Engineer of structure.
Years 3 - 10 every 24 months - 25% of all cable tensioning (randomly chosen) - where tensioning found not adequate, check all other similar cable tensioning, report in writing to BRITESPAN and Engineer of structure.

*** NOTE ***

TEMPORARY BRACING / SUPPORTS REQUIRED DURING ERECTION OF BUILDING. BRACING MUST REMAIN IN PLACE UNTIL STRUCTURE AND ALL PERMANENT BRACING IS COMPLETELY INSTALLED.
TEMPORARY BRACING DESIGN AND SUPPLY IS NOT THE RESPONSIBILITY OF BRITESPAN BUILDING SYSTEMS INC.

BRITESPAN BUILDING SYSTEMS INC

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DRAWN BY: TWF

CHECKED BY: CJM

REV #	CR #	DESCRIPTION:	DATE:
0		ISSUED FOR CONSTRUCTION	03.SEP.2019

DEALER:
TREELINE PROJECT MANAGEMENT LTD.
1075 CLARENCE ROAD, R.R.#1
BRIDGETOWN, NS. B0S 1C0

CUSTOMER:
TERRAPURE ENVIRONMENTAL
11 BROWN AVENUE
DARTMOUTH, NS. B3B 1Z7

PROJECT:
ATLAS 18
52'L8' x 50' - 420 GM
10' oc

ORDER ID:
SO# 6934-01

WIDTH-STEEL-FAB-HSS-HSSDROP:
52-420-320-12-//

DRAWING TITLE:
COVER PAGE

SHEET NO.: FB-1

PAGE NO.: 002 /14

REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF NOVA SCOTIA
DATE
M. S. Nicolas
9340

about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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