ENVIRONMENTAL ASSESSMENT REGISTRATION

STERICYCLE
BIOMEDICAL WASTE TRANSFER
and TREATMENT FACILITY

SUBMITTED TO:
MINISTER OF MUNICIPAL AFFAIRS AND ENVIRONMENT
DIRECTOR OF ENVIRONMENTAL ASSESSMENT
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STERICYCLE BIOMEDICAL WASTE TRANSFER and TREATMENT FACILITY

2.0 PROPONENT:

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3.0 THE UNDERTAKING:

3.1 Need for the Undertaking:

In October 2017, Eastern Health issued an RFP for the removal, treatment and disposal of biomedical waste that would apply to each of the Newfoundland & Labrador regional health authorities. The RFP challenged bidders to provide options for this service as either “on-island” or “off-island”, or a combination of both.

As the incumbent, we have been providing this service in NL for the last 5 years utilizing an “off-island” model. This involved taking all biomedical waste streams and transporting them from Newfoundland to Dartmouth NS or Brampton ON for treatment and final disposal. This is a very costly way to dispose of the material due to the high transportation costs and the logistics involved in servicing the health authorities and certainly does not represent the most environmentally-friendly approach. Recognizing that there are alternatives to doing so, we submitted a response to the RFP utilizing a hybrid model of the “off-island/on-island” scenarios. Based on our submission, we were successful in our bid to continue to provide services to the health authorities.

The model we proposed will continue with off-island service for a portion of the waste stream (anatomical, cytotoxic and pharmaceutical waste), as they require incineration. However, the remaining waste, referred to as Yellow Bag (non-anatomical waste such as IV bags and lines, sharps, gauze dressings, gowns, masks, etc.), will be staying on-island for treatment and disposal. Yellow Bag material is treated through an autoclave system. The autoclave system uses steam heat and pressure to render the waste non-hazardous.

3.2 Nature of the Undertaking:

Under our new model, the waste collected on the Island would be received at the new site (45 Clyde Avenue) where it would be either held refrigerated (inside our warehouse) or treated on site. Medical waste requiring disposal by incineration will be shipped to our Brampton, ON facility and the remaining waste will be autoclaved on site and then sent to Robyn Hoods Bay Landfill, for final disposal. Robyn Hoods Bay has agreed to accept this waste pending their permit approval. Approximately 60% to 80% of the waste collected will be treated on-site.

We will be installing the equipment necessary to operate within the next four to five months. That equipment includes a new boiler to feed the steam to our autoclave and the associated equipment necessary to fuel the system (propane). The waste material will be compacted into a self-contained compaction system, which will be housed inside our facility. Equipment to wash and disinfect the plastic reusable containers used to collect and transport the treatable waste (Yellow Bag) will also be installed at the facility. Any wastewater resulting from our process will meet the by-law requirements (testing will be performed to confirm). The autoclaving process is very well-known and accepted for its effectiveness and efficiency in treating this waste without any negative impact.

Incineration waste will be consolidated (packaged efficiently for transport) at our facility and contained in a refrigeration unit inside our warehouse until ready for transport (every 30 to 60 days). It will be transferred to a reefer trailer (refrigerated) for transportation to Brampton ON where it will be destroyed.

3.3 Proponent's Experience:

Stericycle, ULC is a Canadian company with its corporate office in Oakville, ON. It is wholly owned by Stericycle, Inc. a public company based in Chicago, IL and traded on the NASDAQ (SRCL). The company has revenues in excess of $4 billion and employees more than 20,000 people worldwide.

The company specializes in the management of biomedical waste. It has been in business since 1989. In Canada, the company operates one incineration facility, 4 sterilization facilities, 5 waste transfer facilities and runs a fleet of more than 200 vehicles located at 17 different locations across the country. Stericycle services customers in all 10 Canadian provinces. We are the leader in managing biomedical waste in Canada.

The waste transfer facility to be established in Mount Pearl will be very similar to the other 4 treatment facilities we operate in Canada. We have more than 25 years of experience running biomedical waste transfer and treatment facilities. We understand how to manage them in a safe, compliant and effective manner. Our staff is fully trained, knowledgeable and experienced with all the processes and procedures that are required to ensure the proper management and risk mitigation of those facilities.

The company employs a team of Environmental, Health and Safety professionals that are responsible for ensuring that our operations are in full compliance with all our operating approvals and all applicable rules and regulations at all times. These professionals do not report into the site management but directly to the company Senior Vice-President of SH&C at the corporate office in Chicago and therefore have the required level of independence to enforce the company policies that are implemented to achieve this level of safety and compliance.

There will be an Environmental, Health and Safety professional assigned to the Mount Pearl facility.

Note that Stericycle currently holds a Certificate of Approval issued by the Government of Newfoundland and Labrador Department of Environment and Conservation for the transportation of biomedical and other waste (WMS-10-10-019, included in Appendix A). Once released from Environmental Registration, the Company will seek the Certificate of Approval required to operate the waste transfer facility.

3.4 Reference Documents

This document has been prepared using the proponent's knowledge and experience but also with the use of the following reference documents:

- The NL Department of Environment Guide to Environmental Assessment
- The NL Department of Environment Guidance Document on the Management of Biomedical and Pharmaceutical Waste (BPW)
- The CCME Guidelines on the Management of Biomedical Waste in Canada
- The CSA standard Z317.10-15: Handling of Healthcare Waste Materials
- The Ontario Ministry of the Environment Guidance Document C-17: Non-Incineration Technologies for Treatment of Biomedical Waste
- The Federal Transportation of Dangerous Goods Regulations and all of its standards and reference documents

The proponent is well aware of those guidance documents and has incorporated their requirements in its proposed operations.

The proponent is also very well aware of all Federal, Provincial and Municipal laws, regulations, by-laws and standards applicable to its operations and will conduct its business in full compliance with those.

4.0 DESCRIPTION OF THE UNDERTAKING:

4.1 Geographical Location:

The proposed undertaking will be located at 45 Clyde Avenue, Donovans Industrial Park, Mount Pearl, NF as shown below.

A copy of the legal survey is attached in Appendix B

The site is located in the Donovans Industrial Park (Industrial Zoning). It is easily accessible through Highway 1 and Topsail Road.

Adjacent properties are occupied by various commercial and industrial tenants who warehouse and distribute products, service the oil and gas industries or manufacture paper products.

There is an Open space and a pound (Power's Pond) behind the site. The closest residential area is located on the other side of the Open Space, approximately 200 m from the site.

The site is compatible for the other land uses in the Industrial Park. It will not have any negative impact on the neighboring properties. All activities are done indoors with no nuisance impact (no noise, dust, letter, odours, etc…). Further details are provided in Section 4.4.

4.2 Physical Features:

The site is 1.010 acres in area and includes a 12,203 sq. ft. building of which 1,318 sq. ft. is office space and 10,885 sq. ft. is warehouse space. A second floor of office space (1,892 sq. ft.) is also available. The building is currently unoccupied. Approximately 8,400 sq. ft. of the warehouse space will be occupied by Stericycle for this project while another 2,500 sq. ft. will be occupied by Stericycle's sister company – Shred-It. As shown on Figure 1 below, the two sections of the warehouse are separated by the office space.

Figure 1: Site Layout

There is a chain link fence around both 45 and 47 Clyde Avenue with a common gate. The gate will be kept close and locked when the sites are unoccupied. The parking area is fully paved.

The building will also be protected by a fire and intrusion alarm system including smoke detectors, motion detectors and door contacts. The security system will be monitored on a 24-hour per day and 7-day per week basis by a third party.

There will be signs at both the front door and the loading dock doors indicating that the site is a waste transfer and treatment site. An emergency phone number will be provided. Waste storage and processing areas will be identified appropriately for the waste to be handled (biohazard sign for biomedical waste).

Pictures of the front, back and inside of the building are shown below.

All waste management activities will be conducted inside the building. Truck loading and unloading activities will be performed directly from the loading docks to the building. There will never be any waste outside the building or a company vehicle. A site plan is included in Appendix C.

The waste handling and storage areas will consist of the inside of the warehouse (for waste other than biomedical waste) as well as refrigerated unit (24 ft. by 24 ft. by 18 ft. high) to keep the waste requiring incineration refrigerated at less than 4 degree Celcius until it is shipped off-site. The unit compressors do not use any CFCs (they use a Zero Ozone Depletion Potential (ODP) refrigerant – R407C) and their service will comply with the Newfoundland and Labrador Regulation 41/05 Halocarbon Regulations under the Environmental Protection Act. There will be no floor drain in the refrigeration unit. This will ensure that in the unforeseen event of a spill inside the storage unit, the material will be contained in the unit and therefore easily cleaned. The site will be equipped with complete spill kits including absorbent materials, socks, disinfecting solutions and packaging equipment.

A separate area inside the warehouse will be used to store the other (other than biomedical) waste received. The storage area is identified on the Site Plan in Appendix C. Details about the types of waste and quantities are found in Section 4.4.

The site will also be equipped with a steam autoclave and all necessary ancillary equipment (boiler, condenser, etc.) to be used to treat non-anatomical biomedical waste. The treated waste will then be compacted into a waste bin to be shipped to final disposal (Robin Hood's Bay landfill – see Appendix D). An aboveground propane tank (approximately 2000L) will be installed outside the building, close to the boiler, to fuel the steam boiler.

Detailed descriptions of the operation are found in Section 4.4 and specifications on all equipment used are found in Appendix E.

Note that both the boiler and the autoclave are regulated pressure vessels. They will both bear the appropriate certification (CRN number) and be installed by certified (in NL) pressure vessel pipe fitters and technicians. Any repairs and maintenance will also be performed in accordance with the manufacturer's recommendations and the applicable regulations.

The warehouse floor will be coated with an impervious material to ensure it can contain any spills until they are cleaned up.

The office area will be used for administrative work as well as for a change room and separate eating area for the employees (see Appendix C).

Given the nature of the activities that will occur at the site (waste receiving, storage and shipping and autoclaving of non-anatomical waste), the location of the site (in an industrial park, inside a building), physical and biological environments will not be affected by this undertaking.

4.3 Construction:

The site will only require minor modifications such as the addition of 2 loading dock doors and renovating the office/change room area. All other preparation activities will be related to the equipment installation.

A Development Permit Application (DA18-0745 – attached in Appendix F) has been submitted and reviewed by City of Mount Pearl. The City is ready to issue the permit but first needs to review the approval to be issued by the Newfoundland and Labrador Department of Environment. Stericycle will also develop the site in full compliance with the conditions of the permit.

No more than 60 days would be required to complete these modifications, which will begin as soon as the required approvals are obtained.

There will be no airborne emissions or liquid effluents during the construction/set up period. Only limited quantities of construction debris will be generated from the installation of the 2 doors.

4.4 Operation:

The site will operate as a transportation terminal, a waste storage and transfer site and a biomedical waste treatment site. As such, the vehicles (approximately 2-3) used to collect waste in Newfoundland will be based at the site. Every day, they will be dispatched to service customers on the island. At the end of their route, they will come back to the site where their waste will be off-loaded and stored or treated.

Below are all the details regarding the site operations:

Waste received:

The site will receive the following waste:

- Biomedical (as defined by the CCME Guidelines on the management of biomedical waste in Canada) from hospitals, other healthcare providers, pharmacies operating a sharps return program (diabetics), retail stores that provide sharps containers in their washrooms. This waste is classified as UN3291, class 6.2 by the Transport of Dangerous Goods Regulations (TDGR). This waste stream can be further categories as follows:
    - Non-Anatomical Waste (Yellow Bag)
        - This includes microbiology laboratory waste, blood waste, items that have been in contact with blood or bodily fluids and contaminated sharps (needles)
        - This waste stream is treated by autoclaving
    - Anatomical Waste (Red Bag)
        - This includes human or animal tissues, organs or body parts
        - This waste stream requires Incineration as disposal method

- Cytotoxic Waste (Red Bag)
    - This includes biomedical waste/medical items that have been in contact with a cytotoxic agent or drug – for example a syringe used to inject a chemotherapy drug to a patient
    - This waste stream requires Incineration as disposal method.

- Pharmaceutical – waste medicines from hospitals or other healthcare providers as well as pharmacies operating a medicine return program (stewardship programs). This waste will either be non-regulated by TDGR or classified as UN3249, class 6.1 or other based on their characteristics.

  No more than 100,000 kg per month of biomedical and pharmaceutical waste will be received at the site. Over the life of the facility, it is anticipated that the facility will not receive more than 200,000 kg of such waste per month.

- Waste Dangerous Goods/Hazardous Waste – class 2, 3, 4, 5 6, 8 or 9 – these consists of consumer goods only that are no longer suitable to be sold that retailers or distributors require proper disposal. This consists mainly of consumer packaged products that are damaged or otherwise not sellable. Examples of products would include bleach bottles, aerosol cans (hair products), toilet cleaners, nail polish, etc… Prior to collection, these products will be segregated and packaged in small containers (cardboard boxes) in full compliance with the Transport of Dangerous Goods Regulations.

The products collected will be in their original containers as purchased by the retail consumer. They will be overpacked, individually, in sealed plastic bags then put in a rigid TDG compliant cardboard box of approximately 20L in capacity.

Proper TDG labeling and Stericycle's own barcode labels (for tracking purposes) will then be applied.

The facility will **not** handle any industrial hazardous waste in bulk (containers larger than 20L). As stated above, this waste stream consists exclusively of unsellable consumer products in their original packaging that have been further overpacked in sealed bags and TDG compliance cardboard boxes.

Upon receipt at the facility, these containers will be stored inside the building in a dedicated area, away from the biomedical waste, for a period not to exceed 90 days. No more than 5,000 kg of such waste per month will be received and stored at the site. It will then be consolidated and shipped to approved final disposal sites on or off the island. This waste stream will not be treated on site.

All waste received at the site will originate from generators in Newfoundland exclusively.

Waste Packaging

Stericycle provides compliant waste containers to all its customers as well as waste packaging and segregation procedures and posters to ensure that all waste collected is properly packaged and safe to transport and receive at its facility. The containers used are all compliant with the applicable regulations and standards (Transport of Dangerous Goods, Canada General Standard Board Packaging standard 43-125, CCME Guidelines for the Management of Biomedical Waste in Canada). They are sealed and leak proof and lined cardboard boxes, plastic pails or plastic reusable containers. In the case of sharps biomedical waste, puncture resistant containers are used. Waste is never transported in bulk or compressed. Rigid, sealed and leak proof containers are always used. The high strength and integrity of this packaging is designed to prevent and greatly reduce the risk of spills or incidents.

The pictures below represent typical biomedical waste containers used:

Maximum quantity stored and duration

- On average, the quantity of biomedical and pharmaceutical waste on site should be less than 20,000 kg. The maximum quantity of biomedical and pharmaceutical waste in storage on site should be 60,000 kg. All the biomedical waste on site will be stored at 4^{o}C or less in sealed, locked refrigeration unit at all times. This complies with the requirements of the CCME Guidelines for the Management of Biomedical waste in Canada as well as the CSA Standard Z317.1 for the management of healthcare waste.

  The average storage time should be approximately 7 to 10 days but will not exceed 60 days. Only in the event of ferry and/or weather issues would the waste be stored for longer period.

- The maximum quantity of other waste in storage should be 5,000 kg for no more than 90 days

Waste Collection and Receiving

Vehicles (approximately 2-3) authorized under Certificate of Approval No. WMS10-10-019 will be based at the site. At the end of their route, they will return to the site. Please refer to the Site Plan in Appendix C.

Upon arrival, the trucks will be managed as follows:

- They will be parked on site, either in the yard or at the loading dock. The waste compartments will be locked, until the site is ready to transfer the waste.

- Once the site is ready to offload a truck, it will be moved to the loading dock, if not already there. Note that incoming trucks parked in the yard (not at a loading dock), will be emptied and have their waste transferred to the building within the same day of arrival at the site.

- The waste will be transferred directly from the truck to the building:
  - As the waste is offloaded from the trucks, it will be inspected and weighted prior to being stored or processed in the building.

  - The inspection will consist of a visual inspection of the packaging to verify its integrity and proper labeling and to confirm that it is of an acceptable waste type. The Stericycle drivers are fully trained on the applicable regulations and waste acceptance protocols and will not accept to collect any waste container that is not in good condition or not properly labeled. Such containers would stay at the healthcare establishment. Should any incoming containers be compromised, it will be repackaged immediately. If any incoming waste is not of the approved type, it will be set aside and arrangements will be made to return it to the generator.

  - The waste containers will also be weighted and have their barcode labels scanned. The barcode labels used are part of our proprietary tracking system (SteriWorks). With this system, each individual waste container has a unique barcode label which identifies the waste generator and the nature of the waste. The barcode is scanned at the

time of collection at the generator's site, upon receipt at the Stericycle transfer facility (Stericycle Mount Pearl facility) and again at the final disposal site. This enables a complete tracking of the waste from the time of collection until final disposal.

- Shipping documents (manifests, bill of lading) are then verified and signed. Note that a TDGR compliant shipping document will be used to document all the waste collected and received at the Mount Pearl facility while a federal manifest, compliant with the Interprovincial Movement of Hazardous Waste Regulation will be used for all shipments from the Mount Pearl facility to the company disposal sites in Ontario (incineration).

Waste Segregation

As described above, incoming waste will be weighted and inspected upon receipt in the building. It will also be segregated according to type immediately after receipt, before being moved to storage or processing. The waste will be segregated as below:

- Biomedical Waste:
  - Non-anatomical (Yellow Bag Waste) – for treatment (or temporary refrigerated storage until treatment)
  - Anatomical and Cytotoxic Waste (Red Bag Waste) – for storage in refrigerated unit

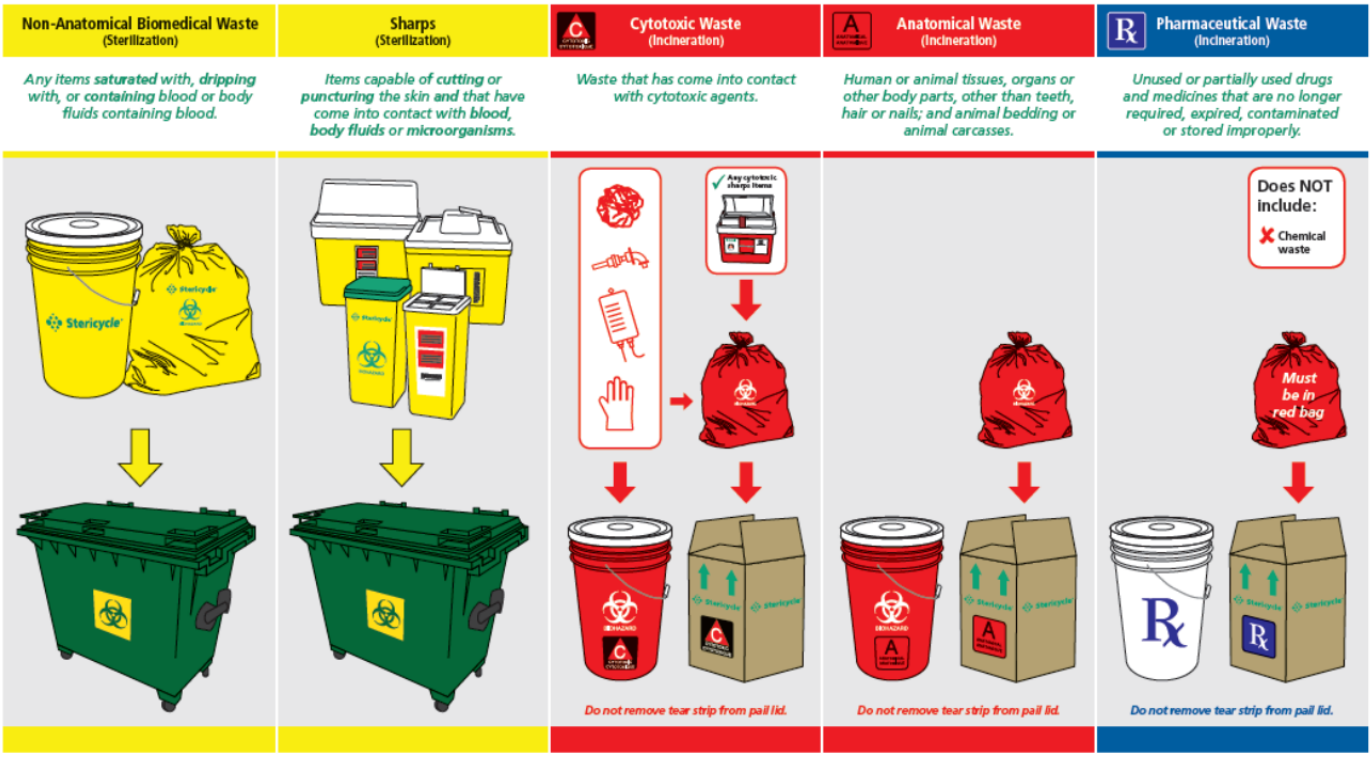
- Pharmaceutical Waste – for storage in warehouse

- Other Non-Biomedical (waste dangerous goods) – for storage in warehouse

Waste Packaging and labelling as well as the shipping documents are used to ensure proper segregation.

In fact, all biomedical waste containers are colour-coded (yellow or red) and show the biohazard symbol. Pharmaceutical waste containers are labeled with the RX label and waste dangerous goods containers are labeled in accordance with TDGR (with the class labels). Identification and segregation is then easy and safe.

The diagram below illustrates how the waste is packaged and segregated.



The empty reusable containers will then be washed and stored in the building, as indicated on the site plan, to be returned to the hospitals.

Once segregated, the different waste stream will be moved to the proper storage or treatment area:

- Non-anatomical biomedical waste (Yellow bag)
    - Moved by the cart dumper where the carts will have their waste transferred into the autoclave bins to be treated, or
    - Moved to the refrigeration unit until ready to be treated

- Anatomical and Cytotoxic Biomedical Waste (Red Bag)
    - Moved to the refrigerated unit to be stored until they are shipped to the incineration facility

- Pharmaceutical Waste
    - Moved to the DG Storage area to be stored in racks until they are shipped to the incineration facility

- Other Non-biomedical Waste (waste dangerous goods)
    - Moved to the DG storage area where the will be stored, by class, on spill pallets or in the racks, until they are shipped to the final disposal site. Care will be taken to ensure that incompatible materials are not stored together. The storage area is away from high traffic area and in full compliance with the Building Code and the Fire Code.

Non-Anatomical Biomedical Waste Treatment

As described above, only non-anatomical biomedical waste (yellow bag) will be treated on site. As described below, the non-anatomical waste will be rendered non-infectious (disinfected) using high pressure steam. The level is disinfection achieved will be a log 6 reduction in spores. Further details are provided below. All other waste stream will be temporarily stored until they are shipped off-site for incineration or disposal

The treatment cycle will be as follows:

- Transfer of the non-anatomical waste into the autoclave bins
    - The cart dumper will be used to empty the yellow bags and yellow sharps containers into the autoclave bins. The operator will ensure that only yellow bag waste gets into the autoclave bins. If he/she sees any other types of waste or packages, he/she will immediately notify the supervisor and the unapproved waste will be safely removed from the bin. The waste will be set aside and arrangements will be made to contact the generator. If the waste is biomedical waste that can be disposed of by incineration, it will be packaged accordingly and moved to the refrigeration unit for storage.
    - The empty reusable carts are then moved over to the cart washing area. The cart washing process is described in the next section.

- Once all the autoclave bins are full, they will be loaded into the autoclave
    - The autoclave door will be opened and the bins (5) will be loaded into the autoclave (the bins are on wheels and can roll into the autoclave internal tracks.)

- The autoclave door will be closed and locked and the treatment cycle started (details about the autoclave cycle are presented in the next section)
- Once the cycle is complete, the autoclave door is opened and the bins are removed from the autoclave
- The bins are then transported to the waste compactor using the forklift.
- The forklift, with rotating forks then tips the bins over the compactor such that the waste falls into the compactor and is them moved to the waste bin ready to go to the landfill for final disposal.
- The bins are then moved over by the cart dumper for the cycle to start again.

The autoclave Standard Operating Procedure is included in Appendix G.

It is anticipated that approximately 400,000 kg of non-anatomical biomedical waste will be treated each year. This is also the amount of waste that will be sent to the Robin Hood's Bay landfill as solid non-hazardous waste. The City of St. John's has provided Stericycle with an approval letter stating that they will accept the treated biomedical waste at their landfill upon receipt of all required approval – see Appendix D.

The autoclave capacity exceeds 2,000,000 kg per year, depending on the waste density and the number of operating hours per day. The volumes to be treated therefore only represent a small fraction of the autoclave capacity (approximately 25%). It is therefore anticipated that the autoclave will operate only 2-3 days per week, 8 hours per day.

Not that should the autoclave or any ancillary equipment (such as the boiler) were to have a breakdown and/or require significant maintenance, waste will be

transferred to the Stericycle facility in Dartmouth, NS before the site storage capacity is reached. Stericycle has the required number of refrigerated trailers and the capacity in Dartmouth to handle the waste generated in NL (The Stericycle Dartmouth facility has been managing all the waste from NL for the last 5 years and still currently handles it until the Mount Pearl Facility is approved and up and running).

The rest of the biomedical waste received (anatomical and cytotoxic) represent approximately 100,000 kg per year. This waste will be stored than shipped to our Brampton Ontario incinerator.

Autoclave Cycle

Each autoclave cycle is composed of 6 distinct stages:

1. PRE-VACCUM:

   Once the autoclave door is closed and locked, the autoclave PLC initiates the treatment cycle. In order to get an effective sterilization process, it is necessary to remove all the air inside the autoclave to allow for a strong steam penetration to all the waste inside the autoclave. This is achieved using the autoclave venturi vaccum system. The venturi operates until a vacuum of approximately 20" HG is drawn inside the autoclave.

2. RAMP:

   During this stage, the steam valve will open to let steam inside the vessel until the temperature reaches the soak temperature (to be determined during the validation testing – typically 300 ^{o}F).

3. SOAK:

   During this stage, the autoclave controller will modulate the steam inlet valve to maintain the soak temperature for the set soak time (also to be determined during the validation testing – typically 30 minutes). At any time during this stage, if the temperature gets below the soak temperature (300

°F), the timer will stop and resume only once the temperature is back up at the soak temperature of more.

4. BLOW-DOWN:

   Once the soak time has elapsed, the autoclave controller will open the blowdown valve to let the steam out of the autoclave. The out coming steam will be condensed in the water-cooled heat exchanger and the resulting water will be sent to sanitary sewer. This will continue until the pressure inside the vessel has come down to about 5 psig.

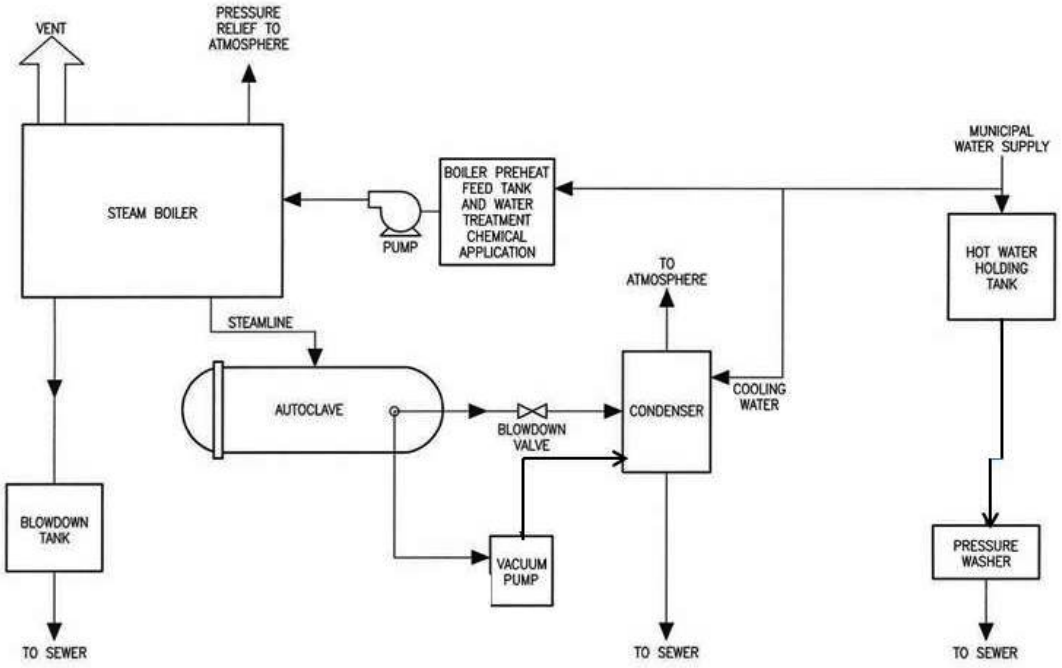
5. POST-VAC:

   Once the pressure inside the autoclave is approximately 5 psig, the vacuum pump (venture) will start to draw a small vacuum inside the vessel of approximately 5" Hg.

6. ATMOSPHERIC RELEASE:

   Finally, the controller will open the vacuum break valve to let ambient air inside the autoclave to bring the pressure back up to ambient level such that the autoclave door can be safely opened.

Below is a diagram illustration the autoclave process flow



Autoclave Process Validation

Prior to beginning operation of the autoclave, Stericycle will perform a validation test to ensure the autoclave system perform the required sterilization to the desired level

The biomedical waste is sterilized in the autoclave where steam, heat and pressure are used to achieve sterilization.

In order to validate the ability of the autoclave system to sterilize biomedical waste, Stericycle ULC (Stericycle) will perform periodic autoclave efficiency tests using biological indicators. The test will have to prove that at least a 99.9999% **(log 6) reduction in spores of bacillus stearothermophillus** is achieved by the autoclave. Biological indicators with a concentration of at least 10^6 spores of B. stearothermophilus will be used (Mesa Lab ESZ/6 indicators – see Appendix H). Two indicators will be fixed to a rod at approximately 30 cm from the end of the rod. The rod will then be located, straight up, in the middle of the bin, with the biological indicators located close to the bottom of the bin (approximately 30 cm from the bottom). Biomedical waste will then be loaded into the bin as usual. This will ensure that the biological indicators are located as close as possible to the middle of the waste bin, in the most difficult area for the steam to access.

Demonstration trials will be done using the method described above and with an independent lab responsible for the incubation of the biological indicators. Stericycle will notify the Ministry before performing the test. All 4 bins will have a rod with 2 biological indicators and the bins will be loaded with actual biomedical waste. The bins will then be treated at the parameters to validate. The parameters chosen are 300 ^{o}F for the soak temperature and 30 minutes for the soak time. The biological indicators will be removed from the waste and incubated by both Stericycle and an independent lab (indicator from one stick each). Two “control” biological indicators will also be incubated to verify that the indicators are active. The treated waste will be kept in the bins until the results of the incubation are available (48 hours). Two other loads of 4 bins will be processed in the same fashion with biological indicators. If all indicators showed no growth, the waste will be disposed of in a landfill. If the test is negative (growth), the waste will be treated again, with biological indicators, at the same soak temperature but for a longer time. Once all the tests are done and conclusive, regular operations will begin and the residue will be released from the facility.

The records of time, temperature and pressure produced by the autoclave's chart recorder will be used as evidence of treatment for each cycle.

A complete report will then be produced showing:

- the number of loads processed
- qualitative and quantitative description of the biomedical waste treated during the trial
- the operating parameters for each load, including copies of the autocalve cycle chart)
- the details of the testing methodology
- results of all testing (including lab results), and
- analysis of the test results, including discussion of any conditions that may cause detrimental effect on human health or the environment, if any.

The report will be submitted to the Department of the Environment for review and approval. Operations will then begin with the validated parameters.

On-Going Monitoring

The autoclave is equipped with a chart recorder which records the temperature and pressure inside the vessel at all times as well as a computer-based controller that ensures the autoclave system completes its cycle as programmed. At the end of each cycle, the autoclave operator will verify that the parameters have all been met by looking at the chart.

Once a week, Stericycle will perform an in-house validation test. All 4 autoclave bins will be prepared with biological indicators (ESZ/6) as previously described. The bins will then be autoclaved according to the approved procedure. Once the waste is autoclaved, the biological indicators will be retrieved and immediately incubated by Stericycle according to the manufacturer's specifications.

Stericycle personnel will record all relevant information regarding this test including the date and time of the test as well as the processing temperature, pressure and time, and the lot number of the biological indicators used (a copy of the lot certificate will be kept on file). The results will also be recorded. Records of weekly tests will be kept on files for two years.

If one or more of the indicators turns positive within incubation period, Stericycle will immediately notify the Director. A complete investigation will be initiated and no other waste will be treated until the cause of the problem has been determined and fixed.

Reusable Container Washing Process

Empty carts will be washed using hot water and a chlorine based soap (Zep FS ZChlor or equivalent – See Appendix I for specifications and M.S.D.S.). The soap is specifically designed to remove any protein, blood or stains. The high pressure water spray also contributes in removing any soil and dust that could have been accumulated during transportation. The site will have a separate section (see site plan) where the washing will occur. This section will have adequate separations to prevent any water from splashing to the other areas of the building as well as a trench drain connected to the City sanitary sewer line. A standard power washer unit will be used to wash and disinfect both the inside and outside of the containers. As the containers were used to transport waste that was already packaged in sealed bags, boxes or pails, they are then quite clean after each use. They are washed and disinfected only as an added precaution as these containers are used in a hospital environment. The discharge will be in full compliance with City requirements and the Provincial Environmental Control Water and Sewage Regulations.

Record-Keeping

As stated above, all incoming waste containers will be labeled with a unique identifier (bar code label). The label will be scanned upon receipt at the facility at the same time as the containers are weighted and inspected. The system also enables the tracking of containers that are autoclaved at the facility ("processing record") as well as the tracking of containers put in storage and then transferred off site for disposal ("transfer records"). They system will hold the following records:

- the generator names and addresses, the types and weights of all waste received each day
- the types, weights and destination of all waste transferred from the site each day
- the weights of all waste processed (autoclaved) each day
- the types and weights of all wastes on site at the end of each day

The site will also keep copies of the autoclave charts produced each day showing the start and end time of each batch as well as the operating parameters of each batch (time, temperature and pressure). All spore testing results will also be maintained on file (see next section).

Records of the refrigeration unit temperature will also be kept, showing the temperature at the beginning and at the end of each operating day.

MONITORING AND CONTROL PROGRAM

The site will be operated to minimize any risk or impact to the environment or the public. The following measures will be in place:

- Waste packaging: as described before, Stericycle provides its customers with waste packaging materials (bags, pails, boxes, plastic reusable containers) that are sealed, leak proof and of sufficient strength to ensure they will not break, crack, tear or otherwise permit the release of waste during transportation and at the site. The packaging material is designed and fully complies with all the requirements of the Transport of Dangerous Goods Regulations as well as all other applicable standards. Stericycle drivers and employees are trained on the proper packaging and labeling procedures and will not accept delivery of any containers that does not fully comply.
  This is a very important and ensures that the potential of any spills or mishaps is very low.

- Site floor and containment areas: The site floor is all concrete and there is only one floor drain (trench drain). The warehouse floor will be coated with an impervious material. The drain is located in the container washing area which is isolated from the waste handling area. Should there be any spills or incident while handling the waste, the spilled material would be contained inside the building and therefore easily cleaned with no impact on the natural environment or the public. The same disinfecting soap (FS-ZClor) used to disinfect the reusable containers will also be used to clean and disinfect the floor should it be necessary following a spill. The floor drain will be capped prior to disinfecting the floor such that the wash water pH can be verified prior to

releasing the water to sanitary sewer. Note that the drain inside the building is connected to the City sewer system (see attached confirmation in Appendix J)

- Biomedical waste transfer/storage trailers: The trailers used have sealed aluminum floors, insulated walls and refrigeration units that are both electric and diesel powered. The sealed floor would contain any spills and the refrigeration unit will keep the waste cool and therefore prevent any degradation. The refrigeration unit can function either on electric power or diesel. Therefore, they can continue to operate even during power failures. See picture of inside of trailer below:

- The refrigeration unit inside the building operates on electrical power. Should there be a power failure or for any other reason, the unit is not capable of maintaining the temperature at 4 ^{o}C or less, all the waste will be transferred to a refrigerated trailer as shown above. The same process will be followed should the autoclave and/or its ancillary equipment breakdowns or requires extensive maintenance.

- Spill kits and contingency and emergency response plan

  The site will be equipped with a complete spill kit including absorbent material, socks and disinfecting solutions to properly contain and clean any spills, should there be any. A contingency and emergency response plan, to be approved by the Department of Environment, will also be available and all employees working on site will be fully trained on the requirements of the plan, including how to prevent spills as well as to how to properly contain and clean them should they ever occur. The plan will also describe the procedures to follow and the reporting requirements in the event of any other emergency at the site such as fire, power failures, etc… A copy of the Plan is included in Appendix K

- Monitoring and Inspection

  The company will conduct daily inspection of the site to ensure that the waste received is properly packaged, that the storage areas and trailers are in good condition and that all other equipment, such as the autoclave and ancillary equipment and cart dumper. The purpose of the inspection will be to ensure the site is operated and maintained such that it does not create any nuisance and that it is in full compliance with all its operating permits, rules and regulations. The inspection will be documented and kept on file.

Incident Reporting

As previously stated, the Site will have a comprehensive Emergency Response Plan to address any situations that could affect the site's operations, the environment of the safety of the employees or the community. The plan will include an Incident Reporting Section.

Any incident will need to be reported immediately. Applicable regulatory agencies (such as the Department of Environment, the Department of Labour,

the City of Mount Pearl, etc.) will be notified as required. Stericycle also uses a custom-design on-line reporting system to report any and all incidents such as:

- Injuries and near misses
- Vehicle accidents
- Property damage incidents
- Spills and other environmental incidents (Contingency Plan)
- Security Incidents
- Fires
- Complaints

Once an incident is entered in the system, management received an automatic notification and can then follow up immediately with applicable regulatory agencies. Management also ensures that a comprehensive investigation is completed and that corrective actions are put in place as required.

ENVIRONMENTAL IMPACTS

As described in this document, the site is to be used as a waste transfer station and biomedical non-anatomical waste processing site. The incoming waste will be packaged in sealed containers and either stored in a refrigeration unit (biomedical waste), in racks and spill pallets for pharmaceutical and waste dangerous goods or processed in the autoclave (non-anatomical waste)

The storage activities will have no environmental impact. Waste containers are rigid, sealed and ensure proper waste containment. The refrigeration unit does not use any CFC refrigerants (R-407C refrigerant) and the plant floor is sealed to enable proper containment should there be a spill.

The autoclave process is environmentally-friendly. It uses a high efficiency propane-fired boiler to generate the steam required in the process. The autoclave itself has no air emissions (except for the boiler and condenser vents) – to prevent pressure build up – and the water discharged does not contain any contaminants of concerns. As described below, Stericycle will perform some sampling of all waste water generated by the facility and have it tested to prove it meets the City of Mount Pearl sewer-use by-law. Given our experience with other autoclaving facilities, we are very confident the waste water will meet all by-law parameters, including pH.

The container washing process only generates residual wash water. This water will also be part of the sampling program proposed by Stericycle.

Liquid effluents will be limited to the water generated from the reusable container washing process. This water will not be released to the environment

but will be directed to the sanitary sewer. There will be no solid waste materials generated from the operation.

Noise: The site does not have any noise generating equipment, except for the power washer (standard electrically-powered commercial unit). The site is located in an industrial compound with the other tenants having similar activities. The truck traffic generated by the site (approximately 3 truck movements per day) as well as the operation of a refrigerated trailer does not generate significant amounts of noise in comparison with the surrounding tenants' activities. Most of them have a much large fleet and one of them also operates refrigerated trailers and/or waste compactors. There is no residential area or any other susceptible receptors at proximity of the site.

Potential causes of resources conflicts: Given the relatively small size (only 2-3 trucks) of the operation and the fact that all activities are done indoors and within an industrial park, there will not be any resource conflict. The facility will not have any negative impact on the surrounding area.

4.5 Occupations:

Stericycle has a comprehensive employment equity policy and program that addresses employment equity relative to but not limited to age and gender. The Company hiring and employment practices comply with this policy.

During the set up phase of the project (i.e. addition of the 2 loading dock doors, installation of the equipment), external contractors, Newfoundland based contractors, will be used. These contractors will work under the authority of the property owner (Stericycle leases the property).

During normal operations, the site will employee approximately 3-4 full time employees. There will be one office employee, one warehouse worker as well as truck drivers. The National Occupational Classification Code for these occupations are as follows:

- Truck driver: 7511 (transport truck driver)
- Warehouse/Office worker: 7452 (materials handler) and 1411 (general office support worker)

The truck drivers will collect the packaged waste from the customers and transport them to the site. The warehouse employee will be in charge of receiving and processing the waste, washing the reusable containers and handling all paperwork associated with the operations, including manifests, reports, inspections, etc…

All new staff undergoes an extensive screening process which includes drug use screening, criminal background verification and a medical fitness test including Hepatitis B vaccination. Once hired the staff members go through a comprehensive class room and practical training program. The training program includes the following:

Health and Safety

- Health and Safety Rules and Regulations
- Company Health and Safety Policy and Programs
    - Safe work procedures
    - Proper lifting techniques and slip/trip/fall prevention
    - Lock out and Tag Out Program
    - Personal Protective Equipment and Job Hazard Analysis
    - Forklift Safety
    - Extreme weather training
    - Etc..
- Workplace Hazardous Materials Information System (WHMIS)
- Substance Abuse Training
- Accident and Injury Reporting Procedure
- Blood borne pathogens training
    - Principles of disease transmission (viable infectious agents, modes of transmission, etc.)
    - Safe handling of medical waste containers
    - Treated vs untreated medical waste – risks and handling procedures
    - Port of entry (needle sticks, cuts, mucous membranes)
    - Puncture resistant gloves, other related PPE
    - Benefits of vaccination
    - Post-exposure Protocol

- Infectious materials spills – prevention measures, containment, clean up and reporting

Regulatory

- Environmental Regulations, Guidelines and Standards
- Environmental Permits (Certificate of Approval conditions)
- Waste Acceptance Protocol
- Transportation of Dangerous Goods (TDG)

Emergency management

- Spill Prevention and Response
- Contingency and Emergency Response Plans

Operations

- Standard Operating Procedures and Standard Work Instructions Review and Training
- Equipment (autoclave) Operating Procedures Review and Training
- Vehicle Loading and Unloading Procedures
- Load Securement Training
- Hours of Service and Log Book Training
- Vehicle Inspection Requirements and Reporting
- Defensive Driving Techniques, including driving in adverse conditions

During the first week the new staff member will work alongside an experience staff member to complete his or her training. During this time the new staff member will learn and put into application under the direct supervision of the experienced staff member all the concepts covered during the in- class training.

At the end of the orientation period the new staff member will be evaluated by the Director of Operations and the staff members' supervisor.

The training program is repeated yearly for all staff members.

4.6 Project Related Documents:

Stericycle has applied to the City of Mount Pearl for a Development Permit for the establishment of the facility at 45 Clyde Avenue. The following steps were completed to obtain this permit:

- Submission of the Application Form on September 20. 2018
- Publication of a Public Notice by the City of Mount Pearl on October 9, 2018. Businesses and residents had 14 days to give written notice.
- A Briefing Session for all concerned was scheduled for October 23, 2018.
- As no comments were received by the City, the Briefing Session was cancelled
- Following the meeting, the City Development department prepared its positive recommendation to the City Council.
- Approval of permit will be granted in conjunction once the Department of Environment has issued their approval.

A copy of the permit application is included in Appendix F.

5.0 APPROVAL OF THE UNDERTAKING:

Stericycle requires a Certificate of Approval from the NL Department of Environment and Conservation in order to begin operations at the site. A Building Permit and an Occupancy Permit from the City of Mount Pearl are also required.

Once the project will be released from the assessment process, the approval process will be immediately initiated.

6.0 SCHEDULE:

Stericycle desires to begin operations at Clyde Avenue as soon as the Certificate of Approval from the Department of Environment is obtained. The earliest date when site setup could begin is February 2019 with the beginning of operations approximately 30 days after (assuming all required approvals have been obtained).

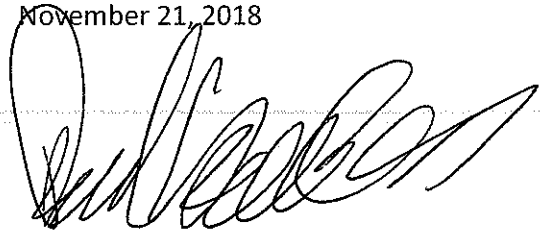
This time frame is selected based upon the time required to complete the Assessment Process.

7.0 FUNDING

Stericycle will fund the project on its own. No grant or public funding is involved with this project.

Total capital cost for this project is evaluated at approximately $1,000,000.

November 21, 2018



Paul Saabas,

Vice-President, SCS Canada

8.0 CONCLUSION

Stericycle is very committed to this project. It will set it up in the most professional and state-of-the art manner with all the required safeguards and mitigation measures to ensure the protection of the environment and of the public health. It will operate it in full compliance with all its operating approvals and applicable rules and regulations and with great concern for the health and safety of its employees. It will always act in such a way as to have a positive impact in the community.

Sincerely,

Jean-Pierre Pepin, P. Eng, MBA

Director, Safety, Health and Compliance

Stericycle, ULC.

Appendix A

WMS10-10-019 Certificate of Approval

Newfoundland Labrador

GOVERNMENT OF
NEWFOUNDLAND AND LABRADOR
Department of Municipal Affairs and Environment

CERTIFICATE OF APPROVAL

Pursuant to the Environmental Protection Act, SNL 2002 c E-14.2 Section 83

Issue Date: ***September 14, 2017***

Approval No. WMS10-10-019

Expiration: ***September 14, 2022***

File No. 830.000.002

Proponent: Stericycle ULC
19 Armthorpe Road, Brampton, ON L6T 5M4.

Attention: Jean-Pierre Pépin
Tele: 819-743-4772

Re: ***Transportation of Waste Dangerous Goods/Hazardous Waste: Province-wide***

Approval is hereby given for: the transportation of waste dangerous goods/hazardous waste within Newfoundland and Labrador

This Certificate of Approval does not release the proponent from the obligation to obtain appropriate approvals from other concerned provincial, federal and municipal agencies. Nothing in this Certificate of Approval negates any regulatory requirement placed on the proponent. Where there is a conflict between conditions in this Certificate of Approval and a regulation, the condition in the regulation shall take precedence. Approval from the Department of Municipal Affairs and Environment shall be obtained prior to any significant change in operation. This Certificate of Approval shall not be sold, assigned, transferred, leased, mortgaged, sublet or otherwise alienated by the proponent without obtaining prior approval from the Minister.

This Certificate of Approval is subject to the terms and conditions as contained therein, as may be revised from time to time by the Department. Failure to comply with any of the terms and conditions may render this Certificate of Approval null and void, may require the proponent to cease all activities associated with this Certificate of Approval, may place the proponent and its agent(s) in violation of the *Environmental Protection Act*, and will make the proponent responsible for taking such remedial measures as may be prescribed by the Department. The Department reserves the right to add, delete or modify conditions to correct errors in the Certificate of Approval or to address significant environmental or health concerns.

For **MINISTER**

TERMS AND CONDITIONS FOR APPROVAL No. WMS10-10-019

General

1. The operation of this waste management system is limited to all equipment and operations for the collection, handling and transportation of waste dangerous goods/hazardous waste (specifically biomedical/pharmaceutical waste and small quantities of WDG/HW). This operation does not include the storage of any of these wastes on or in properties owned, leased and/or operated by the Approval Holder.

2. Any inquiries concerning this approval shall be directed to the St. John's office of the Pollution Prevention Division, telephone: 709-729-2556; or facsimile: 709-729-6969. All responsible personnel who are directly involved with operation of this waste management system shall be provided copies of this approval.

3. The Department reserves the right to make this Certificate of Approval publicly available.

4. The proponent is responsible to ensure that appropriate and adequate financial assurance and environmental impairment liability or pollution and automotive insurance policies are in place for all operators of this waste management system.

5. In this Certificate of Approval:

- **accredited** means the formal recognition of the competence of a laboratory to carry out specific functions;
-
- **biomedical waste** refer to APPENDIX A1- Definitions and Examples of Biomedical Waste of the *Management of Biomedical and Pharmaceutical Waste*, GD-PPD-078 (October 5, 2016);
- **Department** means the Department of Municipal Affairs and Environment and its successors;
- **Director** means the Director of the Pollution Prevention Division of the Department;
- **leachable toxic waste (LTW)** means waste material which, upon laboratory analysis, is shown to contain levels of contaminants that exceed parameters listed in the Canadian Council of Ministers of the Environment (CCME) Canadian Soil Quality Guidelines (CSQG); and/or the leachate from the material exceeds criteria limits when the material is subjected to the leachate (TCLP) test (as described below);
- **leachable test** means the US EPA Toxicity Characteristic Leaching Procedure (TCLP) Test Method 1311 (as amended) is to be used to determine the leachate toxicity hazard;
- **licensed** means has a Certificate of Approval issued by the Minister to conduct an activity;

- **Minister** means the Minister of the Department;

- **pharmaceutical waste** refer to APPENDIX A2- definitions and examples of pharmaceutical waste of the *Management of Biomedical and Pharmaceutical Waste*, GD-PPD-078 (October 5, 2016);

- **spill or spillage** means a loss of gasoline or associated product in excess of 70 litres from a storage tank system, pipeline, tank vessel or vehicle, or an uncontrolled release of any volume of a regulated substance onto or into soil or a body of water;

- **used lubricating oil** means lubricating oil that as a result of its use, storage or handling, is altered so that it is no longer suitable for its intended purpose but is suitable for refining or other permitted uses;

- **used oil** means a used lubricating oil or waste oil;

- **waste dangerous goods/hazardous waste (WDG/HW)** means a product, substance or organism that is intended for disposal or recycling and that:

  (a) is listed in Schedule III of the *Export and Import of Hazardous Waste Regulations under the Canadian Environmental Protection Act, 1999*;
  (b) is included in any of Classes 2 to 6, and 8 and 9 of the *Transportation of Dangerous Goods Regulations* under the *Transportation of Dangerous Goods Act, 1992*; or
  (*c*) according to information that Canada has received from the United States or in accordance with the Convention, is considered or defined as hazardous under the legislation of the country receiving it and is prohibited by that country from being imported or conveyed in transit.

- **waste oil** means an oil that as a result of contamination by any means or by its use, is altered so that it is no longer suitable for its intended purpose;

6. All necessary measures shall be taken to ensure compliance with all applicable acts, regulations, policies and guidelines, including the following, or their successors:

- *Environmental Protection Act*;
- *Water Resources Act*;
- *Management of Biomedical and Pharmaceutical Waste (BPW), 2016;*
- *Air Pollution Control Regulations, 2004;*
- *Environmental Control Water and Sewage Regulations, 2003;*
- *Halocarbon Regulations, 2005;*
- *Storage and Handling of Gasoline and Associated Products Regulations, 2003;*
- *Used Oil Control Regulations;*
- *Heating Oil Storage Tank System Regulations, 2003;*
- *Leachable Toxic Waste , Testing and Disposal, 2003*
- *Canadian Environmental Protection Act* and Regulations (CEPA)
- *Transportation of Dangerous Goods Act* and Regulations as amended

This Approval provides terms and conditions to satisfy various requirements of the

above listed acts, regulations, Departmental policies and guidelines. If it appears that any of the pertinent requirements of these acts, regulations, policies and guidelines are not being met, then a further review of the works shall be conducted, and suitable pollution control measures may be required by the Minister.

Transportation Requirements

7. Receivers to which WDG/HW is transported for treatment prior to disposal both within Newfoundland & Labrador and Canada must be licensed by the Province having jurisdiction. A copy of the license must be submitted to the Department showing that the Receiver is in good standing with the Province of jurisdiction.

8. All motor vehicles used in this operation must be inspected and certified as road worthy by the Motor Registration Division of Service NL.

9. The *Dangerous Goods Transportation Act and Regulations* require that all personnel involved in the handling, offering for transport, and transport of dangerous goods participate in a training program which includes the essential training components as outlined in the federal *Transportation of Dangerous Goods Act and Regulations.* In addition to these essential components, the training program shall also include relevant waste management legislation, regulations, and guidelines and the major environmental and health and safety concerns for the wastes to be handled, offered for transport, or transported. This training is a requirement of the Certificate of Approval.

10. The characteristics of the waste product being collected will determine whether or not provisions of provincial and/or federal dangerous goods regulations apply. Safety standards, placards, labels, tanker truck inspections, etc. under the provisions of the Transportation of Dangerous Goods Act and Regulations are applied to all transport of WDG/HW.

11. The characteristics of the waste product being collected will determine whether or not provisions of provincial and/or federal dangerous goods regulations apply. Safety standards, placards, labels, tanker truck inspections, etc. under the provisions of the *Transportation of Dangerous Goods Act and Regulations* and *CCME Guidelines for the Management of Biomedical Waste in Canada* shall apply to all transport of waste and hazardous waste dangerous goods of waste and hazardous waste dangerous goods.

12. The transportation of other forms of WDG/HW not described in the application for this Certificate of Approval is not permitted.

13. All WDG/HW shall be contained in labelled containers or drums.

14. Municipal and industrial landfills in this province are not permitted to accept

WDG/HW materials. Non-hazardous wastes may be disposed of to a landfill with the approval of the Service NL and landfill owner/operator.

15. All handling and transport operations shall be conducted in a manner that prevents the release of contaminants into the environment. Measures such as secondary transport (for liquid waste) shall be taken to prevent leakage and spillage of WDG/HW.

16. The importation of WDG/HW to the Province of NL is not permitted.

17. All manifest/moving documents shall be completed and remitted to the Department either prior to shipment or immediately following each export .

18. Care shall be taken during tank pump out procedures to ensure no spillage takes place.

19. The company name, address, and telephone number shall be clearly displayed on every waste collection vehicle. Lettering should be at least 5 centimetres in size.

20. Every vehicle used for the hauling, collection and transportation of WDG/HW shall be operated and marked/placarded in accordance with Federal *Transportation of Dangerous Goods Regulations*.

21. Personnel handling WDG/HW should be trained in the use of personal protective equipment, clean-up equipment and all applicable safety procedures. In addition, sufficient equipment including sorbents, and related clean-up materials shall be kept on hand in the event of a leak or a spill during storage, handling, or transportation.

22. Any spillage or leakage of gasoline or associated product shall be reported immediately through the Canadian Coast Guard at 1-(709)-772-2083.

Emergency Response

23. In the event of an emergency and/or WDG/HW incident or spill, the operator of the vehicle shall notify the Department immediately by calling:

772-2083 or 1-800-563 - 9089 (24 hour basis).

24. In an emergency, the Canadian Transport Emergency Center (CANUTEC) shall be called at *613-996-6666* (24 hours) or * *666* cellular (press * *666*, Canada only). In a non-emergency situation call the information line @ *613-992-4624* (24 hours).

25. The Proponent shall maintain an Emergency Response Contingency Plan, specific to operations in Newfoundland and Labrador, and submit an updated copy of this plan to the Department.

26. A copy of the holder's current contingency plan shall be kept in each vehicle used in the operation of this waste management system. Personnel shall be briefed on the contents of the plan and any associated emergency response equipment.

Expiration

27. This Certificate of Approval expires ***September 14, 2022.***

28. Should *Stericycle ULC* wish to continue to operate beyond this expiry date, a written request shall be submitted to the Director for the renewal of this approval. Such request shall be made prior to ***July 14, 2022.***

cc: Fire Commissioner (email)
Pleasantville Fire Station
P.O. Box 8700
St. John's, NL
A1B 4J6

Robert Locke
Manger of Operations and Environmental Protection
Service NL
rlocke@gov.nl.ca

Appendix B

45 Clyde Ave – Legal Survey Document

December 6, 2013

Job No. 10234P

CIVIC 45-47 CLYDE AVENUE

MOUNT PEARL

NEWFOUNDLAND & LABRADOR

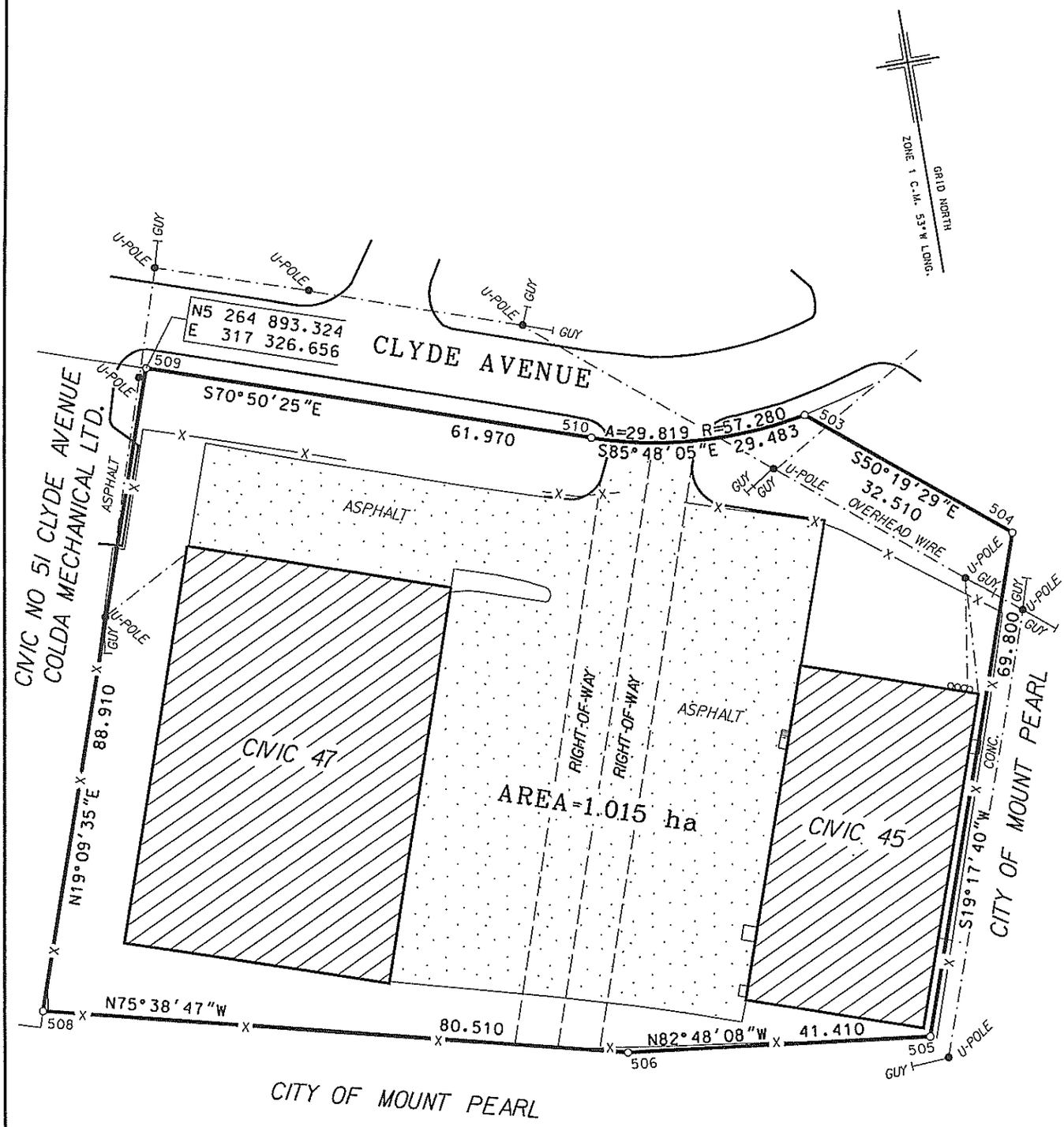
ALL THAT piece or parcel of land, situate and being on the southern side of the Clyde Avenue, in the City of Mount Pearl, in the Province of Newfoundland & Labrador, Canada, and being bounded and abutted as follows: THAT IS TO SAY, beginning at a point on the southern side of Clyde Avenue, said point having coordinates N 5 264 893.324 metres and E 317 326.656 metres of the Three Degree Modified Transverse Mercator Projection NAD – 83 for the Province of Newfoundland & Labrador, THENCE along the southern side of Clyde Avenue S 70° 50'25" E for a distance of 61.970 metres, THENCE for a distance of 29.819 metres along the arc of a curve having a radius of 57.280 metres and a chord distance of 29.483 metres on a bearing of S 85° 48'05" E, THENCE by property of the City of Mount Pearl S 50° 19'29" E for a distance of 32.510 metres, THENCE S 19° 17'40" W for a distance of 69.800 metres, THENCE N 82° 48'08" W for a distance of 41.410 metres, THENCE N 75° 38'47" W for a distance of 80.510 metres, THENCE by property of Colda Mechanical Ltd N 19° 09'35" E for a distance of 88.910 metres, more or less, to the point of beginning and containing an area of 1.015 hectares, more or less. Which land is more particularly shown on the plan hereto attached. All bearings being referred to the above mentioned projection. All linear measurements are horizontal ground distances.

This description and accompanying plan, **Job # 10234P** of Brown & Way Surveys, form an integral part of the returns and are not separable.

The asphalt at Civic 51 Clyde Avenue extends onto the property as shown on the attached plan.

There concrete at the rear of the building at Civic 45 extends beyond the property boundary as shown on the attached plan.

There is a Right-of-Way crossing this property as shown on the attached plan.



Monument used for tie-in, Zone 1: 80G2178 N 5 265 688.873 E 317 199.904 80G2177 N 5 265 282.548 E 317 705.340

NAD - 83

All linear measurements are horizontal ground distances.

For the computation of coordinates, horizontal ground distances have been reduced to the Nfld. 3° M T M Projection plane by multiplying them by an average combined scale factor of 0.999888

ROBERT A. WAY
NEWFOUNDLAND LAND SURVEYOR
Signature
PROVINCE OF NEWFOUNDLAND

BROWN & WAY SURVEYS

Professional Surveying Services

Tel: (709) 726-1040 Telecopier: (709) 726-1041

email:brownsur@nl.rogers.com

LEGAL SURVEY

CIVIC 45-47 CLYDE AVENUE

MOUNT PEARL NEWFOUNDLAND & LABRADOR

SCALE: 1:750	DATE: DECEMBER 6, 2013
JOB NO: 10234P	SURVEY:

December 6, 2013

Job No. 10234B

CIVIC 45 CLYDE AVENUE

MOUNT PEARL

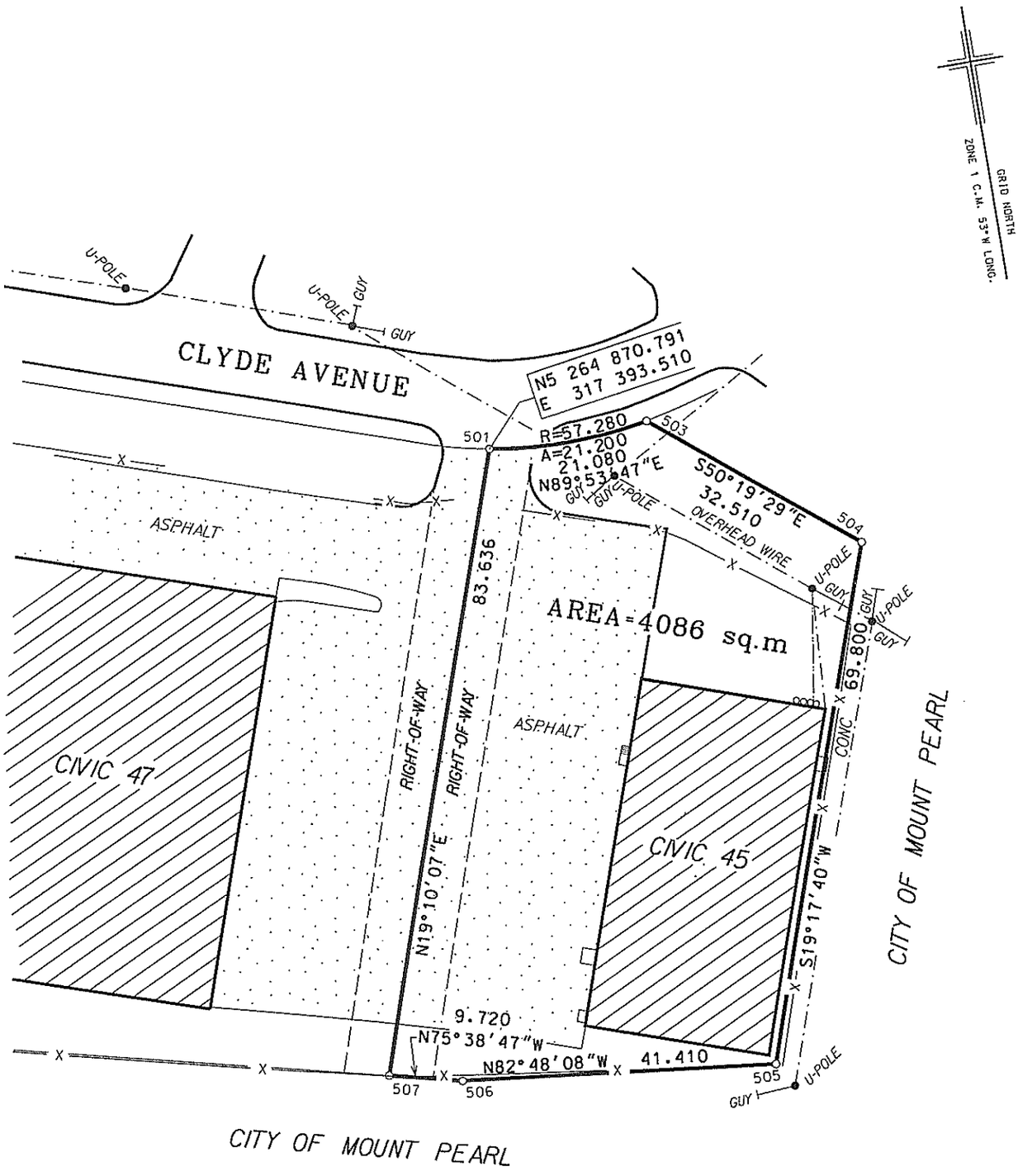
NEWFOUNDLAND & LABRADOR

ALL THAT piece or parcel of land, situate and being on the southern side of the Clyde Avenue, in the City of Mount Pearl, in the Province of Newfoundland & Labrador, Canada, and being bounded and abutted as follows: THAT IS TO SAY, beginning at a point on the southern side of Clyde Avenue, said point having coordinates N 5 264 870.791 metres and E 317 393.510 metres of the Three Degree Modified Transverse Mercator Projection NAD – 83 for the Province of Newfoundland & Labrador, THENCE along the southern side of Clyde Avenue for a distance of 21.200 metres along the arc of a curve having a radius of 57.280 metres and a chord distance of 21.080 metres on a bearing of N 89° 53'47" E, THENCE by the City of Mount Pearl S 50° 19'29" E for a distance of 32.510 metres, THENCE S 19° 17'40" W for a distance of 69.800 metres, THENCE N 82° 48'08" W for a distance of 41.410 metres, THENCE N 75° 38'47" W for a distance of 9.720 metres, THENCE by Civic 47 N 19° 10'07" E for a distance of 83.636 metres, more or less, to the point of beginning and containing an area of 4086 square metres, more or less. Which land is more particularly shown on the plan hereto attached. All bearings being referred to the above mentioned projection. All linear measurements are horizontal ground distances.

This description and accompanying plan, **Job # 10234B** of Brown & Way Surveys, form an integral part of the returns and are not separable.

The concrete at the rear of the building at Civic 45 extends beyond the property boundary as shown on the attached plan.

There is a Right-of-Way along the western boundary as shown on the attached plan.



Monument used for tie-in, Zone 1: 80G2178 N 5 265 688.873 E 317 199.904 80G2177 N 5 265 282.548 E 317 705.340

NAD - 83

All linear measurements are horizontal ground distances.

For the computation of coordinates, horizontal ground distances have been reduced to the Nfld. 3° M T M Projection plane by multiplying them by an average combined scale factor of 0.999888

ROBERT A. WAY
NEWFOUNDLAND
LAND SURVEYOR
Signature
PROVINCE OF NEWFOUNDLAND

BROWN & WAY SURVEYS

Professional Surveying Services

Tel: (709) 726-1040 Telecopier: (709) 726-1041

email:brownsur@nl.rogers.com

LEGAL SURVEY

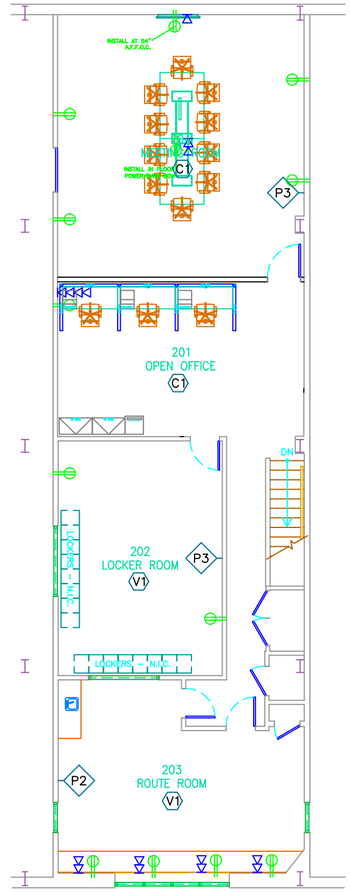
CIVIC 45 CLYDE AVENUE

MOUNT PEARL NEWFOUNDLAND & LABRADOR

SCALE: 1:750	DATE: DECEMBER 6, 2013
JOB NO: 10234B	SURVEY:

Appendix C

Site Plan



ALL MEASUREMENTS ARE TO BE VERIFIED ONSITE BY CONTRACTOR

ALL CORRECTIONS ARE TO BE NOTED AND RETURNED TO THE DRAFTSMAN NOTED BELOW.
ALL CHANGES ARE TO BE APPROVED BY THE REAL ESTATE DEPARTMENT AT THE SUPPORT CENTRE.

NOTES:

Stericycle

STERICYCLE ULC.
1383 North Service Road, East
Oakville, ON L6H 1A7
Tel: 905.491.2312

Site:

45 Clyde Avenue
Mount Pearl, NL A1N 4R8

Project:

PLANT ASSESSMENT
PRELIMINARY LAYOUT

Scale:	$\frac{3}{32}$" = 1'-0" DO NOT SCALE SHEET
Date:	JUNE 19, 2018
Drawn By:	LEE J. FEARN
Dwg. No:	**A1.1**
Dwg. Name:	5570, 45 Clyde - Floor Plan.dwg

Appendix D

City of St. John's (Robin Hood Bay's landfill) – approval letter

November 29, 2017

Attention: Neno Testana, Business Solutions Manager, Stericycle Inc.. 19 Armthorpe Road, Brampton, ON, L6T 5M4

Re: Disposal of Autoclaved Material at Robin Hood Bay Landfill, St. John's, NL

Dear Mr. Testana,

Based on our conversations via telephone and email over the past months, it is our understanding that Stericycle is intending to establish an autoclave in the Province of Newfoundland and Labrador for the processing and treatment of medical waste materials.

Specific materials that would be processed through the autoclave could potentially include the following materials:

- Sharps – needles, syringes, blades, glassware, etc.;
- Items soiled with blood and/or other bodily fluids (eg., gowns, gloves, surgical masks, towels, dressings, etc.)
- Microbiological lab waste – laboratory cultures, vaccines, human or animal cell cultures, etc.

The aforementioned materials would be treated via a steam autoclave procedure which would effectively render the waste non-infectious and safe for disposal at a non-hazardous, sanitary landfill. Stericycle estimates approximately twenty-seven (27) tonnes of this material would be generated each month.

The acceptance of this material by the City of St. John's would require an amendment to our Certificate of Approval (Approval No. WMS-2014-02-002), issued by the Newfoundland and Labrador Department of Municipal Affairs and Environment (formerly Environment & Conservation). Upon approval from the Department to operate this facility, The City of St. John's would be willing to accept this material at the Robin Hood Bay Waste Management Facility. Prior to disposal of this waste, the City of St. John's will request a further meeting with Stericycle to discuss operational requirements to ensure the safe disposal of this material and an applicable tipping fee.

Please contact the undersigned should you require any further information.

Regards,

Jonathan Murphy, P.Eng.
Waste Management Engineer
Waste & Recycling Division, Department of Public Works
City of St. John's
Phone: (709) 576-0355 | Fax: (709) 576-5629

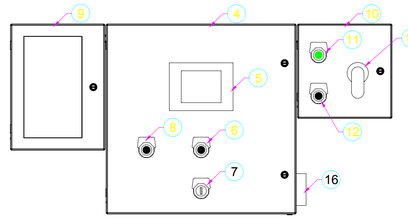
Appendix E

Equipment Specifications and Drawing

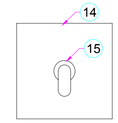
AUTOCALVE

NOTES

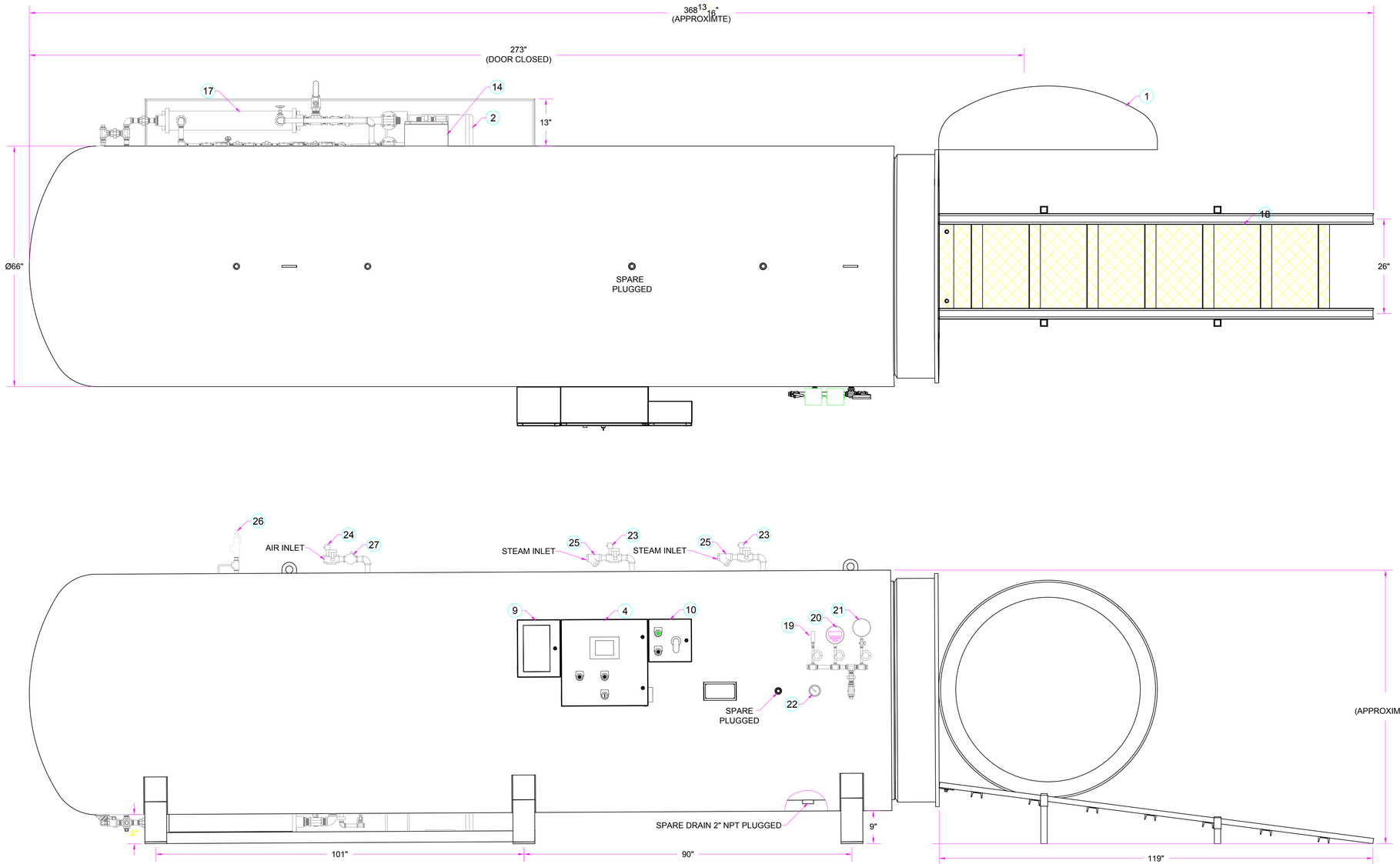
1.) Vessel to be constructed per ASME Boiler & Pressure Vessel Code, Section VIII, "U" Stamped & National Board registered.
2.) One layer of 2" rockwool & 2" fiberglass insulation.
3.) Aluminum Jacket.
4.) Vessel to have 1" tilt from door to drain for drainage.
5.) Check & Solenoid valves to be horizontal.
6.) Tank to be Ø60" x 270"
7.) Door to be right hand hinged.
8.) All dimensions ± 1/2"



CONTROL MODULE DETAIL

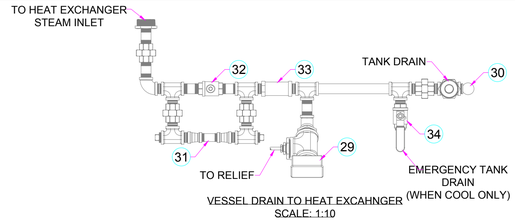


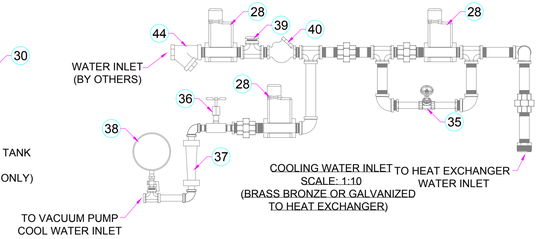
VACUUM PUMP MODULE DETAIL



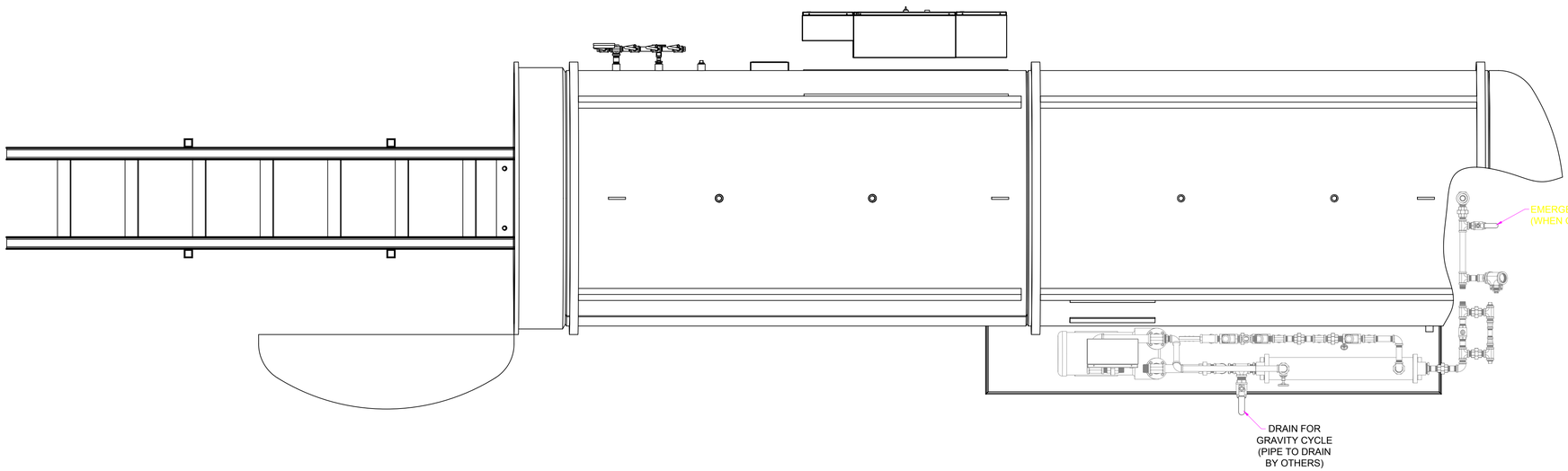
ITEM #	DESCRIPTION
1	DOOR, QUICK OPENING Ø60"
2	VACUUM PUMP, SIHI LEM 170 10 hp, 480/3/60
3	PUMP, HYDRAULIC 1-1/2 hp 480/1/60 w/ DIR FLOW VALVE
4	CONTROL PANEL, 24" x 24" x 10" NEMA 4
5	OPERATOR TOUCH SCREEN (PLC)
6	PILOT LIGHT, WHITE (POWER ON)
7	SWITCH, ON/OFF (POWER ON)
8	EMERGENCY STOP, PUSH BUTTON
9	PRINTER CABINET, 12" x 16" x 10" NEMA 12
10	HYDRALIC CONTROL PANEL, 12" x 12" x 6" NEMA 4
11	PILOT LIGHT, GREEN (PUMP ENABLED)
12	PUSH BUTTON, HYDRAULIC PUMP START
13	DISCONNECT, 480v HYDRAULIC PUMP (16 AMP)
14	VACUUM PUMP CONTROL PANEL, 12" x 12" x 6" NEMA 4
15	DISCONNECT, VACUUM PUMP 480v (16 AMP)
16	ALARM HORN
17	HEAT EXCHANGER
18	TRACK, 3" CHANNEL w/ 10 ft. REMOVALABLE RAMP
19	PRESSURE TRANSDUCER, (-14.7-135 psi) 4-20mA
20	PRESSURE SWITCH, DUAL MERCOID DIGITAL 0-100 PSI
21	COMBINATION GAUGE, VAC & PRESSURE (30"-0-160 psi)
22	TEMPERATURE GAUGE, 3" DIAL (50°-300°F)
23	SOLENOID VALVE, (2) 3/4" HAYS Cv=7.5
24	SOLENOID VALVE, 3/4" NEUCO
25	STRAINER, (2) 3/4" NPT
26	SAFETY VALVE, KUNKLE 6021ED (3/4" x 1" @ 100 psi)
27	SWING CHECK VALVE, 3/4" NPT

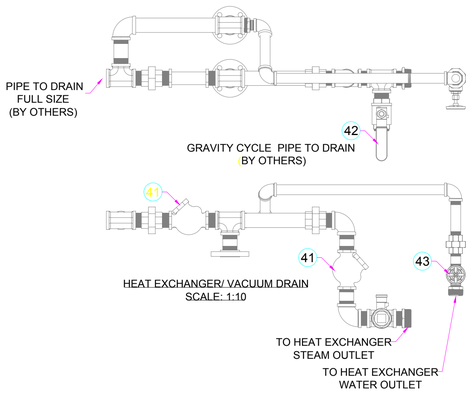
DRAWN BY DJC	3/01/10	GEORGE K. MOSS CO.	
QA		MODEL: AC Ø60" x 270"	
ENGINEER		SIZE D	DWG NO: AC60270XC-0001 REV 2
CO#: 4661			
JOB NAME: B&D Biomedical Waste		SCALE: 1:16	SHEET: 1 of 2

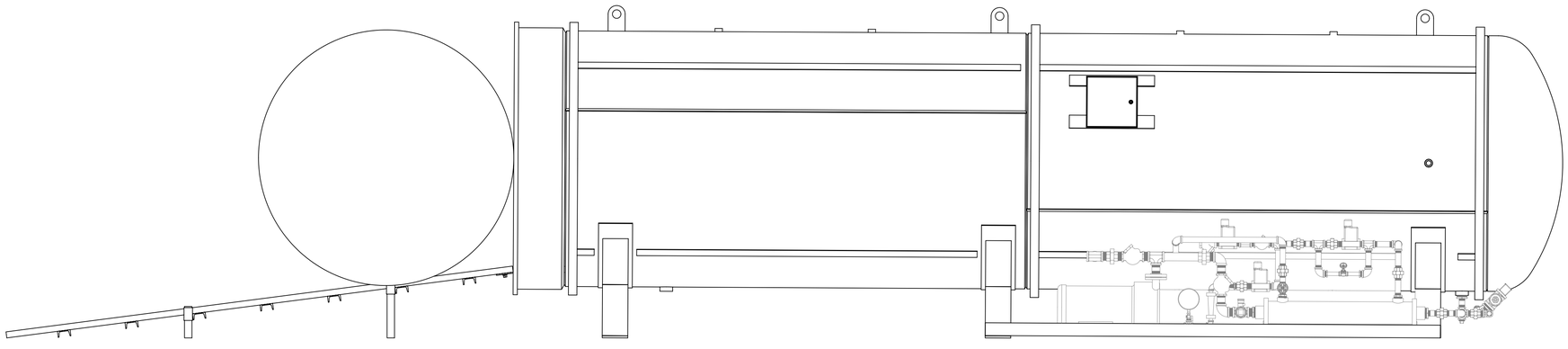


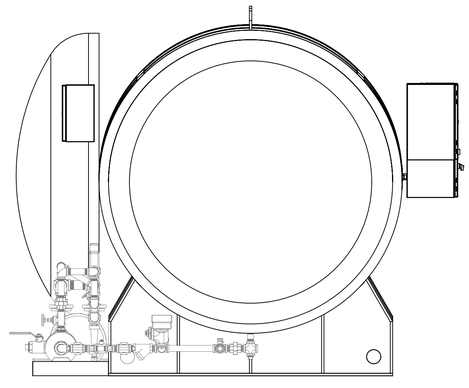


ITEM #	DESCRIPTION
28	SOLENOID VALVE, (3) 1" HAYS Cv=9.8
29	FLOAT SWITCH
30	RTD TRANSMITTER, 32°-392°F (4-20mA)
31	ORFICE, 3/16"
32	MOTORIZED BALL VALVE, 1" NPT Cv=32
33	STRAINER, 1" NPT
34	BALL VALVE, 1" NPT w/ PLUG
35	GLOBE VALVE, 1/2" NPT
36	METERING VALVE, 1/2" NPT
37	FLOW METER, 1/2" NPT .5-5 gpm
38	PRESSURE GAUGE, 0-100 psi w/ GAUGE COCK
39	VACUUM BREAKER, 3/4" NPT
40	SWING CHECK VALVE, 1" NPT
41	SWING CHECK VALVE, (2) 1-1/2" NPT
42	BALL VALVE, 1-1/2" NPT PLUG
43	GLOBE VALVE, 1" NPT
44	STRAINER, BRONZE, 1" NPT



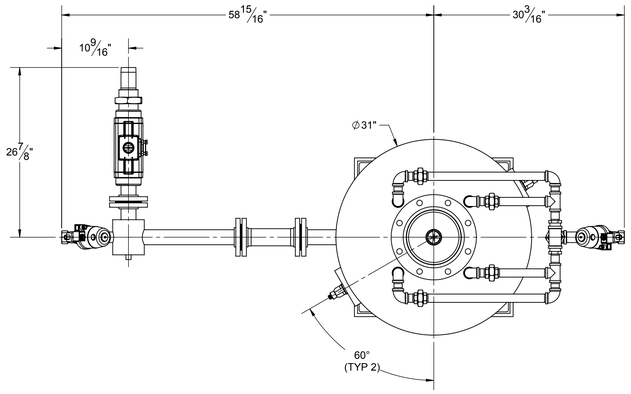


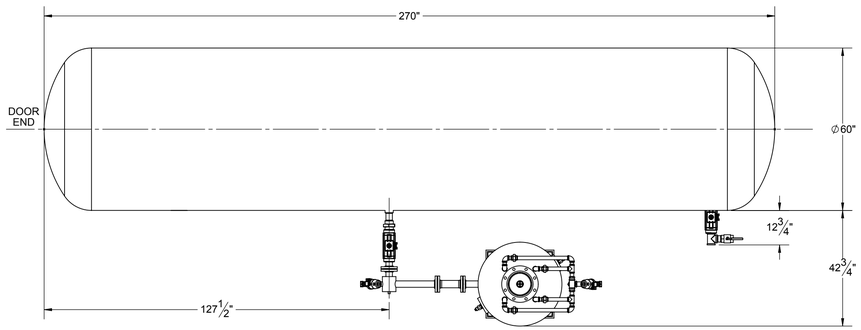




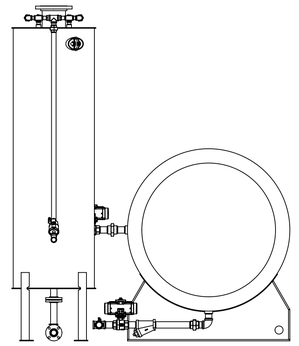
NOTE: JACKET & INSULATION NOT SHOWN

DRAWN BY: DJC	3/01/10	GEORGE K. MOSS CO.		
QA		MODEL: AC Ø60" x 270"		
ENGINEER		SIZE: D	DWG NO: AC60270XC-0001	REV: 0
CO#: 4661		JOB NAME: B&D Biomedical Waste	SCALE: 1:16	SHEET: 2 of 2

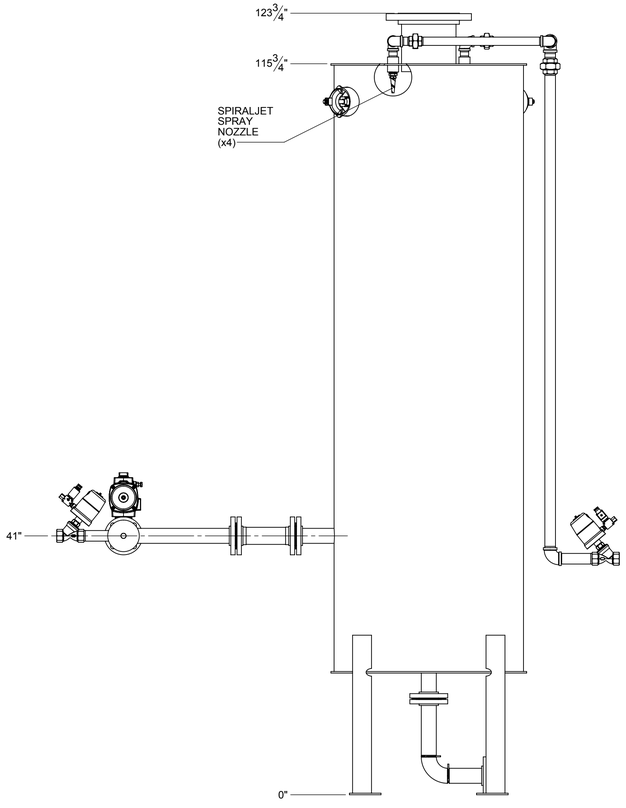


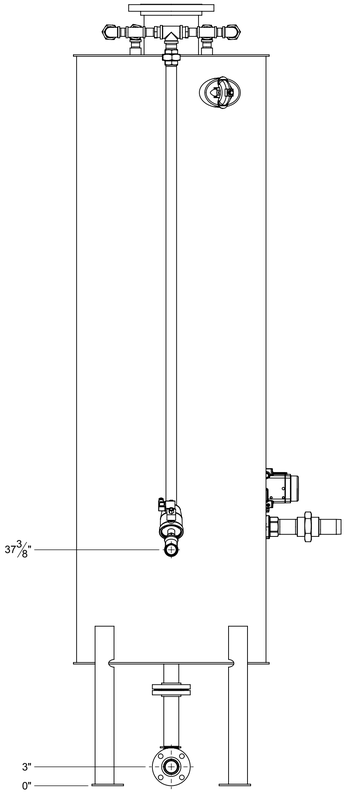


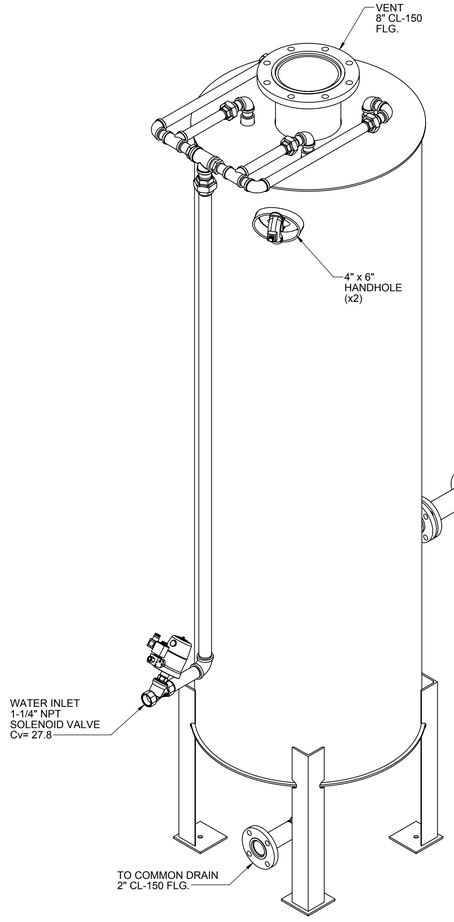
GENERAL ARRANGEMENT
OVERHEAD DETAIL
SCALE 1:28



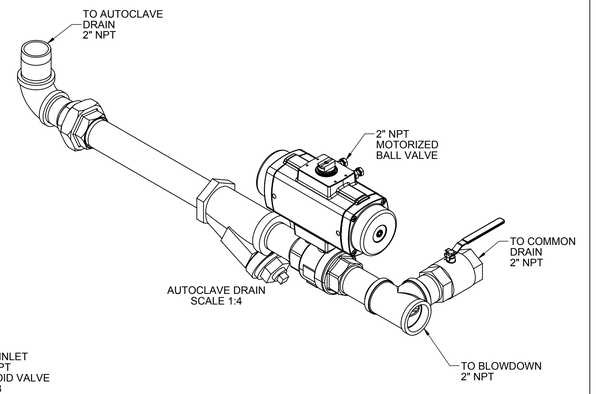
GENERAL ARRANGEMENT
RIGHT SIDE DETAIL
SCALE 1:28



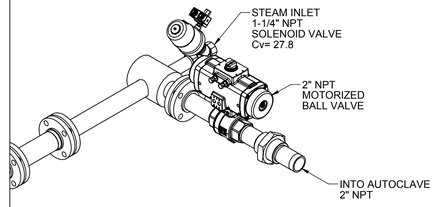




STEAM TOWER DETAIL
SCALE 1:10



AUTOCLAVE DRAIN
SCALE 1:4



NOTES

1.) SPRAY COOLING TOWER TO BE NON-CODE.
2.) SPRAY TOWER WEIGHT = APPROX. 1100LBS

PRECISION BOILERS

JOB NAME:

CO #:

DRAWN:	DATE:	APP'VD:	DATE:

DWG. DESCRIPTION:

DWG. NO. | REV:

FINISH:
SCALE:1:12
WEIGHT: N/A
TOLERANCES
FRACTIONAL ± 1/2"
ANGULAR ± 3°
.01 ± .005
.001 ± .0005

D


BONDTECH
TREATMENT TECHNOLOGY
TEL: 800-414-4231
606-677-2616

Self-Contained Auger Compactor

- Easy to use and maintenance friendly
- Always moves material forward
- Ideal for wet waste such as medical or organic
- Whisper quiet

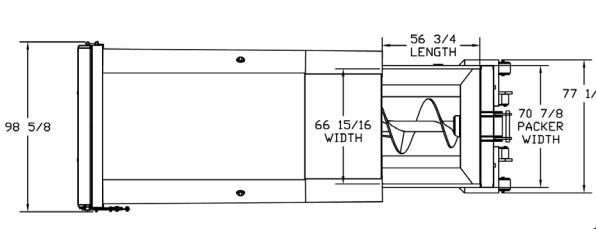
Environmental Solutions Group
A DOVER COMPANY

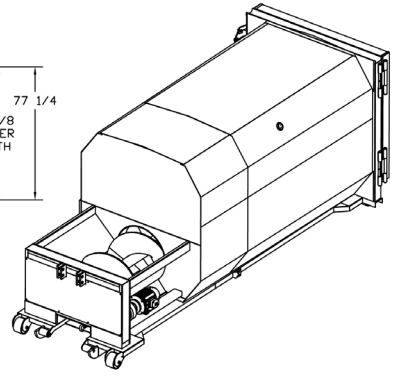
Self-Contained Auger Compactor

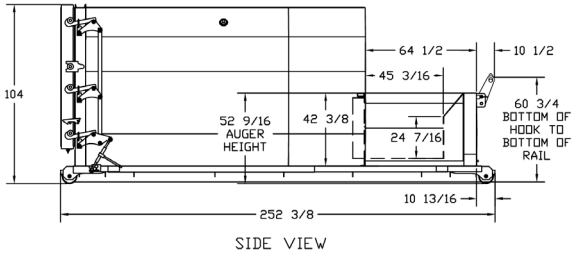
Marathon's Self-Contained Auger Compactors are easy to use and maintenance friendly. Features such as the short tail for dock feeding, or rear feeding, and the check valve action that assures materials stay in the container, all add up to a reliable auger compactor for years of trouble-free performance.

The advantages of using an using an Auger Compactor

- » Denser waste volume, reducing transport movements and cost
- » Minimize waste storage space on site







30 cubic yard Self-Contained Auger Compactor

Specifications for AST-220		
Head Weight	4,100 lbs	1,850 kg
Auger Diameter	36"	900 mm
Container Penetration	13"	330 mm
Charge Chamber Size	1.1 yd^3	.84 m^3
Performance Characteristics		
Auger Speed	9 rpm	9 rpm
Cycle Time	13 sec	13 sec
Displacement Rate	305 yd^3/hr	235 m^3/hr
Electrical Equipment		
Electric Motor 3/60/230-460	15 hp	11 kW

Visit www.marathonequipment.com to learn more about how Marathon Solutions are making a difference around the world.

Marathon Equipment Company
P.O. Box 1798
Vernon, AL 35592-1798
800.633.8974

Pictures in this literature are illustrative only. Specifications are subject to change without notice in order to accommodate improvements to the equipment. Complies with ANSI standard Z245.2, and applicable OSHA Regulations. Products must be used with safe practice and in accordance with said operator manual and applicable regulations and standards.

www.doveresg.com

BOILER

QUOTATION

TURN - KEY STEAM SOLUTIONS

Quote Name	Stericycle-NS-LX-100SG X 1
Quote Number	00002283

Company Address	8-2500 Meadowpine Boulevard Mississauga ON L5N 6C4 CA
Created Date	2018-06-29
Prepared By	Martin Zanbaka
Email	martin.zanbaka@miuraz.com
Contact Name	Jeff Richardson
Phone	(902) 480-7800
Email	jbrichardson@stericycle.com
Bill To Name	Stericycle Inc
Bill To	45 Av Wright, Dartmouth NS B3B 1G9
Ship To Name	Stericycle Inc
Ship To	Mount Pearl NL

- LEAD TIME 6-8 WEEKS UPON RECEIPT OF PO AND DEPOSIT.
- INSTALLATION (MECHANICAL AND ELECTRICAL) PROVIDED BY OTHERS.
- 5 PSI LP GAS AT SITE REQUIRED - customer must provide evaporator (not include).
- COMMISSIONING BY AN APPROVED CONTRACTOR NOT INCLUDE - CONTACT MIURA REP FOR MORE DETAILS.
- SHIPPING AND UNLOADING NOT INCLUDE - FOB : BRANTFORD, ONT.




QUOTATION

MIURA

TURN - KEY STEAM SOLUTIONS

Quote Name Stericycle-NS-LX-100SG X 1

Quote Number 00002283

Product	Sales Price	Quantity	Total Price
LX-100SG	$75,391.00	1,00	$75,391.00
Automatic Surface Blowdown	$0.00	1,00	$0.00
Second Blowdown Valve for EX, LX and LXL Boilers up to 200HP (TSSA Requirement)	$0.00	1,00	$0.00
Double Disk Check Valve	$0.00	1,00	$0.00
Feedwater Shut Off Valve for EX, LX and LXL Boilers	$0.00	1,00	$0.00
HIGHWATER ALARM for All BOILER Models	$0.00	1,00	$0.00
MOM Communication for Single Boiler installations	$0.00	1,00	$0.00
DRIP PAN ELBOW 2" NPT for 50/100HP	$0.00	1,00	$0.00
Air Filter each: for all LX EXCEPT LX-300	$0.00	1,00	$0.00
Automatic Bottom Blowdown Valve for EX, LX and LXL Boilers	$3,288.00	1,00	$3,288.00
Main Steam Globe Valve 2" 800#	$582.00	1,00	$582.00
Miura EWS SD160 Duplex Softener	$2,800.00	1,00	$2,800.00
Miura EWS S130 Single Polisher	$1,100.00	1,00	$1,100.00
Colormetry Hardness Monitor System	$2,100.00	1,00	$2,100.00
Stainless-Steel feed water tank 100 gallons	$11,500.00	1,00	$11,500.00
High/Low Water Alarm for HT	$1,476.00	1,00	$1,476.00
Steam Injector Package INS-10	$4,805.00	1,00	$4,805.00
CR3-17K Feed Water Pump, 575V	$2,902.00	1,00	$2,902.00
Flange Kit for CR1, CR3 and CR5 Feedwater Pumps	$113.00	1,00	$113.00
W100 MULTI-FUNCTION ACCUMULATOR TIMER	$1,049.00	1,00	$1,049.00
PULSAFEEDER A+ CHEM PUMP, 12 GPD	$749.00	3,00	$2,247.00
Chemical Injection Check Valve (STD)	$170.00	3,00	$510.00
BOILERMATE® 1200S	$1,302.00	1,00	$1,302.00
BOILERMATE® 3200C	$895.00	1,00	$895.00
BOILERMATE® 2100D	$1,175.00	1,00	$1,175.00
Boiler Drop Test Kit, Best	$528.00	1,00	$528.00
Deionized Water 4 L	$65.00	1,00	$65.00
Taylor Silica Test Kit	$485.00	1,00	$485.00




MIURA

QUOTATION

MIURA

TURN - KEY STEAM SOLUTIONS

Quote Name	Stericycle-NS-LX-100SG X 1
Quote Number	00002283

BS-10/3 up to 100HP boiler only	$4,150.00	1,00	$4,150.00
Sample Cooler, Spirax, 316SS, CRN	$1,995.00	1,00	$1,995.00

Unless otherwise noted above, Shipping/Unloading/Tax not included.

Subtotal	$120,458.00
Total Price	$120,458.00

Terms and Conditions

SIGNATURE REQUIRED FOR BELOW ITEMS TO PROCESS ORDER:

1. **GAS PRESSURE -->** 5 PSI TO THE BOILER IS REQUIRED AND CUSTOMER RESPONSIBILITY.
2. **MAIN GAS LINE -->** ADEQUATE SIZE (BTU CALCULATION) IS CUSTOMER RESPONSIBILITY.
3. **BOILER SIZING -->** MIURA WILL ASSIST FOR CUSTOMER REQUIRED OUTPUT (PLANT LOAD), HOWEVER MIURA WILL NOT BE RESPONSIBLE FOR INSUFFICIENT OR EXCESSIVE BOILER OUTPUT.
4. **INSTALLATION -->** BY OTHERS (MECHANICAL & ELECTRICAL) UNLESS INCLUDED AS LINE ITEM IN QUOTE DETAILS ABOVE.
5. **REGISTRATIONS/INSPECTIONS -->** ALL PROVINCIAL SAFETY AUTHORITY (TSSA IN ONTARIO) ARE CUSTOMER RESPONSIBILITY.
6. **BOILER DIMENSIONS/WEIGHTS -->** CUSTOMER TO VERIFY PRIOR TO PLACING ORDER. MIURA CANNOT BE RESPONSIBLE IF CUSTOMER UNABLE TO UNLOAD FROM TRUCK OR EQUIPMENT DOES NOT FIT INTO BUILDING/ROOM.
7. **SHIPPING LOGISTICS -->** LX SERIES BOILERS WILL SHIP FULLY ASSEMBLED AND IT IS CUSTOMER RESPONSIBILITY TO REMOVE ANY ITEMS NECESSARY TO FIT THROUGH DOORWAYS.
8. **DEPOSIT & SHIPPING DATE -->** DEPOSIT IS REQUIRED TO PROCESS YOUR ORDER AND AVOID ANY DELAYS TO YOUR WISH SHIPPING DATE. MIURA WILL NOT BE RESPONSIBLE IF SHIPPING DATE IS DELAYED DUE TO DELAYED PAYMENTS.
9. **STORAGE FEES** --> WILL BE CHARGED TO CUSTOMER IF SHIPPING IS DELAYED BY > 1 WEEK FROM MIURA CONFIRMED DATE. CHARGES ARE $600 / BOILER, ONE TIME FEE, AND $100 / WEEK PER BOILER.

CUSTOMER TO FILL OUT FOLLOWING ITEMS NEEDED TO COMPLETE ORDER:

***FUEL TYPE (CIRCLE):**

GENERAL TERMS AND CONDITIONS:

1. GENERAL

F.O.B. Brantford, Ontario.
Shipping, Storage and Loading costs are not included unless otherwise noted in quote details above.

All work (warranty, commissioning, inspections etc.) must be completed during “normal business hours”, M~F/ 8:00a.m. ~ 4:30 p.m. Overtime & Holiday hours are subject to additional charges.

2. PAYMENT TERMS

QUOTES *with* Boilers:
30% due with Purchase Order (non-refundable)
70% due one week prior to shipping

NOTE - interest charges applied to all overdue accounts. Interest rate will be calculated at 18% per annum, (1.5% per month).

QUOTES *with No* Boilers/Pressure Vessels:
Net 30 from shipping

*Miura is not bound by the terms of any purchase order placed in lieu of this or any other quotation that is not accompanied by the customer’s signed acknowledgement of these terms unless otherwise provided for in writing by authorized Miura management.

ORDER CANCELLATION FEE - Customer Purchase Orders or Letters of Intent that are Cancelled by the Customer will see a Cancellation Fee of 25% of the Total Sales Order value applied.
Note that the initial Deposit is also Non-Refundable.

3. FIELD COMMISSIONING STARTUP:
***PRE-STARTUP INSPECTION MUST BE COMPLETED BEFORE ACTUAL STARTUP CAN BE BOOKED.**




MIURA

QUOTATION

TURN - KEY STEAM SOLUTIONS

Quote Name	Stericycle-NS-LX-100SG X 1
Quote Number	00002283

--> NATURAL GAS PROPANE #2 OIL

***VOLTAGE, 3PH, (CIRCLE):**
--> 575/600 460/480 230

***SAFETY VALVE SET PRESSURE (CIRCLE):**
--> 15psi 150psi 170psi 250psi 300psi

***WISH SHIP DATE (FILL IN):** _____ *(To be confirmed by Miura once deposit has been processed)*

CUSTOMER NAME (PRINT): _____

CUSTOMER SIGNATURE:_____

DATE: _____

***STARTUP - SEVEN (7) BUSINESS DAYS NOTICE TO MIURA** is required so that we may appropriately schedule your start up request. Boiler startup may be postponed if adequate payments have not been received.

Prices are based on all boilers being commissioned together.

EXTRA COMMISSIONING CHARGES may apply under the following circumstances:
- Miura Technician cannot gain access to customer site
- Boilers are not ready for startup
- Installation, Equipment or Utilities not complete or in place
- Permits are not in place
- Mutiple Boilers are not commissioned together




Specification: LX-100-12

ITEM	UNITS	Standard	Ultra Low NOx
Boiler Output			
Boiler Type	-	Multiple water tube, once through, forced flow, steam boiler	
Maximum Allowable Working Pressure	PSIG	170	
Recommended Operational Range	PSIG	70 - 150	
Boiler Heating Surface Area	ft^2	269	
Boiler Horsepower Rating	BHP	100	
Equivalent Output[i]	lb/hr	3,450	
Maximum Heat Output	MMBTU/hr	3.348	
Turn-Down	-	3:1 (33%)	
Trim Selection			
Integral Economizer (S)	Yes / No	Yes	Yes
Fuel Selection (G)	Gas	Gas	Gas
Low NOx Option (N)	Yes / No / NA	No	Yes
Boiler Trim	-	LX-100 SG	LX-100 SGN
Air and Fuel Requirements			
Fuel Supply Pressure	PSIG	5 PSIG (Natural Gas or Propane)	
Heat Input	MMBTU/hr	3.939	3.939
Efficiency[ii]	%	85%	85%
Flue Gas Excess Oxygen	%	5.0%	7.0%
Flue Gas Temperature[ii]	°F	260	240
NG/LPG Fuel Consumption[iii]	SCFH / GPH	3,860 / 43	3,860 / 43
Required Air Volume	SCFH	48,730	55,740
Flue Gas Volume - Wet	SCFH	52,590	59,600
Flue Gas Volume - Dry[iv]	SCFH	45,100	51,590
Flue Gas Velocity	ft/s	26.7	29.4
Emissions			
NOx Emission NG/LPG[v]	ppm (lbs/MMBTU)	20/25 (0.0243 / 0.0304)	9/12 (0.0110 / 0.0146)
CO Emission NG&LPG[v]	ppm (lbs/MMBTU)	100 (0.0739)	50 (0.0370)
CO_2 Emission NG/LPG[v]	lbs/MMBTU	117.6 / 136.6	
VOC Emission NG&LPG[v]	lbs/MMBTU	0.00539	
SO_2 Emission NG/LPG[vi]	lbs/MMBTU	0.00588 / 0.00547	
PM Emission NG&LPG[v]	lbs/MMBTU	0.00745	
Weights			
Shipping Weight	lbs	6,000	6,000
Operational Weight	lbs	6,600	6,600

Inlet & Outlet Connections

Economizer Drain (If Equipped)	in	2" npt
Main Steam Outlet	in	2" npt
Safety Valve[vii]	in	2" npt
Drip Pan Elbow Vent	in	3"
Drip Pan Elbow Drain	in	3/4" npt
Feedwater Inlet	in	1" npt
Fuel Gas Inlet	in	2" npt
Automatic "Surface" Blowdown	in	3/8" npt
Bottom Blow-Off	in	1" npt
LVC Blow-Off	in	1" npt
Chimney Diameter	in	12" OD

Electrical Components & Controls

Power Supply	-	575, 460, 380, 230 or 208 Volts, 3 Phase, 60 Hz
Max. Electrical Consumption[viii]	kVA	12.6 or 15.5
Blower Motor	HP	10
Water Pump Motor[viii]	HP	3 or 5
Control Power Transformer	kVA	0.5
Combustion Control	-	3 Position Step Burner (High - Low - Off)
Combustion System	-	Forced Draft Burner
Ignition System	-	Electric Spark Ignited, Interrupted Gas Pilot
Flame Safeguard	-	Miura BL Microcontroller with Miura ZUV Flame Sensor
Low Water Protection	-	Primary and Secondary Low Water Cutoff Electrodes
Miura Online Maintenance (M.O.M)	-	Analog Phone Line

NOTES:

i) Equivalent Output is calculated based on conversion of 212°F feedwater to 212°F steam.

ii) Flue gas temperatures and efficiencies are based on 68°F feedwater and 80°F combustion air and calculated using the higher heating value

iii) Fuel consumption for NG and LPG is based on a higher heating value of 1,020 Btu/SCF and 91,500 Btu/Gal respectively

iv) Dry flue gas volume is based on F-Factor of 8710 SCF/MMbtu and corrected for the operating O2 percentage

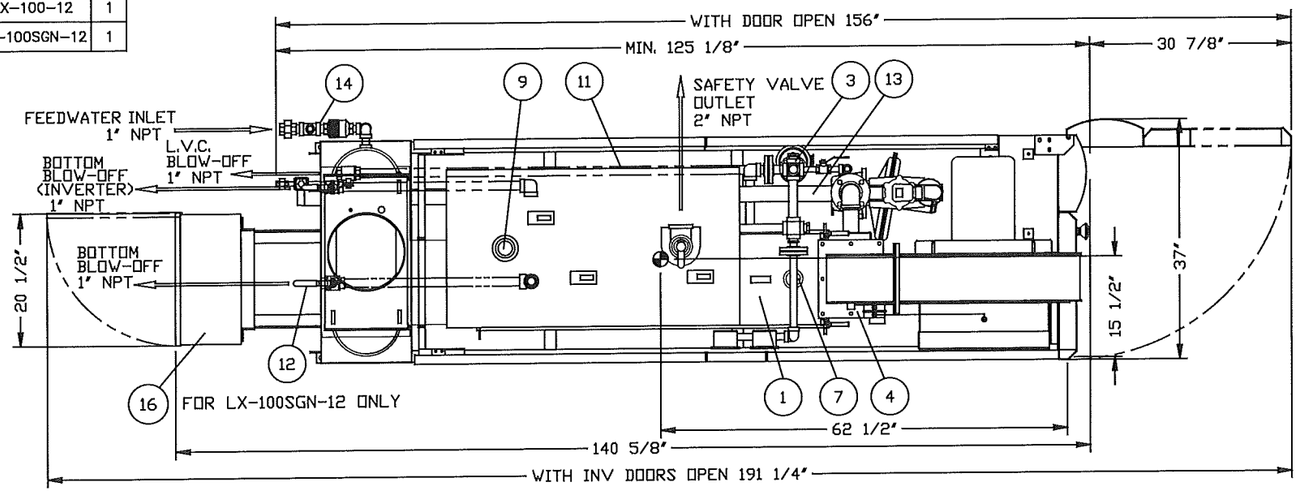
v) NOx and CO emissions are based on empirical test data corrected to 3% excess oxygen, all others are calculated using EPA factors.

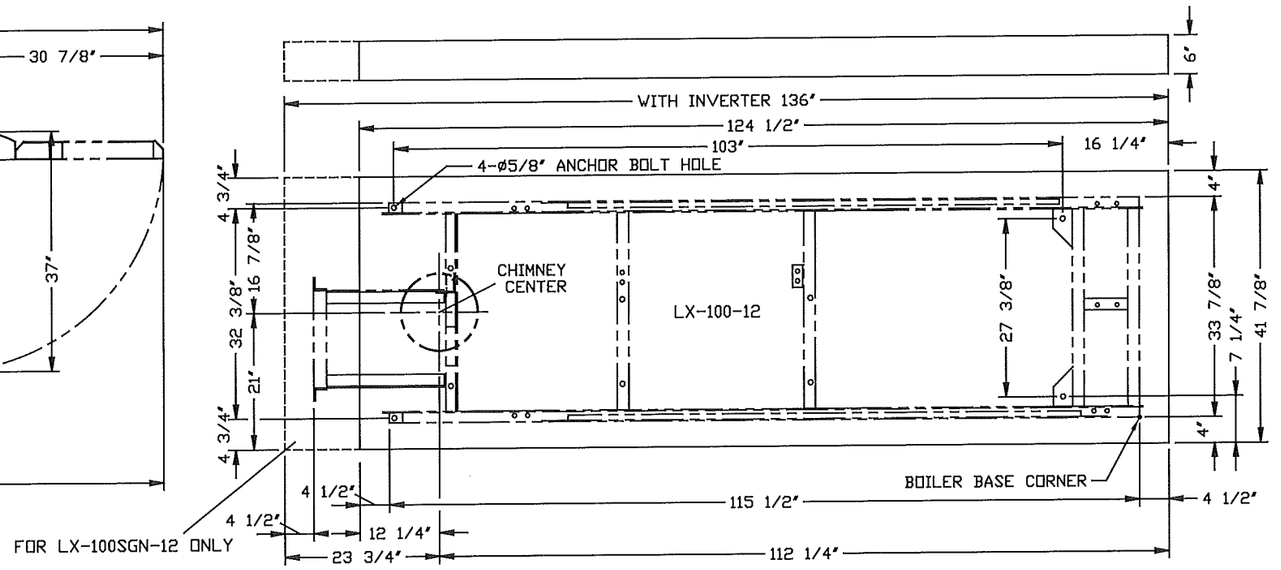
vi) SO2 factor assumes 0.2 grains per scf for NG and 0.5 grains per scf for LPG

vii) Boiler Safety Valve Outlet size may increase if set pressure is below 170 PSIG

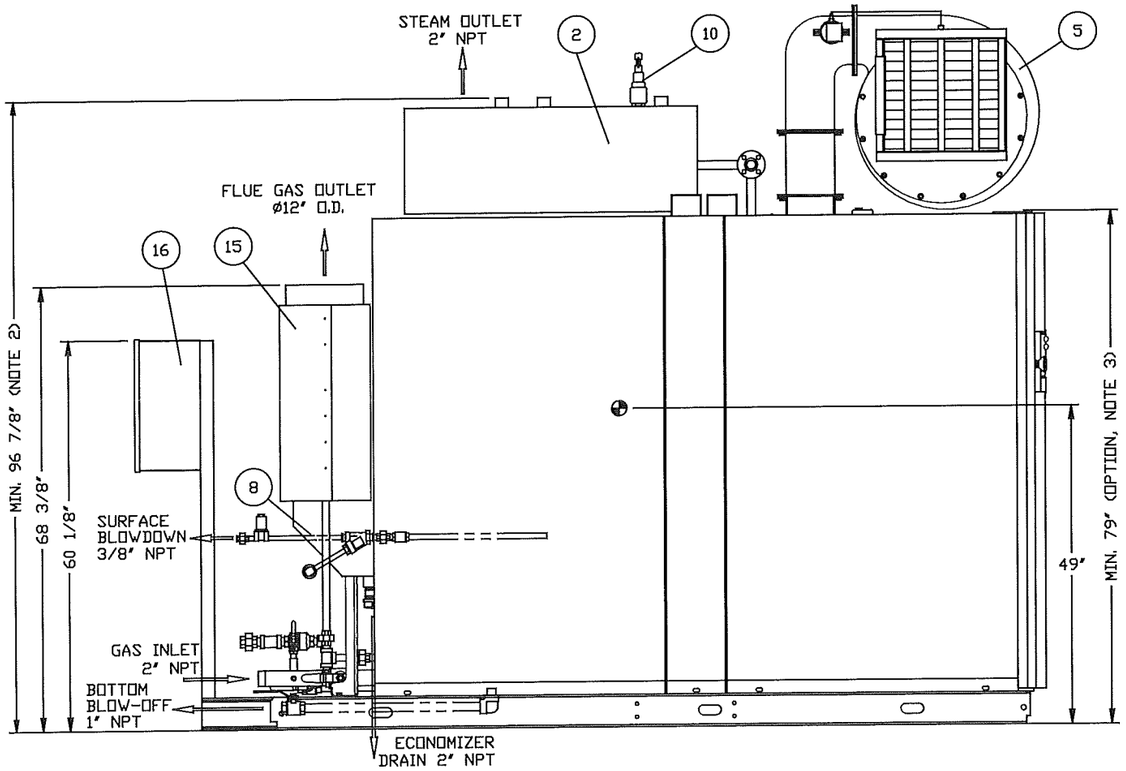
viii) Water pump output may vary by feedwater piping options

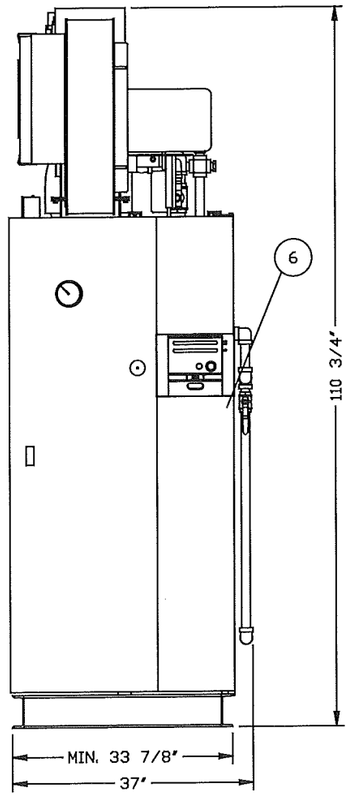
APP. TYPE	QTY
LX-100-12	1
LX-100SGN-12	1





BOILER FOUNDATION





NOTE:

1) DIMENSIONS, SPECIFICATIONS AND SOME PIPINGS ARE SUBJECT TO CHANGE WITHOUT NOTICE.
2) MINIMUM HEIGHT WITH SAFETY VALVE & BLOWER ASSY DISMANTLED.
3) OPTION : MINIMUM HEIGHT WITH SEPARATOR & BLOWER ASSY DISMANTLED.
4) MINIMUM CLEARANCE IN FRONT OF CONTROL BOX AND INVERTER BOX ARE DICTATED BY INSTALLATION CODES. FOR EXAMPLE, NEC REQUIRES 42" MIN CLEARANCE.

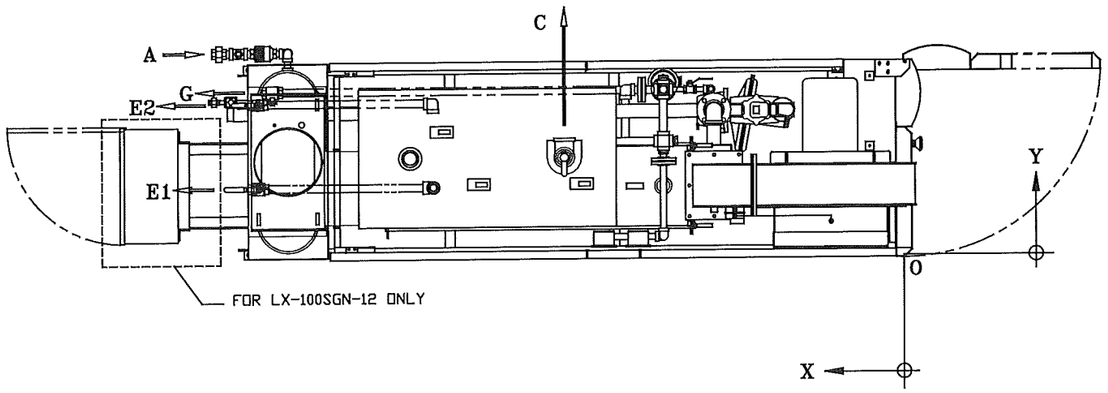
⊕ CENTER OF GRAVITY LOCATION.

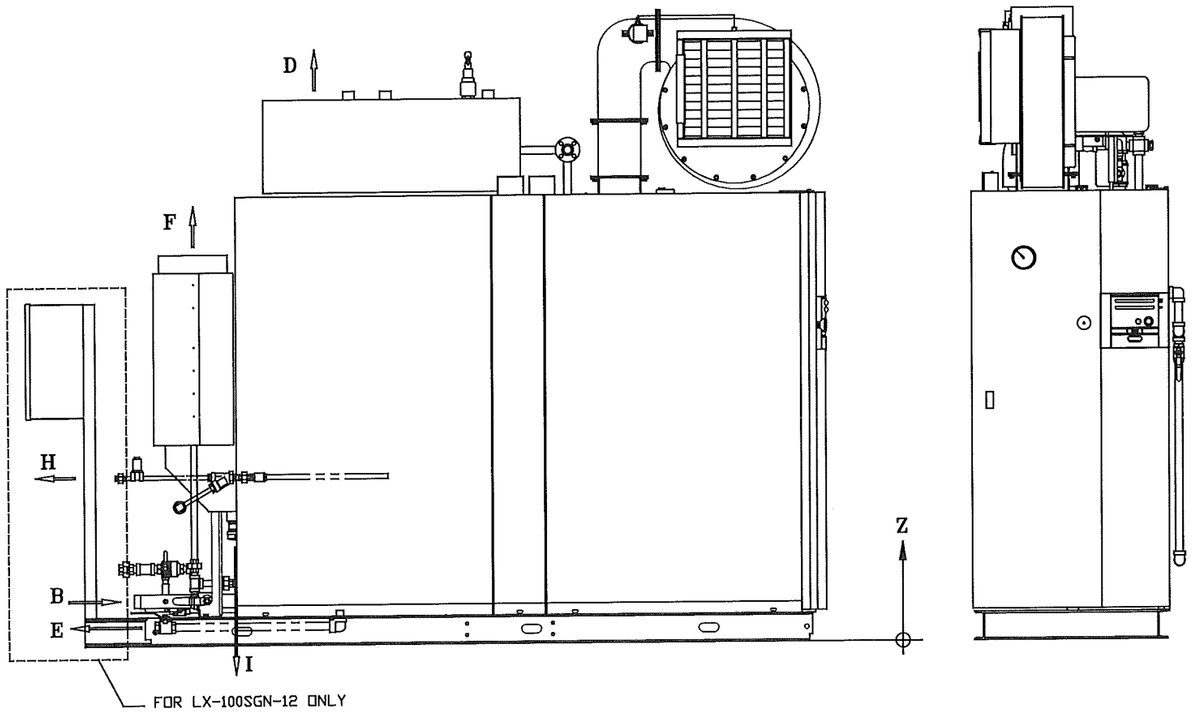
NO.	NAME OF PART	MATERIAL	QTY	REMARKS / DRAWING #
16	INVERTER BOX		1	FOR LX-100SGN-12 ONLY
15	ECONOMIZER		1	ø12" O.D.
14	FEEDWATER PIPING		1	1"
13	MAIN GAS TRAIN		1	2"
12	BOTTOM BLOW-OFF		1	1"
11	L.V.C. BLOW-OFF		1	1"
10	MAIN SAFETY VALVE		1	1 1/2" x H x 2"
9	STEAM OUTLET		1	2"
8	SURFACE BLOWDOWN		1	3/8"
7	INSPECTION HOLE		2	2"
6	CONTROL BOX		1	
5	BLOWER		1	
4	WIND BOX		1	
3	LIQUID VOLUME CONTROL		1	
2	STEAM SEPARATOR		1	
1	BOILER VESSEL		1	

DWN.: THERESA	CK'D.:	SCALE: NON	DO NOT SCALE
DATE: DEC.15,2016	APPROVED:	THIRD ANGLE SYSTEM	DIM'N SHOWN ARE INCH
MIURA	DESCRIPTION: BOILER ASS'Y OUTSIDE VIEW		DRAWING NUMBER LX12-0100-0W63

SYM	REVISION	DATE	BY
CAD DWG – NO MANUAL CHANGES PERMITTED			

APP. TYPE	QTY
LX–100SG–12	1
LX–100SGN–12	1





NOTE:

1) THIS DRAWING ILLUSTRATED WITH AN ECONOMIZER.
2) DIMENSIONS, SPECIFICATIONS AND SOME PIPINGS ARE SUBJECT TO CHANGE WITHOUT NOTICE.
3) GAS VENT PIPING SHALL BE ENFORCED IN ACCORDANCE WITH LOCAL REGULATION.

LEGEND		DIMENSION (INCHES)			
		X	Y	Z	SIZE
A	FEEDWATER INLET	121	36	13 5/8	1" NPT
B	SUPPLY GAS INLET	118 1/4	25 3/8	7 3/8	2" NPT
C	MAIN SAFETY VALVE OUTLET	59 3/8	20 3/4	97 1/8	2" NPT
D	STEAM OUTLET	86 3/8	17 3/8	94	2" NPT
E1	BOTTOM BLOW–OFF	114 5/8	12 1/4	3 1/4	1" NPT
E2	BOTTOM BLOW–OFF(INVERTER)	114 5/8	27	3 1/4	1" NPT
F	FLUE GAS OUTLET	107 3/4	17	68 3/8	ø12"OD DUCT
G	L.V.C. BLOW–OFF	112 1/8	29 1/8	6 1/2	1" NPT
H	SURFACE BLOWDOWN	121 5/8	27 5/8	29 1/2	3/8" NPT
I	ECONOMIZER DRAIN	100 1/4	12 1/4	21 3/4	2" NPT
0	BOILER CORNER	0	0	0	–

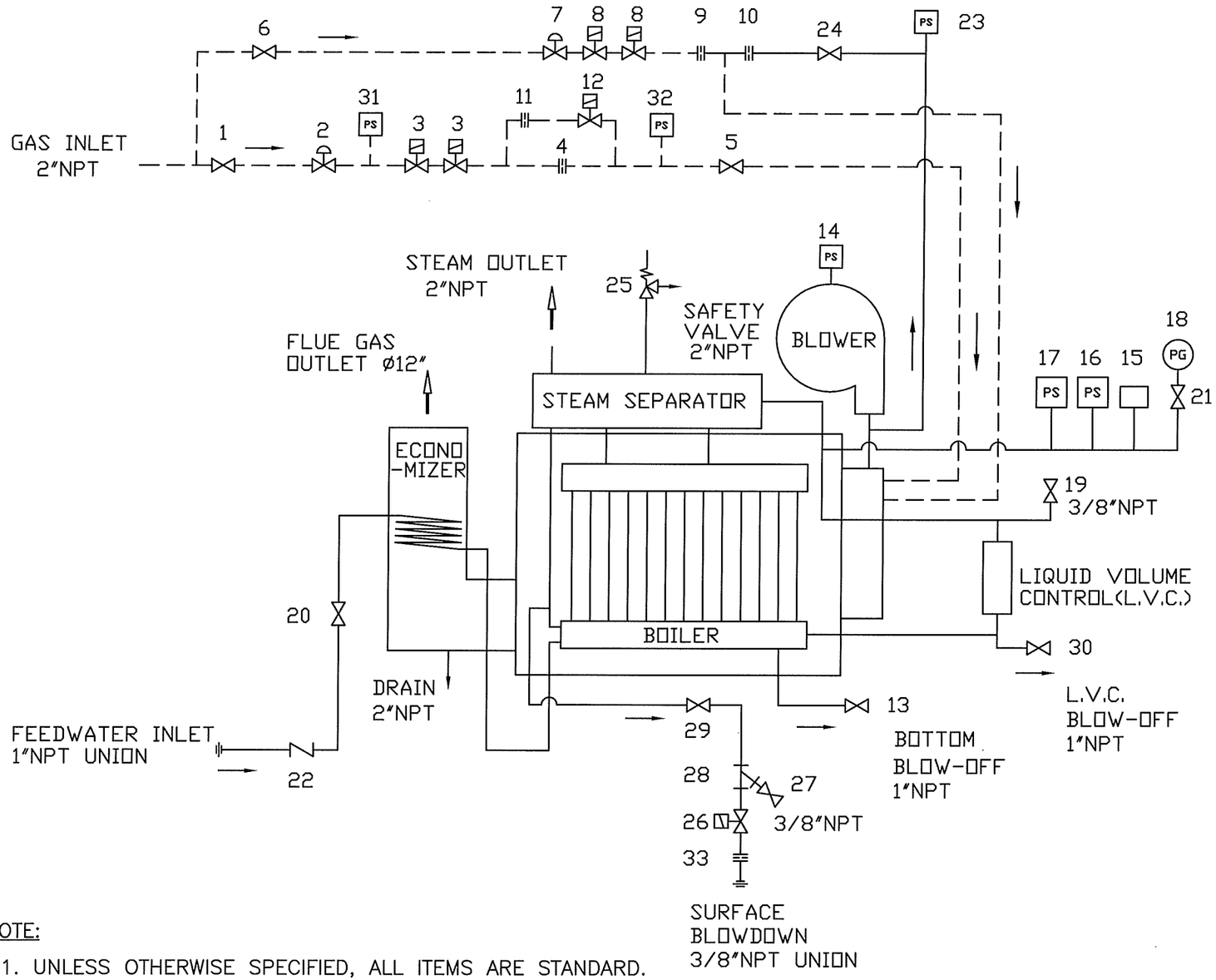
NO	NAME OF PART	MATERIAL	QTY	REMARKS / DRAWING #

DWN.: THERESA	CK'D.:	SCALE: NTS	DO NOT SCALE
		THIRD ANGLE SYSTEM	DIM'N SHOWN ARE INCH

SYM	REVISION	DATE	BY
	CAD DWG – NO MANUAL CHANGES PERMITTED		

DATE: DEC.15,2016
APPROVED:
MIURA
DESCRIPTION: ORIENTATION OF IN & OUTLET
DRAWING NUMBER LX12–0100–0R63

APP. TYPE	QTY
LX-100SG-12	-



NO	NAME OF PART	MATERIAL	QTY	REMARKS / DRAWING #
33	BLOWDOWN ORIFICE			ø3/32"
32	GAS PRESSURE SWITCH			RHGP-G 5-35" ANTUNES (HIGH)
31	GAS PRESSURE SWITCH			GAO-A4-4-6 (12"-60") DUNGS (LOW)
30	L.V.C. BLOW-OFF VALVE			1" #2500 NEO
29	BLOWDOWN VALVE			1/2" #2500 NEO
28	BLOWDOWN STRAINER			3/4" 20MESH
27	SAMPLE WATER VALVE			3/8" 300# T-275-Y
26	SURFACE BLOWDOWN VALVE			3/8" 6027-A06
25	SAFETY VALVE			1 1/2"xHx2" #6021HG KUNKLE
24	AIR CONTROL VALVE			1/2"NPT, 125WOG, RISING STEM
23	AIR PRESSURE SWITCH			RLGP-G 5-30" ANTUNES
22	CHECK VALVE			1" DDCV2 MIURA (WITH ECO.)
21	PRESSURE GAUGE VALVE			3/4" #2500 NEO
20	VALVE			1" #2500 NEO
19	AIR VENT VALVE			3/8" #2500 NEO
18	PRESSURE GAUGE			ø4" 0-300PSIG WINTER'S
17	STEAM PRESSURE SWITCH			L4079B (HIGH LIMIT)
16	STEAM PRESSURE SWITCH			L404F (BACK-UP CONTROL)
15	PRESSURE SENSOR			YSK-AC20M-334
14	PRESSURE SWITCH			#8024204025 (AIR FILTER)
13	BOTTOM BLOW-OFF VALVE			1" #2500 NEO
12	HIGH-LOW CONTROL VALVE			1 1/2" 8215B70 ASCO
11	MAIN GAS ORIFICE (HIGH)			ø7/8"(NATURAL)/ø3/4"(PROPANE)
10	PILOT AIR ORIFICE			ø 3/8"
9	PILOT GAS ORIFICE			ø 1/8"
8	PILOT GAS CONTROL VALVE			1/2" JKF8215G020 ASCO
7	PILOT GAS REGULATOR			1/2" #325-3 MAXITROL
6	PILOT GAS VALVE			1/2" #613 NEO
5	TEST FIRING VALVE			2" #613 NEO
4	MAIN GAS ORIFICE (LOW)			ø7/16"(NATURAL)/ø3/8"(PROPANE)
3	GAS CONTROL VALVE			2" V5055+V4055 HONEYWELL
2	MAIN GAS REGULATOR			2" 133L FISHER
1	MAIN GAS VALVE			2" #613 NEO

NOTE:

1. UNLESS OTHERWISE SPECIFIED, ALL ITEMS ARE STANDARD.
2. THIS DRAWING IS ILLUSTRATED WITH AN ECONOMIZER.
3. DESIGN, SPECIFICATIONS AND SOME PIPINGS ARE SUBJECT TO CHANGE WITHOUT NOTICE.
4. FLANGES USED ARE ASME B16 CLASS 150#.
5. SAFETY VALVE SIZE WILL CHANGE FOR BOILER SET BELOW 150PSIG.

SYM	REVISION	DATE	BY
	CAD DWG - NO MANUAL CHANGES PERMITTED		

DWN.: SHELLEY | CK'D.: | SCALE: - | DO NOT SCALE

DATE: SEPT.19,2016 | APPROVED: | THIRD ANGLE SYSTEM | DIM'N SHOWN ARE INCH

MIURA

DESCRIPTION: BOILER SYSTEM DIAGRAM

DRAWING NUMBER LX12-0100-0S56

MIURA CANADA CO. LTD

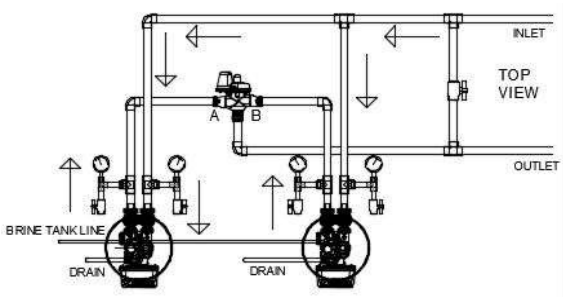
SYSTEM DESIGN DATA & SPECIFICATIONS

Model: EWS SD160
Duplex 1.0" Water Softener 60,000 Capacity

Water Softener Operating Parameters

Flow Pressure Drop @ 15psi, gpm	: 14.0
Flow Pressure Drop @ 25psi, gpm	: 19.0
Continuous Max Flow Rate, gpm	: 10.0
Minimum Flow Rate, gpm	: 1.6
Backwash Flow Rate, gpm	: 3.2
Capacity @10lbs/ft^3, kgr	: 54.0
Capacity @15lbs/ft^3, kgr	: 60.0
Salt Usage @ 10lbs/ft³, lbs	: 20.0
Salt Usage @ 15lbs/ft³, lbs	: 30.0
Resin Qty, ft³	: 2.0
#20 Gravel Qty, lbs	: 20
Distributor Size, in	: 1.05
Drain Line Size , in	: 0.75
Brine Line Size , in	: 0.375

Top View



*** Critical maximum flow rate refers to soft water feed to boilers, heat exchangers, reverse osmosis systems or any other equipment sensitive to hard water scaling flow rate not exceeding 5gpm/ft³**

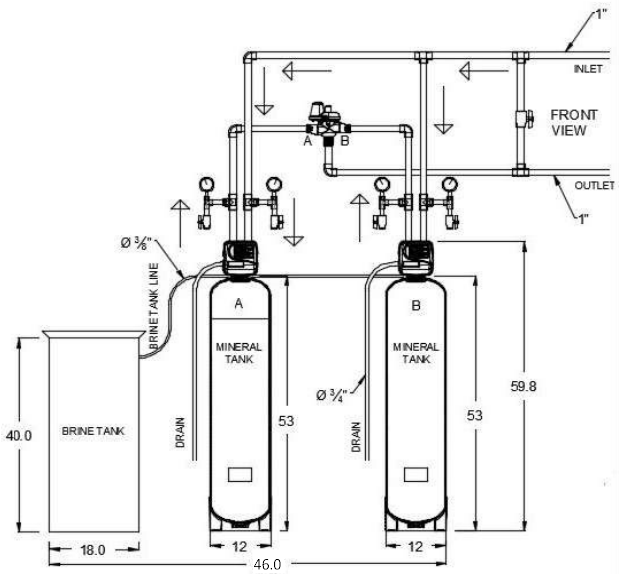
Miscellaneous Design Data

Mineral Tank Size, in.	: 12x52
Tank Area, ft²	: 0.785
Freeboard, in.	: 15.0
Bed Depth, in.	: 30.5
Brine Tank Size, in.	: 18x40
Max. Salt Load, lbs.	: 450 (Dry)
Total Regeneration Time, min.	: 90
Operating Pressure, psi	: 40-110
Operating Temperature, ° F	: 40-110
Shipping Weight, lbs.	: 300
Space Req'd in, L x W x H	: 48 X 20 x 62

Electrical Specifications

Supply Voltage	: 120V AC
Supply Frequency	: 60 Hz
Output Voltage	: 12V AC
Output Current:	: 500 mA

Front View



Model: EWS SD160

MIURA CANADA CO. LTD

SYSTEM DESIGN DATA & SPECIFICATIONS

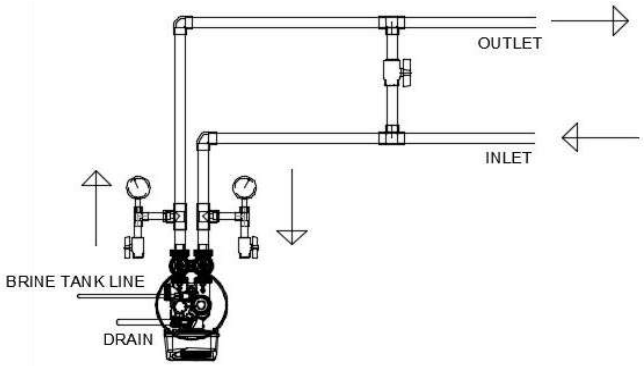
Model: EWS S130

Simplex 1.0" Water Softener 30,000 Capacity

Water Softener Operating Parameters

Flow Pressure Drop @ 15psi, gpm	: 10.0
Flow Pressure Drop @ 25psi, gpm	: 15.0
Continuous Max Flow Rate, gpm	: 5.0
Minimum Flow Rate, gpm	: 0.9
Backwash Flow Rate, gpm	: 2.2
Capacity @10lbs/ft^3, kgr	: 27.0
Capacity @15lbs/ft^3, kgr	: 30.0
Salt Usage @ 10lbs/ft³, lbs	: 10.0
Salt Usage @ 15lbs/ft³, lbs	: 15.0
Resin Qty, ft³	: 1.0
#20 Gravel Qty, lbs	: 12.0
Distributor Size, in	: 1.05
Drain Line Size , in	: 0.75
Brine Line Size , in	: 0.375

Top View



*** Continuous maximum flow rate refers to soft water feed to boilers, heat exchangers, reverse osmosis systems or any other equipment sensitive to hard water scaling flow rate not exceeding 5gpm/ft³**

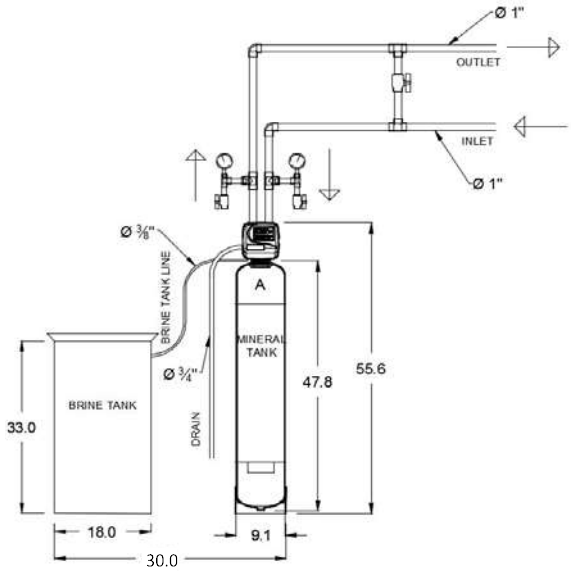
Miscellaneous Design Data

Mineral Tank Size, in.	: 9x48
Tank Area, ft²	: 0.442
Freeboard, in.	: 15.0
Bed Depth, in	: 27.0
Brine Tank Size, in.	: 18x33
Max. Salt Load, lbs.	: 375 (Dry)
Total Regeneration Time, min.	: 81
Operating Pressure, psi	: 40-110
Operating Temperature, ° F	: 40-110
Shipping Weight, lbs.	: 90
Space Req'd in, L x W x H	: 30 X 20 X 57

Electrical Specifications

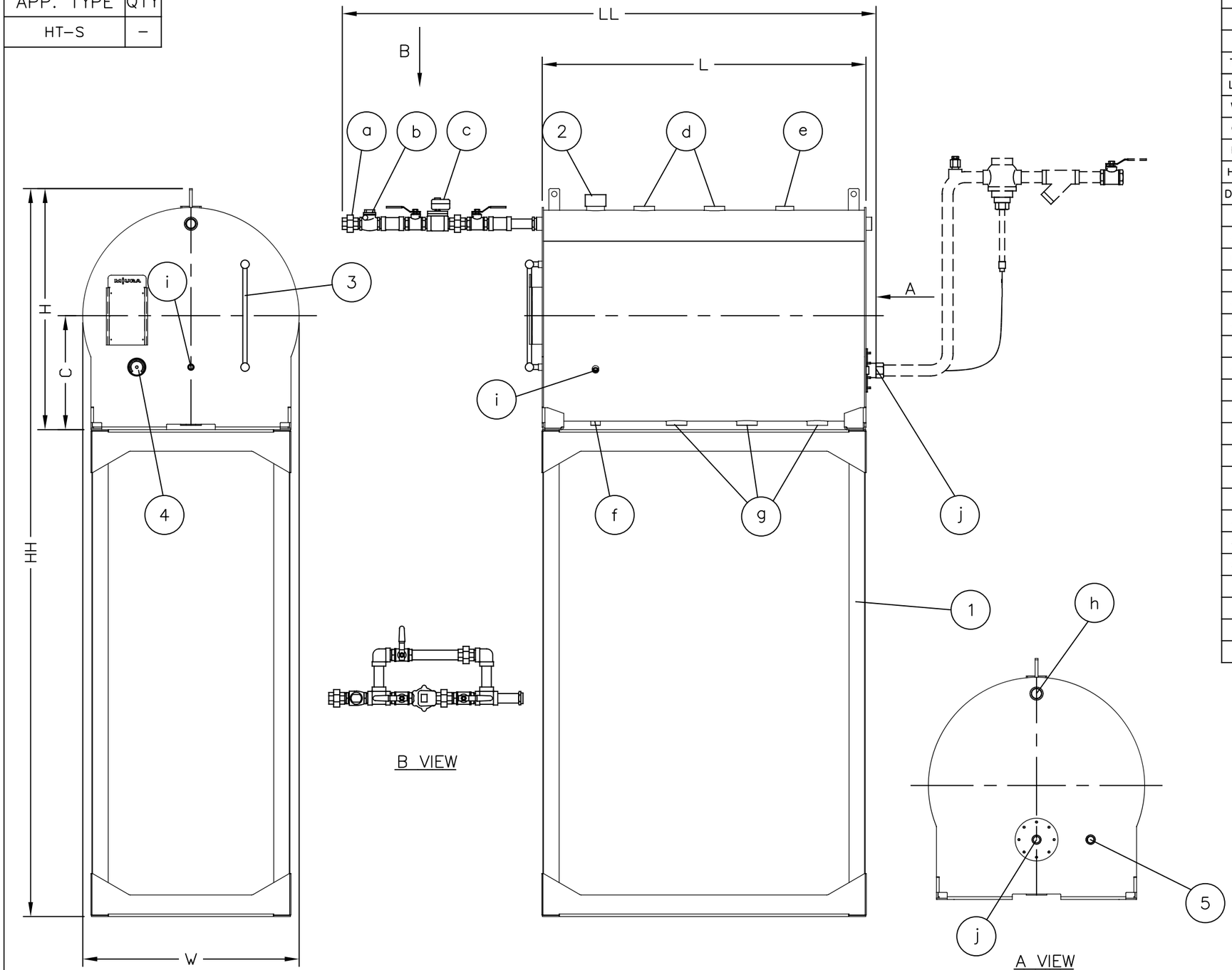
Supply Voltage	: 120V AC
Supply Frequency	: 60 Hz
Output Voltage	: 12V AC
Output Current:	: 500 mA

Front View



Model: EWS S130

APP. TYPE	QTY
HT-S	–



MIURA FEED WATER TANKS						
MODEL		HT-100S	HT-200S	HT-300S	HT-500S	HT-600S
TANK CAPACITY (GALLON to overflow)		89	188	282	506	616
LL	OVERALL LENGTH (Approximate)	79"	91"	97"	109"	126"
W	OVERALL WIDTH (Approximate)	26"	33"	40"	47"	47"
C	CENTRE TANK (Approximate)	14"	25"	21"	25"	25"
H	OVERALL HEIGHT (Approximate)	31"	38"	45"	52"	52"
HH	OVERALL HEIGHT (Note 1)	91"	98"	105"	112"	112"
DxL	TANK SIZE (Diameter x Length)	26" x 48"	33" x 60"	40" x 60"	47" x 72"	47" x 89"
CONNECTION SIZES						
a	WATER INLET (NPT screwed)	3/4"	3/4"	1 1/4"	1 1/4"	1 1/4"
b	CHECK VALVE (NPT screwed)	3/4"	3/4"	1 1/4"	1 1/4"	1 1/4"
c	MAKE-UP VALVE (NPT screwed)	3/4"	3/4"	1 1/4"	1 1/4"	1 1/4"
d	RETURN INLET (NPT screwed)	two 3"	two 3"	two 3"	two 2"	two 2"
e	VENT TO ATMOSPHERE (NPT screwed)	2"	2"	2 1/2"	2 1/2"	2 1/2"
f	TANK DRAIN (NPT screwed)	1"	1"	1"	1"	1"
g	TANK OUTLET (NPT screwed)	two 2"	two 2"	three 2"	three 3"	three 3"
h	OVERFLOW OUTLET (NPT screwed)	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
i	CHEMICAL INLET (NPT screwed)	three 1/2"	three 1/2"	three 1/2"	three 1/2"	three 1/2"
j	STEAM INJECTOR CONNECTION (Option)	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
	ITEM LIST					
1	STAND 5'					
2	LEVEL CONTROLLER (Note 2)					
3	GAUGE GLASS					
4	DIAL THERMOMETER					
5	TEMPERATURE SENSOR (Optional) 1"NPT (Note 3)					
	WEIGHT (LBS)					
	FEED WATER TANK	450	640	867	1150	1280
	STAND	290	310	310	425	425
	OVERALL WEIGHT (Note 6)	740	950	1177	1575	1705

NOTE:
1. HEIGHTS SHOWN ARE WITH 5' STAND
2. WATER LEVEL INCLUDES CONTROL PANEL WHICH IS MOUNTED AT THE CUSTOMER SITE.
3. OPTIONAL STEAM INJECTOR INCLUDES TEMPERATURE SENSOR.
4. HIGH/LOW WATER LEVEL ALARM IS AVAILABLE AS AN OPTION.
5. THIS DRAWING IS FOR DIMENSION PURPOSE ONLY. ACTUAL ITEM'S DIMENSIONS OR LOOK MAY CHANGE WITHOUT NOTICE.
6. OVERALL WEIGHT IS AN ESTIMATE WHICH MAY VARY EACH TIME.

NO	NAME OF PART	MATERIAL	QTY	REMARKS / DRAWING #

SYM	REVISION	DATE	BY
	CAD DWG – NO MANUAL CHANGES PERMITTED		

DWN.: ZOHAIB | CK'D.: | SCALE: --- | DO NOT SCALE

DATE: FEB 22, 12 | APPROVED: | THIRD ANGLE SYSTEM | DIM'N SHOWN ARE ---

MIURA BOILER CO., LTD. BRANTFORD, ONTARIO, CANADA

DESCRIPTION: FEED WATER TANK SERIES

DRAWING NUMBER 0037-0002-35C3

CMU－224HE

Automatic monitoring system to detect the slightest water hardness leakage

What is Colormetry (for hardness)?

Water hardness is considered to be the most common factor in damaging a boiler. Typically the level of hardness in the water is checked manually by using chemical reagents. Such measurements are time consuming and can result in errors in reading.
Colormetry solves all these problems by offering reagent injection, mixing and evaluation.

SPECIAL FEATURES

Automatic monitoring system for hardness leakage

- Totally automatic control. Simple and time saving procedure.
- No routine calibration necessary.
- Set standard time period monitor. (For example, every day between 9:00-17:00.)
- Monitors hardness leakage at each set time (for example, every hour) which enables early detection of hardness leakage.

Detect the slightest hardness leakage

- Detects hardness leakage to 1 mg/L by optically and electronically monitoring sample water.

Alarm and Alert Data Display

- Alarm sounds when any hardness leakage is detected. The alarm can be sent to a remote location with the external alarm contact.
- Equipped with self check/confirm function. In case the Colormetry faults, the main cause of the failure is displayed on the digital screen.

Easy to read digital screen

- Hardness level is displayed digitally (for example 0 mg/L) indicating softener efficiency. Digital display provides instant operation stage recognition.

Memory function

- Records the date and time of the five most recent alarms.

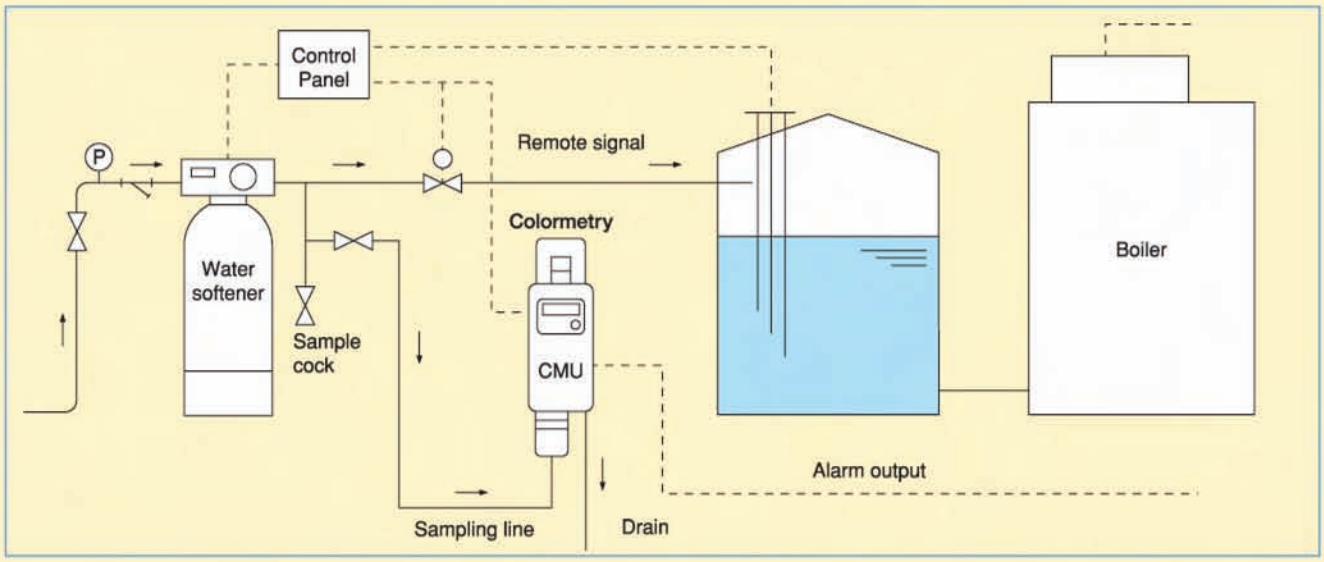
One-touch cartridge replacement

- The cartridge contains all the necessary chemical reagents and can be replaced with a one-touch, simple motion. In normal operation the cartridge does not have to be replaced for approximately 4 months.

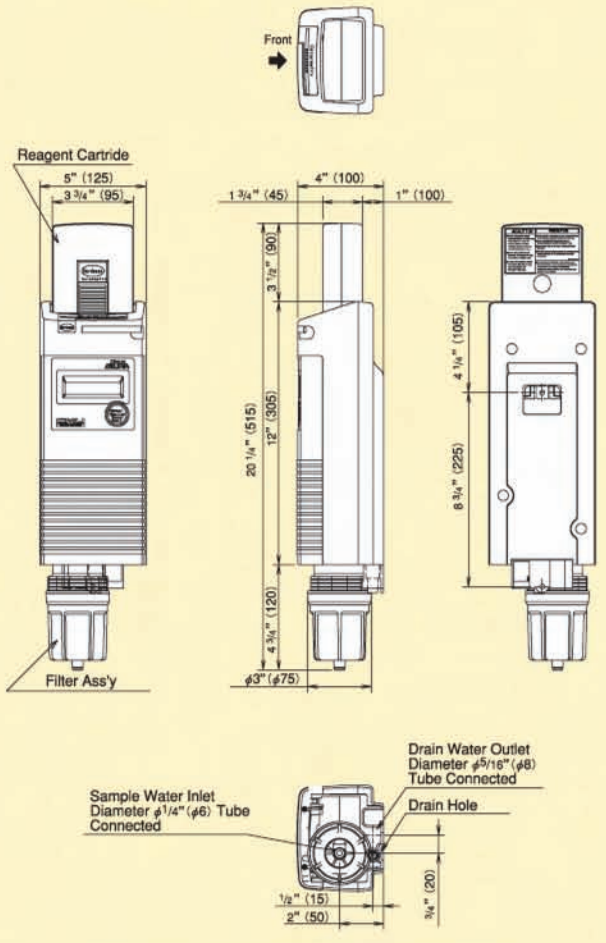
Compact design

- Unique and compactly designed automatic colorimeter device.
- Easy installation on the wall with mounting brackets attached to the device.
- One-touch connection of collection and drain lines to the device.

INSTALLATION FLOW EXAMPLE



MEASUREMENT



●Caution

※The instructions in the operation manual must be followed exactly.

※Even though Colormetry is a device for hardness leakage detection, excessive contamination other than the composition of hardness in sample water may affect the result. Therefore the sample water for the device has to be collected directory from outflow of the softener (at gauge cock).

※The shelf life for the cartridge is about one year from the date manufactured.

※Water quality affects the filter. Hard water shortens the filter life.

SPECIFICATION

Item		Colormetry CMU-224HE
Usage		Hardness monitor
Method		Colorimetric analysis
Monitor		5 leakage level indications (as CaCO3) 0mg/ℓ, 1mg/ℓ, 2mg/ℓ, 3mg/ℓ, >5mg/ℓ
Alarm Set Points		Select one from below 4 points ≧1mg/ℓ, ≧2mg/ℓ, ≧3mg/ℓ, ≧5mg/ℓ,
Remote Signal Input		No voltage contact input (Contact a or contact b)
Alarm Type		Buzzer
External Alarm Output		Open collector output Maximum capacity : DC24V 70mA
Operation Output		
Cartridge Exchange Output		
Raw Water Pressure		0.05~0.49MPa (7.2~71psi)
Water Temperature		41~104°F (5~40℃)
Operation Temperature		41~122°F (5~50℃)
Humidity		20~90%RH (No condensation, No freezing)
Power		AC24V 50/60Hz
Power Consumption		15W (※1)
Cartridge Replacement		Every 4 months(※2)
Connector Diameter(※3)	Inlet	Diameter 1/4 '' (ϕ6) tube connected
	Outlet	Diameter 5/16 '' (ϕ8) tube connected
Drainage		Approx. 1,000 mℓ/monitor (※4)
Installation		Indoor, wall mounted (※5)
Weight		4.9lb (2.2kg)
Dimensions		5'' (W) x 4''(L) x 20 1/2 ''(H) (125(W) x 100(L) x 515(H) mm)

(※1) Power consumption during operation.

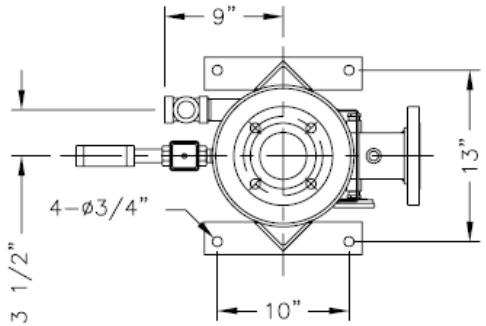
(※2) The warranty period of a reagent cartridge is 1 year for unopened product or 4 months after opening the pack. The reagent will last approximately 4 months on the basis of an hourly monitor. If monitors are taken every 30 minutes or repeated frequently, the reagent may not last for 4 months.

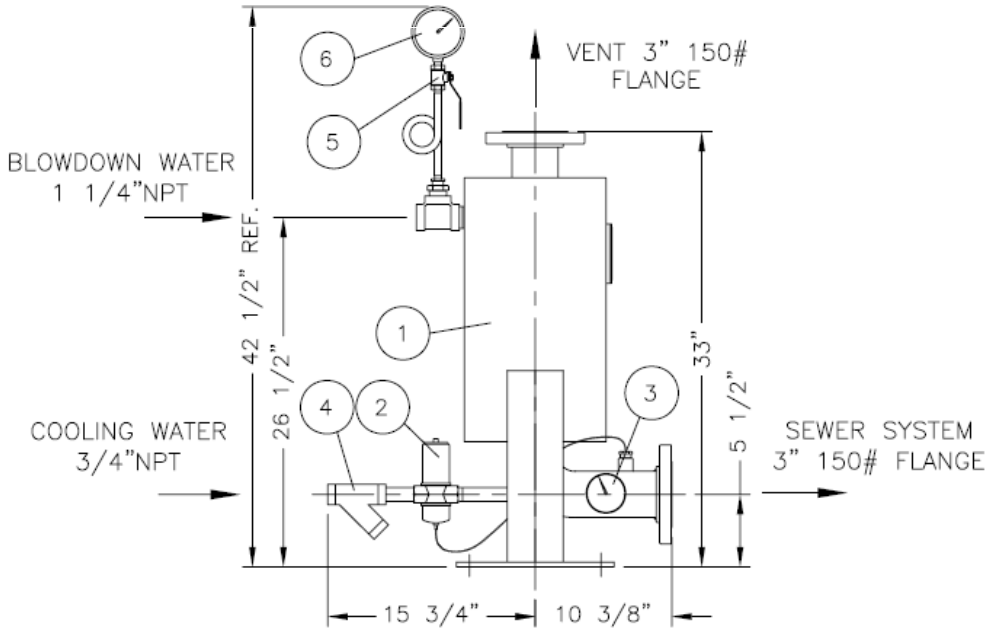
(※3) The inlet and outlet tubes are attached to the device.

(※4) The drainage volume with a fixed flux valve is installed. The drainage volume may vary depending on the water temperature or degradation of a fixed flux valve.

(※5) The mounting bracket is attached to the device.

MIURA BLOW DOWN SEPARATOR BS-10/3





Miura Blow down separator provides efficient steam separation from the blow down water and cooling capability for proper blow down system.

Package includes:

- **-After cooler with automatic temperature control valve**
- **-temperature gauge**
- **-cooling water inlet strainer**
- **-pressure gauge with stop valve**

DESIGN SPECIFICATION:

MAX. ALLOWABLE WORKING PRESSURE	90 PSIG AT 400°F
MIN. DESIGN METAL TEMPERATURE	+35 °F AT 90 PSIG
HYDROSTATIC TEST PRESSURE	117 PSIG

DESIGNED & FABRICATED PER ASME CODE SECTION VIII DIV.1-2007, ADD.2008.

NO.	NAME_OF_PART	QTY	REMARKS
1	BLOW_DOWN_SPEARATOR	1	MIURA_BS-10/3
2	TEMP._ACTUATED_VALVE	1	3/4"
3	TEMP._GAUGE	1	3"DIAL_50-300F
4	Y-STRAINER	1	3/4"NPT
5	BALL_VALVE	1	1/4"
6	PRESSURE_GAUGE	1	3-1/2"DIAL_0-100PSI

Parts Warranty Twelve Months
Pressure Vessel 7 Year Limited / 25 Year Thermal Shock Warranty

Miura Canada Co., Ltd., at its sole option, will repair or replace at no charge any Miura **component**, if found to be defective in workmanship or material within **Twelve Months** from the date of commissioning or eighteen months from the date of shipment from the factory, whichever occurs first.

Miura Canada Co., Ltd., at its sole option, will repair or replace (excluding shipping and labor charges) at no charge any **Miura pressure parts**, if found to be defective in workmanship or material, within **Seven Years** from the date of shipment from the factory, including but not limited to castable refractory of pressure vessel and wind box, inner and outer welded casings, internal insulation.

In addition, Miura Canada Co., Ltd., at its sole option, will repair or replace (excluding shipping and labor charges) at no charge any **Miura boiler pressure parts**, within T**wenty Five Years** from the date of shipment from the factory, if found to have failed due to unequal expansion, poor circulation and/or other causes usually described as “Thermal Shock”.

To qualify for this warranty:

1. Miura Service Personnel must provide start up, safety check and instructions to the end user after installation. Miura Authorized Representatives may likewise provide the start-up, safety check and instructions to the end user.
2. Start-up reports and instructions must be signed by (you) the end user to demonstrate that you have been instructed by qualified personnel.
3. Miura Canada Co., Ltd., must review, accept and retain Installation and startup reports at Miura Canada Co., Ltd.
4. The boiler must be operated in accordance with the conditions of service specified in Miura's Installation and Operation Manuals and addendums. Furthermore, the water quality must have been checked regularly and recorded to meet the standards prescribed in the aforementioned manuals. Feed water and treatment of boiler water are beyond Miura's control and are the sole responsibility of the purchaser.
5. The product must be installed within the U.S. or Canada. Any locations outside the U.S. or Canada must be approved in writing by Miura Canada Co., Ltd.

Any damages due to the presence of oil, grease, scale or deposits on the internal surfaces of the boiler, any damages resulting from foaming caused by chemical conditions of the water corrosion or caustic embrittlement or low water conditions, excessive or insufficient flow rates, or any damages during shipment, offloading, rigging or placement, **will not be covered by this warranty**.

All claims for warranty are to be presented in writing to Management at Miura Canada Co., Ltd., for review within 10 days of discovery of any defects.

The above limited warranty is extended by Miura to the original purchaser only and is not assignable or transferable to subsequent purchasers or lessees.

MIURA EXTENDS NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR SUITABILITY FOR PURPOSE WITH RESPECT TO THE BOILER OR ITS COMPONENTS OR WITH RESPECT TO SERVICES PROVIDED BY MIURA. EXCEPT AS PROVIDED HEREIN, UNDER NO CIRCUMSTANCES WILL MIURA BE LIABLE TO PURCHASER UNDER ANY TORT, NEGLIGENCE, STRICT LIABILITY, CONTRACT OR OTHER LEGAL OR EQUITABLE THEORY, FOR ANY LOSS OF USE, LOSS OF TIME, INCONVENIENCE, COMMERCIAL LOSS, LOST PROFITS OR SAVINGS OR OTHER INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE SUCH BOILER OR FOR PURCHASER'S COST OF EFFECTING COVER, TO THE FULL EXTENT SUCH MAY BE DISCLAIMED BY LAW. PURCHASER SHALL INDEMNIFY AND HOLD HARMLESS MIURA, ITS OFFICERS, AGENTS AND EMPLOYEES FROM AND AGAINST ANY AND ALL LIABILITIES, DAMAGES AND LOSSES, INCLUDING COSTS AND EXPENSES IN CONNECTION THEREWITH, FOR DEATH OF OR INJURY TO ANY PERSONS WHOMSOEVER AND FOR THE LOSS OF, DAMAGE TO OR DESTRUCTION OF ANY PROPERTY WHATSOEVER, CAUSED BY, ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE USE OF THE BOILER BY PURCHASER.

TOTE DUMPER

REFRIGERATION UNIT

KEEP COOL
Refrigeration & A/C Ltd.
Sales & Service

375 East White Hills Rd.
St. John's, NL, A1A 5X7
Tel: (709) 754-6180
Fax: (709) 754-6185
Email: keepcool@keepcoolhvacr.ca

September 6, 2018

SCS Atlantic Canada
Mt. Pearl, NL

Attn: Jeff Richardson
Re: Walk In Cooler Room

To perform the work necessary to supply and install new walk in cooler box as per the information gathered. The outside condensing unit is to be placed on the warehouse floor adjacent to the cooler and the loading door.

Quote Includes:

- Supply and install walk in cooler 3" cam lock panels, c/w insulated ceiling. **(No Floor) Exterior dimensions 24' x 24' x 18'H.** Dial type thermometer.
  - 26 Ga White Stucco Embossed finish in and out
  - Manual Cooler Bi-Part Sliding Door **96"W x 120"H** (each panel 4' Wide, Slide to Right and Left to Open) 3 Sided Face & Back frame, 3-1/16" U channel inside jambs, in and out handle, bottom stay roller guide, door stopper and sweep sill. 48"H SS Exterior kick plate. Non Heated. Ceiling panels will be 24' lengths.
- 1 new indoor air cooled indoor condensing unit **(575V/3ph/60Hz)**
- 1 new evaporator unit **(115V/1ph/60Hz)** c/w TXV, solenoid valve, thermostat, etc.
- New copper piping c/w armaflex insulation and fittings
- Drain line to run outside by gravity
- New R-407C refrigerant
- Acetylene & Silos
- Nitrogen pressure test
- Start-up and Commissioning

Not Included:

- **Power or Control Wiring**
- **Cooler Lighting**

Price:	**$ 54,528.00 plus HST**	**FOB: Mt. Pearl**

All work completed according to manufacturer specifications and environmental regulations.

Delivery: 8 weeks
Quote Valid for 30 Days

Please feel free to contact me if you have any questions.

Sincerely,
Kichelle Morrissey

If conditions are acceptable please sign, provide a purchase order, and return to Keep Cool at your earliest convenience.

Quote Acceptance:

Name:_____ PO#:_____
Signature:_____

Appendix F

City of Mount Pearl Development Permit Application and related documents

Stericycle, Inc.

Development Application

City of Mount Pearl

Robert Jarvis – (902)402-9322
9/17/2018

Stericycle Development Permit Application

Table of Contents:

Plan Development & Background

In October 2017, Eastern Health issued an RFP for the removal, treatment and disposal of biomedical waste that would apply to each of the Newfoundland & Labrador regional health authorities. The RFP challenged bidders to provide options for this service as either “on-island” or “off-island”, or a combination of both.

As the incumbent, we have been providing this service in NL for the last 5 years utilizing an “off-island” model. What this means is that we have been taking all biomedical waste streams and have been transporting them from Newfoundland to Dartmouth NS or Brampton ON for treatment and final disposal. This is a very costly way to dispose of the material due to the high transportation costs and the logistics involved in servicing the health authorities. Recognizing that there are alternatives to doing so, we submitted a response to the RFP utilizing a hybrid model of the “off-island/on-island” scenarios. Based on our submission, we were successful in our bid to continue to provide services to the health authorities.

A New Partnership with NL Health Authorities

The model we proposed will continue with off-island service for a portion of the waste stream (anatomical, cytotoxic and pharmaceutical waste), as they require incineration. However, the remaining waste, referred to as Yellow Bag (IV bags and lines, sharps, gauze dressings, gowns, masks, etc.), will be staying on-island for treatment and disposal. Yellow Bag material is treated through an autoclave system. The autoclave system uses steam heat and pressure to render the waste non-hazardous. This is the same system that we currently use in Nova Scotia, Quebec, Ontario, BC and many other sites around the world, for treating this waste stream. Once treated in this manner, the material can then be safely disposed of in the same fashion as municipal waste.

The benefits to moving to this model are numerous, and high-lighted below are some of the most impactful:

1. **The cost of treating/disposing of waste are reduced** – significant cost savings to the health authorities,
2. **Reduced reliance on off-island services** which can impede service and create inefficiencies – ferries, other treatment facilities, etc.,
3. **Revenue generation for government and local business** – landfill revenue, tax revenue, waste removal services, commercial property owners, contractors and trades, etc.,
4. **Employment and career advancement opportunities** for the local population and current team members,
5. **Environmental benefits** associated with reduced transportation and handling.

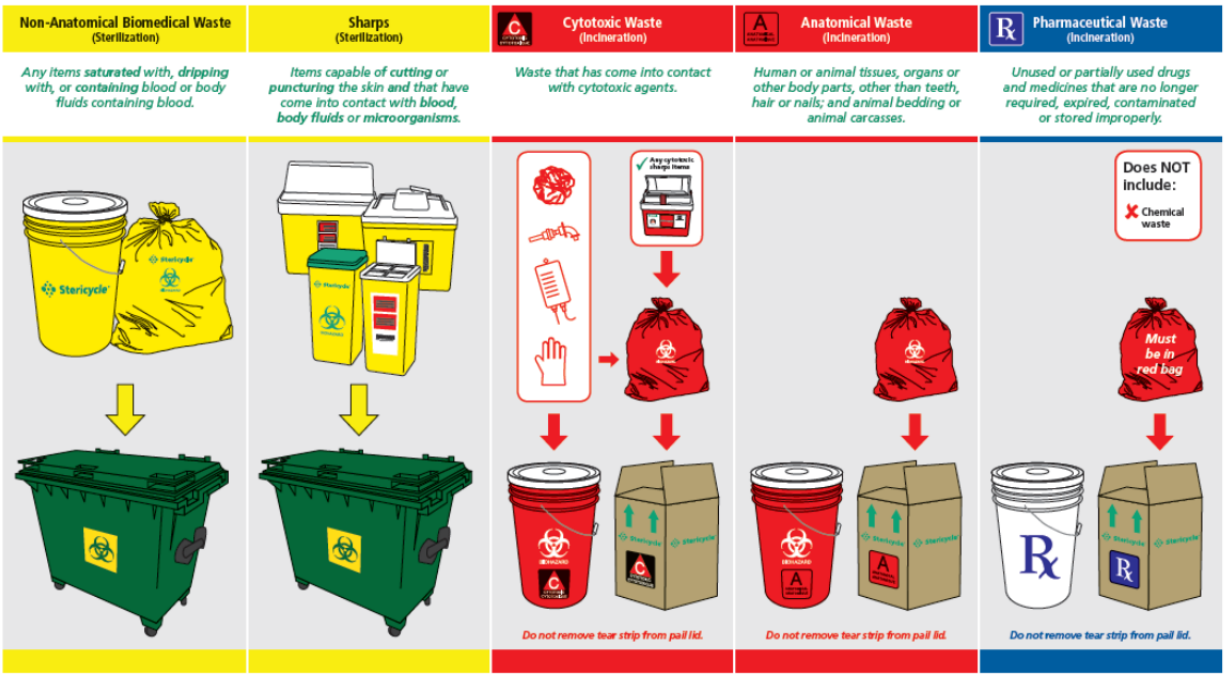
We are currently permitted to provide off-island service in the Donovan’s Industrial Park (27 Clyde Avenue). Under our current arrangement, the collected medical waste is consolidated onto trailers which ship to Nova Scotia approximately twice weekly.

Under our new model, the waste collected on the Island would be received at the new site (45 Clyde Avenue) where it would be either held refrigerated (inside our warehouse) or, treated on site. Medical waste requiring disposal by incineration will be shipped to our Brampton, ON facility and the remaining waste will be autoclaved on site and then sent to Robyn Hoods Bay Landfill, for final disposal. Robyn Hoods Bay has agreed to accept this waste pending their permit approval. Approximately 60% to 80% of the waste collected will be treated on-site.

We will be installing the equipment necessary to operate within the next six months. That equipment includes a new boiler (Miura LX-100) to feed the steam to our autoclave (Bondtech) and the associated equipment necessary to fuel the system (propane). The waste material will be compacted into a self-contained compaction system, which will be housed inside our facility. Equipment to wash and disinfect the plastic reusable containers used to collect and transport the treatable waste (Yellow Bag) equipment will also be installed at the facility. Any wastewater resulting from our process will meet the by-law requirements (testing will be performed to confirm). The autoclaving process is very well-known and accepted for its effectiveness and efficiency in treating this waste without any negative impact.

Incineration waste will be consolidated (packaged efficiently for transport) at our facility and contained in a refrigeration unit inside our warehouse until ready for transport (every 30 to 60 days). It will be transferred to a reefer trailer (refrigerated) for transportation to Brampton ON where it will be destroyed.

Note – the diagram below illustrates how the different waste streams are packaged:



Other Business Units

The site will also be home to our Environmental Solutions Group. It will be used to receive small quantities of other hazardous and non-hazardous waste – the vast majority being damaged/unsellable consumer products from retail operations in NL. This waste will be packaged in TDG compliant small containers (cardboard boxes, plastic pails, gaylords or drums) and simply stored on site (maximum of 90 days) to be re-directed to approved disposal/recycling facilities, preferably on the Island or off the island if necessary. The materials will be stored safely, in a manner that meets all guidelines (Flammable Cabinets, Spill Proof Pallets, etc.). This waste will not be processed on site in any way.

Shred-it will also operate our mobile shredding fleet out of this location. For the purposes of this business unit, the location will serve as a logistics center for equipment storage and operations.

The Site

The chosen site is located at 45 Clyde Avenue in the Donovan's Industrial Park. It is a stand-alone facility, in which we will be the only tenant. The site is fully fenced and will be secured with an access controlled, gated entrance. The building will be access controlled and monitored 24/7 with an alarm and security system that includes cameras (footage retained for 90 days). Site specifications and a facility layout are attached.

Site Plan

Appendix G

Autoclave Standard Operating Procedures

Stericycle Protecting People. Reducing Risk.	**STANDARD OPERATING PROCEDURE** **CONFIDENTIAL**	Document No:	SOP-N100
Subject :	Autoclave Operating Procedure	Effective Date:	TBD
Originator :	Operations	Revision:	00
Applies to :	Mount Pearl, NL	Page:	1 of 6

Document Approvals

Created/Revised by:

Hardeep Sarai, EHS Coordinator		
Typed/Printed Name and Job Title	Signature	Date (dd/mm/yyyy)

The signature of the Subject Matter Expert indicates this document has been reviewed and it effectively documents all system, process, or task specifications. This signature also signifies that all specifications are understood and approved by the Subject Matter Expert on the date of signing.

Management:

Donna Bisch, Health and Safety Manager		
Typed/Printed Name and Job Title	Signature	Date (dd/mm/yyyy)

The Management signature indicates this document has been reviewed and it effectively documents all specifications defined as of the date of signing. This signature also indicates that all specifications are understood and in agreement with Management maintaining governance over the affected Policy or Standard Operating Procedure (SOP).

Release Approval (As Required):

Jean – Pierre Pepin, Director, Environment, Safety and Health		
Typed/Printed Name and Job Title	Signature	Date (dd/mm/yyyy)

This signature indicates this document has been reviewed and it effectively documents all specifications defined as of the date of signing.

Effective Date:

TBD

This date indicates the date which the document officially takes effect.

Change History

From Revision	To Revision	New Rev.Date	Description

1.0 INTRODUCTION AND OVERVIEW

1.1 The purpose of this procedure is to ensure safe operation of the autoclave at all times by providing clear, step-by-step instruction on how to operate this piece of equipment.

2.0 SCOPE

2.1 Applies to the Plant Operations of the Mount Pearl, NL Facility.

2.2 The Bondtech Autoclave system is designed for the treatment of biomedical waste.

3.0 REFERENCES

3.1 Bondtech Corporation User's Manual

3.2 Bondtech Manufacturer's Specification and Maintenance Manual

3.3 Job Hazard Analysis and Hazard Assessment for Autoclave Operation

3.4 SOP-N101 Autoclave Lockout Procedure

3.5 SOP- N102 Autoclave Cleaning Procedure

3.6 SOP-N103 Waste Receiving and Acceptance Autoclave

3.7 SOP-N104 Load Preparation Instructions Autoclave

3.8 SOP- N105 Load-Unload Procedures Autoclave

4.0 DEFINITIONS

4.1 **Autoclave** – A device that has a chamber where medical waste is placed in bins and is treated / sterilized with pressurized steam at high temperatures.

5.0 EQUIPMENT/MATERIAL

5.1 Forklift

5.2 Autoclave

5.3 Autoclave Inspection Checklist

5.4 Autoclave Bins

6.0 SAFETY EQUIPMENT

6.1 CSA Approved Steel Toe Work Boots

6.2 Work Gloves

6.3 Safety Glasses

6.4 Stericycle Uniform with Visibility Markings

7.0 SAFETY PRECAUTIONS

7.1 **High Voltage Danger** – Possible Electrical Shock may occur if contact is made with any exposed electrical wiring.

7.2 Exhaust all air before opening the Autoclave Chamber Door. Having a 1 or 2 psi reading on the pressure gauge over the entire surface area of the Chamber Door will create enough force (if opened) to injure employee.

7.3 Do not exceed operating pressure as a possible explosion may occur if operating pressure is exceeded.

7.4 Adhere to procedures outlined and maintenance schedule, as provided by the equipment manufacturer at all times.

7.5 Operate the autoclave in a manner that is safe and secure at all times.

8.0 CHAMBER DOOR SAFETY

8.1 There are four safety systems in place to prevent the door from opening under pressure

- Mechanical handle
- Visual pingpong ball movement
- A pressure switch
- A limit switch

9.0 AUTOCLAVE OPERATING PROCEDURE

9.1 **WARNING:** Operation of the door is designed to be safe and reliable, however, if precautions are not followed, injury and property damage may occur. Be sure to read and thoroughly understand the procedures and principles stated here and of the Bondtech User's Manual.

9.2 **WARNING:** Under no circumstances, employees are **NEVER** allowed to modify, alter or circumvent safety devices.

9.3 **WARNING:** If pressure is vented from the vessel pressure indicator valve, **DO NOT UNLOCK THE DOOR!!!!** This indicates that pressure is present in the vessel.

9.4 Operators must be educated and made aware of the design and operation of the mechanism as well as any special characteristics in its operation. The door mechanism is **EXTREMELY** heavy and movement must be **GRADUAL** and **GENTLE** to prevent excessive damage (swing or hitting) of the various equipment components.

9.5 The door is fitted with a **DOOR SAFETY INTERLOCK**. The purpose of this is to:

- **PREVENT** the operator inadvertently opening the door while under pressure and to disable the process inside the pressure vessel.
- A part of the **DOOR SAFETY INTERLOCK** pins the operating handle in the locked position whenever vessel is pressurized.

9.6 Operation of the **DOOR SAFETY INTERLOCK HANDLE** actuates the **VESSEL PRESSURE INDICATOR VALVE** which acts as a visual, audible indicator to alert the operator if any pressure remains in the vessel once the **DOOR SAFETY INTERLOCK HANDLE** is open.

9.7 When opening the Chamber Door be sure that you:

- Check that there are no people or equipment in the path of the door
- Verify that there is no pressure in the autoclave and that all processes inside the pressure vessel have been properly terminated.
- Unlock the **DOOR SAFETY INTERLOCK HANDLE.** If the handle will not release, recheck the vessel for pressure.
- Turn the hydraulic power unit "**ON**"

9.8 Push the hydraulic valve lever (or toggle switch) marked "**LOCK RING LOCK/UNLOCK"** and hold until the locking ring stops rotating.

9.9 Release the level and it will return to the neutral central position. Rotation of the locking ring is approximately 6" to 7".

9.10 Visually verify complete rotation by viewing the complete door lug is centered within the **LOCKING RING** cutout.

9.11 On autoclave door swing cylinders, push the hydraulic valve lever (or toggle switch) marked **"DOOR OPEN/CLOSE"** "and hold it while the door swings open. As the door approaches the fully open position, slowly release the lever, allowing it to return to the neutral, central position.

9.12 On manually opened doors, the operator must prevent the door from opening too quickly which can cause damage to the door components of any other obstructions.

9.13 Do not allow the door to come to a **SUDDEN STOP** while traveling at full speed. The door is very heavy and may damage the hydraulic system if allowed to stop suddenly. The speed of the doors 72" diameter and larger can be adjusted with the flow controls located on the swing cylinder or elsewhere in the circuit.

9.14 Do not continue to drive the door open once it has reached the open position to avoid causing damage to the door's hinge.

9.15 The hydraulic power unit may be turned "OFF" at this time.

9.16 Before sterilizing the first load, all valves must be checked to ensure they are in the proper position.

9.17 The boiler must be operating and at a pressure of 110 psi.

9.18 Put the control panel **POWER** switch at the **ON** position.

9.19 Transfer loaded waste bins into the autoclave unit. Refer to SOP-P104 and SOP-P105.

9.20 To close the autoclave door, first make sure the autoclave door locking ring is at the open position and check the seal for cracks or debris.

9.21 To close the door, toggle switch to "Door Close" until closed. Always ensure that the Lock Ring is closed.

9.22 To lock the door ring, toggle switch to "Door Lock" position.

9.23 The autoclave is now ready to start processing the waste

9.24 Press the **CYCLE START** push button to initiate the cycle.

9.25 While the autoclave controller is going through the cycle, the panel lights show what segment of the cycles have been done (light on) and which segment is being done (light flashing).

9.29 The autoclave cycle has six (6) different stages:

- Pre-Vac
  - Vacuum pump starts until pressure is at -4 psi
  - Steam will start to be injected to a pressure of 55 psi
- Ramp
  - Let steam in until temperature = 300°F
- Soak
  - Let steam in as required to maintain temperature = 300°F for 30 minutes
- Blowdown
  - Steam will automatically be vented until pressure = 15 psi
- Post-Vac
  - Vacuum pump starts until pressure = -1 psi
- Atmospheric Release
  - Ambient air is allowed in the vessel until the pressure = 0 psi. Once the cycle is complete, the **CYCLE COMPLETE** light will go on. The buzzer will sound and it is now safe to open the door.

9.30 The waste has now been treated and can be removed from the autoclave

9.31 Before opening the autoclave door, check the autoclave chart to make sure the cycle has been completed correctly and put your initials on the chart. If you notice any irregularities on the chart (i.e. the autoclave cycle did not complete as indicated above) notify your supervisor immediately and wait for his or her instructions before removing the waste from the autoclave.

9.32 At the end of the shift, remove the chart.

9.33 Press **CHART** to stop the chart and then remove the chart.

9.34 Make sure there is no pressure left in the autoclave before attempting to open the door.

Note: You will not be able to open the door if there is pressure inside the vessel, as there are both a mechanical and electrical interlock preventing the opening of the door when the vessel is under pressure.

9.35 Refer to SOP-P105 for Unloading the Autoclave and SOP-P102 for Autoclave Cleaning Procedure.

Stericycle Protecting People. Reducing Risk.	**STANDARD OPERATING PROCEDURE** **CONFIDENTIAL**	Document No:	SOP-N106
Subject :	Autoclave Verification Testing (Biological Efficacy)	Effective Date:	TBD
Originator :	Operations	Revision:	00
Applies to :	Mount Pearl, NL	Page:	1 of 7

Document Approvals

Created/Revised by:

Hardeep Sarai, EHS Coordinator		
Typed/Printed Name and Job Title	Signature	Date (dd/mm/yyyy)

The signature of the Subject Matter Expert indicates this document has been reviewed and it effectively documents all system, process, or task specifications. This signature also signifies that all specifications are understood and approved by the Subject Matter Expert on the date of signing.

Management:

Donna Bisch, Manager of Health and Safety		
Typed/Printed Name and Job Title	Signature	Date (dd/mm/yyyy)

The Management signature indicates this document has been reviewed and it effectively documents all specifications defined as of the date of signing. This signature also indicates that all specifications are understood and in agreement with Management maintaining governance over the affected Policy or Standard Operating Procedure (SOP).

Release Approval (As Required):

Jean – Pierre Pepin, Director, Environment, Safety and Health		
Typed/Printed Name and Job Title	Signature	Date (dd/mm/yyyy)

This signature indicates this document has been reviewed and it effectively documents all specifications defined as of the date of signing.

Effective Date:

TBD

This date indicates the date which the document officially takes effect.

Change History

From Revision	To Revision	New Rev.Date	Description

1.0 INTRODUCTION AND OVERVIEW

1.1 Verification testing is required to ensure the autoclave system continues to achieve the required level of treatment of the biomedical waste (log 6 reduction – sterilization).

1.2 The EZ Test ESZ/6 Indicator system is a dual readout biological indicator system specifically designed for rapid and reliable monitoring of the steam sterilization process.

1.3 Adhere to the operations manual, procedures outline and maintenance schedule, as provided by the equipment manufacturer at all times.

1.4 Operate the autoclave in a manner that is safe and secure at all times.

1.5 Only specifically trained autoclave operators can perform the verification test.

.

2.0 SCOPE

2.1 Applies to the Plant Operations at the Mount Pearl, NL Autoclave Facility.

2.2 Once per week all four container/bins will have spore indicator testing performed to validate the steam sterilization process.

3.0 REFERENCES

3.1 Bondtech Corporation User's Manual

3.2 Bondtech Manufacturer's Specification and Maintenance Manual

3.3 Job Hazard Analysis and Hazard Assessment for Autoclave Operation

3.4 Stericycle ULC – Approved Operating Plan and Delisting Protocol.

3.5 Port Coquitlam Site – Weekly Validation Test Form **Refer to:** Appendix A

4.0 DEFINITIONS – N/A

5.0 EQUIPMENT/MATERIAL

5.1 Five verification testing rods

5.2 ESZ/6 Biological Indicators/Steam (populated with >1 x 10^6 *Bacillus Stearothermophillus Spores*)

5.3 Mesa Lab Steam Incubator (57°C)

5.4 BondTech Autoclave

5.4 Weekly Validation Test Form

6.0 SAFETY EQUIPMENT

6.1 CSA Approved Steel Toe Work Boots

6.2 CSA Approved Safety Eye Wear

6.3 Work Gloves

7.0 SAFETY PRECAUTIONS

7.1 There is a glass ampule inside the plastic vial of the biological indicator. To avoid the risk of serious injury from flying debris due to a ruptured ampule:

7.1.1 Allow the biological indicator to cool for the recommended time period before crushing.

7.1.2 Avoid crushing or excessive handling of the biological indicator before cooling which may cause the glass ampule to burst.

7.1.3 Wear safety glasses and gloves when removing the biological indicator from the sterilizer.

7.1.4 Wear safety glasses when crushing the biological indicator.

7.1.5 Handle the biological indicator by the cap when crushing and tapping.

7.1.6 Do not use your fingers to crush the glass ampule.

7.1.7 Do not roll the biological indicator between your fingers to wet the spore strip.

7.1.8 **DO NOT OPEN** test pack prior to sterilization.

8.0 PROCEDURE

8.1 A predetermined supervisor/manager will be assigned the duty of ensuring the spore test is performed as required under this procedure.

8.2 An assigned autoclave operator, usually the senior operator that is on duty during the specified test time, will perform spore testing.

8.3 All 5 autoclave bins will be prepared with biological indicators

8.4 Insert 2 biological indicators (ESZ/6) in each of the five holders.

8.5 The indicators have to be located in the bottom section of the holders such that they are approximately 30 cm from the bottom of the rod.

8.6 The holders must be located, straight up, in the center of the bin.

8.7 Biomedical waste will be loaded as per usual operating procedures to ensure that the biological indicators are located as close as possible to the middle of the waste bin, in the most difficult area for the steam to access.

8.8 Treat all 5 bins in the autoclave as per normal operating procedures.

8.9 Identify the test load on the autoclave cycle by writing “Validation Test” on the chart at the appropriate load.

8.10 It is important that the Autoclave Chart “Validation Test” is maintained to keep a permanent record of:

- Processing temperatures
- Pressure
- Time

8.10 Retrieve the holders and the biological indicators.

8.11 If one or more indicators turn positive within the incubation period – the District Manager, EHS Coordinator, and Director of Environment, Health and Safety must be immediately notified.

8.12 No other waste cannot be processed until the cause of the problem has been determined and fixed.

8.13 Review chart recorder readings to ensure consistent processing times, temperatures and pressures. Review test procedure with operator and ESH Coordinator.

8.14 Once the cause of failure has been identified, corrected and documented, another test must be run.

8.15 The District Manager and the Director of Environment, Health and Safety will evaluate the results of the investigation and will determine the required next steps.

8.16 If one or more indicators turn positive within the incubation period—the District Manager, EHS Coordinator, and Director of Environment, Health and Safety must be immediately notified.

8.17 No treated waste stored on site can be allowed to leave the site unless it is re-treated following a successful test.

8.18 Review chart recorder readings from pre and post cycles to ensure consistent processing times, temperatures and pressures.

8.19 Once the cause of failure has been identified, corrected and documented, another test must be run with previously treated waste.

8.20 Waste cannot be processed until the cause of the problem has been determined and fixed.

Appendix A

Mount Pearl, NL - WEEKLY VALIDATION TESTS

PROCEDURE:

Insert 2 biological indicators (ESZ/6) in each of the 5 holders
Insert the holders straight up in the middle of each bin
Fill each bin with non-anatomical biomedical waste
Treat all 5 bins in the autoclave under normal operating conditions
Retrieve the holders and the biological indiactors
Break the internal vials and incubate for 48 hours

VALIADATION TEST RESULTS

DATE: _____ Cycle start time: _____
(attach autoclave chart)

Total weight treated: _____kg

Biological indicator Lot Number: _____

	BI #s	Result	BI #s	Result
Bin 1	1		5	
Bin 2	2		6	
Bin 3	3		7	
Bin 4	4		8	
Bin 5	5		10	
Control	C1		C2	

Appendix H

Biological Indicators Specifications

EZTest®

Mesa Biological Indicators

EZTest® SCBI for Steam, EO and H2O2

EZTest® is a self-contained biological indicator for monitoring steam, ethylene oxide or hydrogen peroxide sterilization. EZTest contains bacterial spores on a small carrier packaged within a small, thermoplastic culture tube. Inside the thermoplastic culture tube is a sealed-glass ampoule of specially-formulated soybean casein digest culture medium containing a color indicator which turns a dramatic yellow when spores grow. EZTest is easy-to-use and produces visual results within 24 hours (steam or hydrogen peroxide) or 48 hours (ethylene oxide) without laboratory transfers.

- FDA 510(k) notified (steam and EO)
- 24-hour results for steam or H2O2
- 48-hour results for EO
- Easy to culture
- No laboratory required
- Dramatic color change

Ordering Information

EZTest® for Steam / Flash			
Species	**Catalog #**	**Min. Population**	**Qty/Box**
G. stearothermophilus	EZS/5	1.0 x 10^5	100
G. stearothermophilus	EZS/525	1.0 x 10^5	25
G. stearothermophilus	EZS/6	1.0 x 10^6	100
G. stearothermophilus	EZS/625	1.0 x 10^6	25
EZTest® for Ethylene Oxide			
Species	**Catalog #**	**Min. Population**	**Qty/Box**
B. atrophaeus	EZG/6	1.0 x 10^6	100
B. atrophaeus	EZG/625	1.0 x 10^6	25
EZTest® for Hydrogen Peroxide (H2O2)			
Species	**Catalog #**	**Min. Population**	**Qty/Box**
G. stearothermophilus	EZH/5	1.0 x 10^5	100
G. stearothermophilus	EZH/6	1.0 x 10^6	100

Mesa Laboratories, Inc.
625 Zoot Way
Bozeman, MT 59718

MesaLabs

Tel: 877.746.8883
www.MesaLabs.com
bicustomerservice@mesalabs.com

Appendix I

FS Z-Chlor Specifications and MSDS

PRODUCT SPECIFICATION REPORT

PROD. #2443
1097

FS Z-CHLOR™

Heavy-Duty Chlorinated Detergent

DESCRIPTION

Heavy-duty, liquid chlorinated detergent. Designed primarily to be used in C.I.P. and circulation cleaning in food processing plants. Contains alkaline builders, water conditioners and sequestering agents, inorganic emulsifiers, and hypochlorite.

FEATURES	BENEFITS
• Heavy-duty cleaner	• Removes heavy accumulations of grease, protein, blood, and stains, and also deodorizes.
• Chlorinated	• To aid in the removal of protein, blood, and stains, as well as deodorizing.
• Hard-water tolerant	• Performance and rinsability are unaffected by water hardness. Rinses freely and leaves no scum or film on surfaces.
• Compatible with foamers	• Designed for use with Zep Foam-Sta or comparable foam boosters to generate a thick, stable, highly-active, long-lasting foam that cleans with a minimum of scrubbing.
• Non-foaming	• Generates no foam of its own, so it is ideal for C.I.P. and circulation cleaning, spray cleaning of tanks, machine washing, and other procedures requiring foam-free detergents.
• Color-coded	• Product and labeling are color-coded yellow (chlorinated cleaner) for easy use with other color-coded Zep food systems products.
• U.S.D.A. authorized	• Authorized for use as an all surface cleaner for all departments of federally-inspected food processing plants. (Category A)

APPLICATIONS

Recommended for foam additive cleaning, C.I.P. and circulation cleaning, spray cleaning of tanks, machine washing, on all surfaces of food processing plants. Also used in:

Bakeries
Bottling Plants
Eating & Drinking Facilities
Dairy Farms
Eating & Drinking Establishments
Egg Processing Plants
Meat & Poultry Processing Plants
Nursing Homes & Hospitals
Sanitary Services

COMPANION PRODUCTS

Zep Bakery Pan Cleaner, Zep Concentrated Glass CLeaner, Zep FS Antimicrobial Hand Cleaner, Zep FS Pot Scrub, Zep FS Egg Wash, Zep Persoan, Zep Instant Hand Sanitizer, Zep Paper Towels and Towel Dispenser, Zep Trash Receptacles, Zep Trash Bags

SPECIFICATIONS

Physical Form	Liquid
Color	Clear, yellow
Odor	Mild, chlorine
pH (Concentrate)	13.9
pH, 1 oz./gallon	11.7
Density	11.5 lbs./gal.
Foam Characteristic	Very low, unstable
Phosphate Content (as P)	3.68%
D.O.T. Shipping Label	Corrosive
Storage Temperature	32°F to 120°F

PACKAGING

Pail
Drum

ZEP MANUFACTURING COMPANY
Your One Source for Cleaning and Maintenance Products

1-877-I BUY ZEP
(1-877-428-9937)

PRODUCT LABEL

FS Z-CHLOR™

Heavy-Duty Chlorinated Detergent

ZEP MANUFACTURING COMPANY
ATLANTA, GA 30301
A division of Acuity Specialty Products Group, Inc.
CLEAN ACROSS AMERICA
AND THROUGHOUT THE WORLD ™

BEFORE USING THIS PRODUCT, PLEASE READ THIS ENTIRE LABEL.

KEEP OUT OF REACH OF CHILDREN
FOR INDUSTRIAL AND INSTITUTIONAL USE ONLY
NOT FOR HOUSEHOLD USE OR RESALE

PRECAUCION
AL USUARIO: Si usted no lee inglés, no use este producto hasta que la etiqueta le haya sido explicada ámpliamente.
(**TO THE USER:** If you cannot read English, do not use this product until the label has been fully explained to you.)

This product is designed exclusively for industrial and institutional use by trained, professional maintenance personnel. Label directions and precautions must be followed exactly. Zep Manufacturing Company will not be responsible for any injury, loss, or damage if product is used in any manner not in compliance with label directions, or if precautions are not observed.

HMIS RATINGS

HEALTH	3	4 EXTREME 3 SERIOUS
FLAMMABILITY	0	2 MODERATE 1 SLIGHT
REACTIVITY	0	0 MINIMAL
PERSONAL PROTECTION EQUIPMENT	D	Goggles, Gloves, Apron and Boots

CHLORINATED CLEANER

FS Z-CHLOR™

HEAVY-DUTY CHLORINATED DETERGENT

CLEAN • DESTAIN • DEODORIZE

Chlorinated, alkaline, non-foaming, heavy-duty liquid detergent recommended for C.I.P. and circulation cleaning, foam cleaning, and spray cleaning of tanks, and machine washing of all surfaces in food processing plants and food service establishments. For use in canneries, dairies, bakeries, seafood processing plants, wineries, vegetable processing plants, bottling plants, red meat and poultry processors, institutional kitchens, breweries, supermarkets, egg processing plants, and restaurants. Authorized by the USDA for use in federally-inspected meat and poultry plants.

DIRECTIONS:
C.I.P. APPLICATION: Flush system with water. Prepare a solution of 1 to 2 ozs. of FS Z-CHLOR per gallon of water. Circulate through the system until the soils are loosened and/or removed as determined by inspection. Drain system and rinse thoroughly with water.
FOAM CLEANING: Foam Tank and Solution Foam Equipment: Mix 2 to 4 parts ZEP FS Z-CHLOR with 50 to 100 parts hot (160° - 180oF) water. Add 1 part foam booster to each 50 to 100 parts of the solution. Injection-Type Foam Equipment: Mix 2 to 4 parts ZEP FS Z-CHLOR with 5 parts water and stir thoroughly. Add 1 part foam booster to each 8 to 10 parts solution and stir thoroughly. Inject the solution at a rate of 1 to 10 to 1 to 20 parts hot water. Apply as a foam to all surfaces and allow to soak up to 5 minutes, scrub as necessary with a nylon pad or brush and rinse with high pressure, hot water.
WASHING SHELL EGGS:
1. Mix 1 part product with between 64 to 128 parts (100°F to 120°F) water. Maintain wash solution at an even temperature at least 20°F warmer than the temperature of the eggs to be washed. Do not use water containing more than 2 parts per million iron for shell egg washing, unless equipment capable of removing the excess iron is installed on the water supply.
2. Wash eggs promptly after gathering.
3. After washing, spray rinse eggs with warm potable water containing an approved sanitizing compound. Rinse water should be slightly warmer than wash solution.
4. Dry eggs with warm air stream. Eggs should be reasonably dry before casing or breaking.
CAUTION: Do not use in conjunction with acid products, as hazardous fumes may be produced.

DANGER!
Contains potassium hydroxide
CAUSES BURNS
STRONG OXIDIZER

CONTACT CAN CAUSE SEVERE SKIN BURNS AND BLINDNESS BY TISSUE CORROSION. DO NOT allow product to contact skin, eyes, or clothing. DO NOT breathe vapors or spray mist. DO NOT swallow this product. Repeated exposure can have cumulative effects. Further information on the effects of overexposure is included on the Material Safety Data Sheet, which is available upon request.

Zep advocates limiting exposure to all chemical products. Wear tight-fitting, splash-proof safety goggles during product use and when eye contact is possible, especially contact lens wearers. Wear nitrile, neoprene, natural rubber, or other resistant gloves and alkali resistant footwear; also wear a rubber apron whenever splashing can occur. For spray applications, use product in well ventilated areas only; open windows/doors and use exhaust fans. Remove contaminated clothing promptly and DO NOT rewear until thoroughly cleaned. After handling wash hands thoroughly with soap and water.

FIRST AID:
EYES: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
SKIN: Immediately flush contaminated skin with plenty of water for at least 15 minutes. Get medical attention immediately.
INHALATION: Move exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Get medical attention immediately.
INGESTION: If this product is swallowed, DO NOT induce vomiting. If affected person is conscious give plenty of water to drink. Get medical attention at once.

DISPOSAL AND/OR SPILL INFORMATION: As with all cleaning and maintenance procedures, run-off from the cleaning or maintenance process should be diverted to a collection vessel, or where permitted, to a sanitary sewer (consult local and state regulations) and not allowed to soak into the ground or to enter a storm sewer. If this product is spilled or contaminated and cannot be used, creating the need for disposal, absorb product on an inert absorbent material, such as Zep-O-Zorb or Zep Super Sorbent and deposit in a clean, sealable D.O.T. specification container for disposal as a hazardous waste. Rinse area well with water.
STORAGE: Store tightly closed container in dry area at temperatures between 40°F (4°C) and 120°F (49°C). DO NOT mix this product or its solutions with any other chemical, except when directed by the label.

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Material name : ZEP FS Z-CHLOR 210L

Material number : 244376C

Manufacturer or supplier's details

Company : Zep Inc.

Address : 11627 - 178 Street
Edmonton, Alberta T5S 1N6
Canada

Telephone : 404-352-1680

Emergency telephone numbers

For SDS Information	:	Compliance Services 1-877-428-9937
For a Medical Emergency	:	877-541-2016 Toll Free - All Calls Recorded
For a Transportation Emergency	:	CHEMTREC: 800-424-9300 - All Calls Recorded.

Recommended use of the chemical and restrictions on use

Recommended use : Food and Beverage Facility Maintenance

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	liquid
Colour	clear, light yellow
Odour	mild

GHS Classification

Acute toxicity (Oral) : Category 4
Skin corrosion : Category 1
Serious eye damage : Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.

Precautionary statements : **Prevention:**
P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
P363 Wash contaminated clothing before reuse.
Disposal:
P501 Dispose of contents/container in accordance with local regulation.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration [%]
potassium hydroxide	1310-58-3	>= 10 - < 30
sodium hypochlorite	7681-52-9	>= 1 - < 5

SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.

If inhaled : If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician.

In case of skin contact : Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
Wash off immediately with plenty of water for at least 15 minutes.
Remove contaminated clothing and shoes.
Wash contaminated clothing before reuse.
If skin irritation persists, call a physician.

In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.

		Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Continue rinsing eyes during transport to hospital. Remove contact lenses. Protect unharmed eye. If eye irritation persists, consult a specialist.
If swallowed	:	Clean mouth with water and drink afterwards plenty of water. Keep respiratory tract clear. Do NOT induce vomiting. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.
Most important symptoms and effects, both acute and delayed	:	Symptoms may include blistering, irritation, burns, and pain. Effects are immediate and delayed. Effects are dependent on exposure (dose, concentration, contact time). Symptoms of overexposure may include disorientation; dizziness; and confusion. May progress to unconsciousness, paralysis, and convulsions. Causes severe skin burns and eye damage. Review section 2 of SDS to see all potential hazards. Harmful if swallowed.
Notes to physician	:	Treat symptomatically. Symptoms may be delayed. Contact a poison treatment specialist immediately if large quantities have been ingested or inhaled, or contact with large portions of the body have occurred.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Water spray jet Alcohol-resistant foam Carbon dioxide (CO2) Dry chemical
Unsuitable extinguishing media	:	High volume water jet
Specific hazards during firefighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	:	Carbon dioxide (CO2) Carbon monoxide Chlorine compounds
Specific extinguishing methods	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must

be disposed of in accordance with local regulations.

Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.

Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Neutralise with acid.
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling : Do not breathe vapours or spray mist.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
To avoid spills during handling keep bottle on a metal tray.
Dispose of rinse water in accordance with local and national regulations.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Observe label precautions.
Electrical installations / working materials must comply with the technological safety standards.
This product is formulated for use on hard metal surfaces.
This product does contain a reducing agent(s) that may corrode soft metals. This product should be stored in its original packaging or containers of similar construction, and not in metal vessels.

Materials to avoid : Do not store near acids.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of	Control parameters /	Basis

		exposure)	Permissible concentration	
potassium hydroxide	1310-58-3	(c)	2 mg/m3	CA AB OEL
		C	2 mg/m3	CA BC OEL
		C	2 mg/m3	CA QC OEL
		C	2 mg/m3	ACGIH

Engineering measures : effective ventilation in all processing areas

Personal protective equipment

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.

Hand protection
Material : Neoprene gloves

Eye protection : Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures : When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Colour : clear, light yellow

Odour : mild

Odour Threshold : No data available

pH : 13.5 - 14

Melting point/freezing point : No data available

Boiling point : 104.44 °C

Flash point :
Not applicable

Evaporation rate : 1

Upper explosion limit : No data available

Lower explosion limit : No data available

Vapour pressure : No data available

Relative vapour density : No data available

Density	:	1.28 g/cm3
Solubility(ies)		
Water solubility	:	soluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity		
Viscosity, kinematic	:	4.9 mm2/s (20 °C)

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Stable
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No decomposition if stored and applied as directed.
Conditions to avoid	:	Heat, flames and sparks.
Incompatible materials	:	Acids This product contains sodium hydroxide or potassium hydroxide that may corrode some soft metals and may react with tin, zinc, aluminum to form hydrogen gas.
Hazardous decomposition products	:	No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Potential Health Effects

Aggravated Medical Condition	:	None known.
Symptoms of Overexposure	:	Symptoms may include blistering, irritation, burns, and pain. Effects are immediate and delayed. Effects are dependent on exposure (dose, concentration, contact time). Symptoms of overexposure may include disorientation; dizziness; and confusion. May progress to unconsciousness, paralysis, and convulsions.

Carcinogenicity:

IARC	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH	No component of this product present at levels greater than or

equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Acute toxicity

Product:

Acute oral toxicity	:	Acute toxicity estimate : 646.97 mg/kg Method: Calculation method
Acute dermal toxicity	:	Acute toxicity estimate : > 5,000 mg/kg Method: Calculation method

Skin corrosion/irritation

Product:

Remarks: Extremely corrosive and destructive to tissue.

Serious eye damage/eye irritation

Product:

Remarks: May cause irreversible eye damage.

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Aspiration toxicity

No data available

Further information

Product:

Remarks: No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

No data available

Persistence and degradability

No data available

Bioaccumulative potential

Product:

Partition coefficient: n-octanol/water	:	Remarks: No data available

Mobility in soil

No data available

Other adverse effects

No data available

Product:

Additional ecological information	:	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Toxic to aquatic life with long lasting effects.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of in accordance with local regulations.
Contaminated packaging	:	Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

Transportation Regulation (TDG) / Règlement Pour Le Transport (TMD): (Canada):
UN3266, CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S., (POTASSIUM HYDROXIDE), 8, II

Transportation Regulation / Règlement Pour Le Transport: IMDG (Vessel):
UN3266, CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S., (POTASSIUM HYDROXIDE), 8, II

Transportation Regulation / Règlement Pour Le Transport: IATA (Cargo Air):
UN3266, Corrosive liquid, basic, inorganic, n.o.s., (POTASSIUM HYDROXIDE), 8, II

Transportation Regulation / Règlement Pour Le Transport: IATA (Passenger Air):

UN3266, Corrosive liquid, basic, inorganic, n.o.s., (POTASSIUM HYDROXIDE), 8, II

Transportation Regulation / Règlement Pour Le Transport: 49 CFR (USA):
UN3266, Corrosive liquid, basic, inorganic, n.o.s., (POTASSIUM HYDROXIDE), 8, II

The product as delivered to the customer conforms to packaging requirements for shipment by road under Transport Dangerous Goods (TDG) Canada regulations. Additional transportation classifications noted above are for reference only, and not a certification or warranty of the suitability of the packaging for shipment under these alternative transport regulations.

SECTION 15. REGULATORY INFORMATION

This product has been classified according to the hazard criteria of the HPR and the SDS contains all of the information required by the HPR.

The components of this product are reported in the following inventories:

DSL	All components of this product are on the Canadian DSL
TSCA	On TSCA Inventory

For information on the country notification status for other regions please contact the manufacturer's regulatory group.

Inventory Acronym and Validity Area Legend:

TSCA (USA), DSL (Canada), NDSL (Canada)

SECTION 16. OTHER INFORMATION

WHMIS - GHS Label Information:

Hazard pictograms :

Signal word : **Danger:**
Hazard statements : Harmful if swallowed. Causes severe skin burns and eye damage.
Precautionary statements :

Prevention: Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response: IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor. Wash contaminated clothing before reuse.

Disposal: Dispose of contents/container in accordance with local regulation.

Version:	1.1
Revision Date:	09/26/2018
Print Date:	09/27/2018

We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind. The information in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. Users should make their own investigations to determine the suitability and applicability of the information for their particular purposes. This SDS has been prepared by the Compliance Services organization supporting this manufacturer, supplier or distributor.

Zep Inc. markets products under well recognized and established brand names such as Zep®, Zep Commercial®,Zep Professional®, Enforcer®, National Chemical™, Selig™, Misty®, Next Dimension™, Petro®, i-Chem®, TimeMist®, TimeWick™, MicrobeMax®, Country Vet®, Konk®, Original Bike Spirits®, Blue Coral®, Black Magic®, Rain-X®, Niagara National™, FC Forward Chemicals®,Rexodan®, Mykal™, and a number of private labeled brands.

Appendix J

City of Mount Pearl – sewer connections

Pepin, Jean-Pierre

Subject: FW: 45 Clyde Ave - Site Plan
Attachments: 45 Clyde Ave - Site Plan.PDF

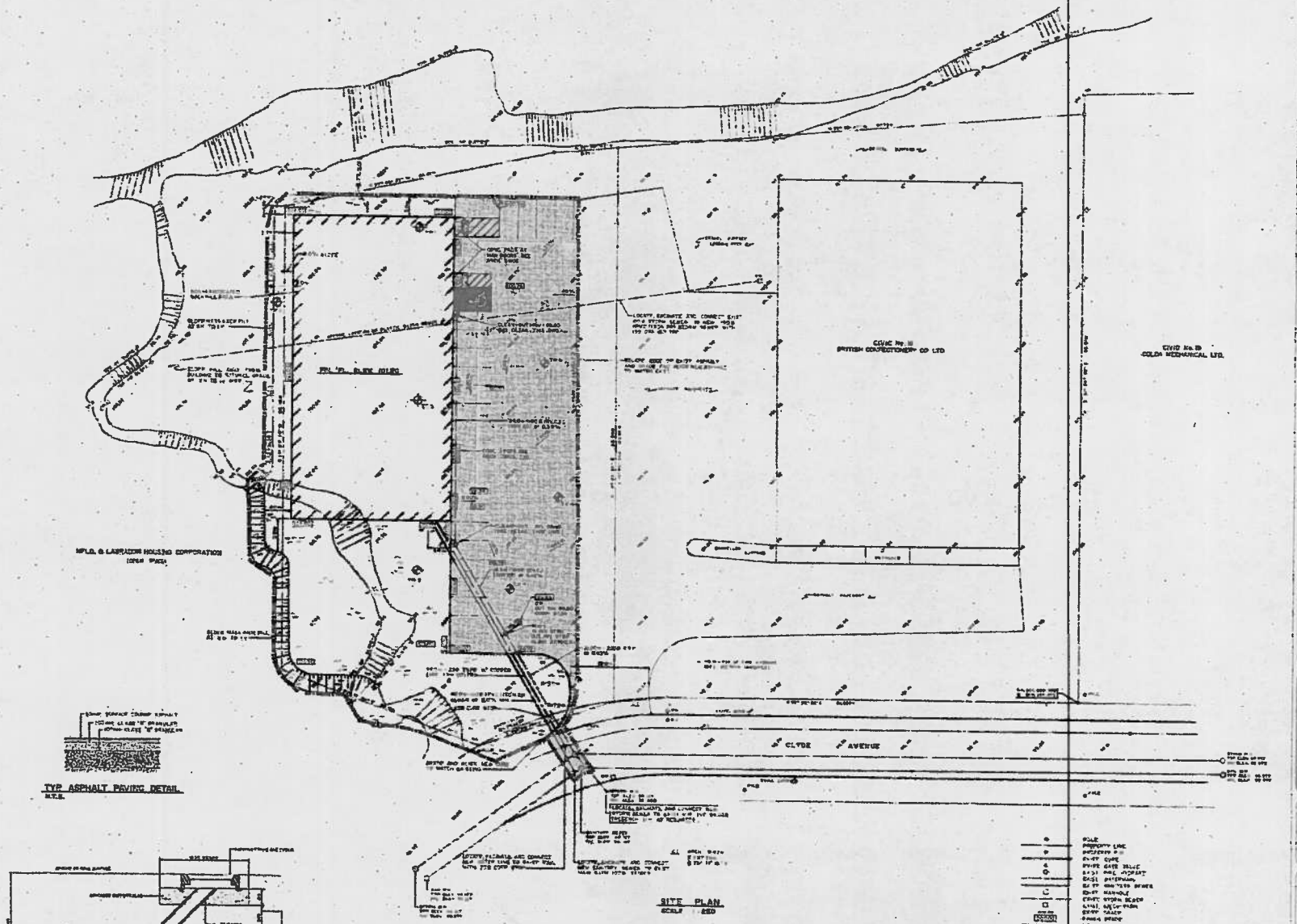
From: Chris Cornish [mailto:ccornish@cluny.ca]
Sent: Wednesday, November 14, 2018 3:35 PM
To: Jarvis, Rob
Cc: Kam Rizvi; Paul North - Martek Morgan Finch
Subject: 45 Clyde Ave - Site Plan

Hi Rob

Attached is the Site plan from the original building drawings for #45. The plan show the two sewer connection (sanitary sand storm) both of which terminate in the corresponding municipal sewers under Clyde Ave.

Regards,

Chris Cornish
Partner
ClunyGroup
Email: ccornish@cluny.ca
Tel: (416) 866-8305
Cel: (416) 318-6180
Fax: (416) 866-8191
Web http:\\www.ClunyGroup.ca



NOTES

1. Existing storm sewer location is approximate only. This system shall be maintained in operation by contractor until connection to the new storm sewer system is complete.
2. Site shall be cleared and grubbed and, in areas to be paved, 100 mm class 'A' Granular, 150 mm Class 'B' Granular and 50 mm surface course asphalt to be placed over finish sub-grade. Prior to placing granulars, obtain Engineer's approval of finish sub-grade.
3. A soils report was prepared by EnvEngineering Geosciences Limited and is available at the offices of the prime consultant.
4. These Project Documents have been prepared in conformation with the standard "specifications for Municipal Services" as published by the Province of Newfoundland and Labrador, Department of Municipal and Provincial Affairs.
5. Tenders shall specifically note Page 6 of the soils report for this project prepared by EnvEngineering Geosciences Limited. The report states that "Sufficient existing material should be removed to provide a minimum of one metre of well compacted earthfill (11) beneath all perfect area. This will require excavation of some existing fill from areas to be occupied by parking and roadway surfaces."
6. Areas to be landscaped shall receive 100 mm topsoil and approved sods, and shall be sloped and graded to Engineer's satisfaction.

NO.	REVISION	DATE	BY
	NFT DEVELOPMENT		

PRIME CONSULTANT

NEWPLAN CONSULTANTS LTD.
consulting engineers

PROJECT
BRITISH BAZAAR
MANUFACTURING PLANT
DONOVANS INDUSTRIAL PARK
CLYDE AVE. MOUNT PEARL

DRAWING TITLE
SITE PLAN

SCALE
AS NOTED

DESIGNED A. WILLIAMS | DRAWN G.J.B. ROSE

CHECKED N.G. MANUEL | DATE

COORDINATION | APPROVED

PROJECT NO. 92070 | DWG. NO. — 101 | REV. A | SHT.

Appendix K

Contingency Plan

STERICYCLE, ULC.

CONTINGENCY PLAN
MOUNT PEARL FACILITY

NEWFOUNDLAND OPERATIONS

November 2018

INTRODUCTION

Stericycle, ULC. is a Canadian company specialized in the transportation and disposal of biomedical waste, pharmaceutical waste and other hazardous waste. This plan covers designated actions team members must take to ensure safety and protection of the environment in the event of spills at the facility. The objectives of Stericycle's Contingency Plan are as follows:

- To minimize any adverse effects on people, damage to property or harm to the environment in an emergency/spill situation;
- To facilitate a rapid and effective emergency response and recovery;
- To provide assistance to emergency and security services; and
- To communicate vital information to all relevant persons involved in the transport emergency (both internal personnel and external agencies) with a minimum of delay.

This plan helps our team members to prepare for the unexpected by identifying response mechanisms to a variety of potential crises arising from the transport of dangerous goods. It outlines the necessary resources, personnel, and logistics which will allow for a prompt, coordinated and rational approach to a transport incident. A copy of this Emergency Response Plan is to be kept in the facility and will be reviewed annually by the EHS Department.

RESOURCES

Attached to this plan is an accurate, up-to-date telephone roster for emergencies, as outlined below:

Stericycle Contact Personnel:

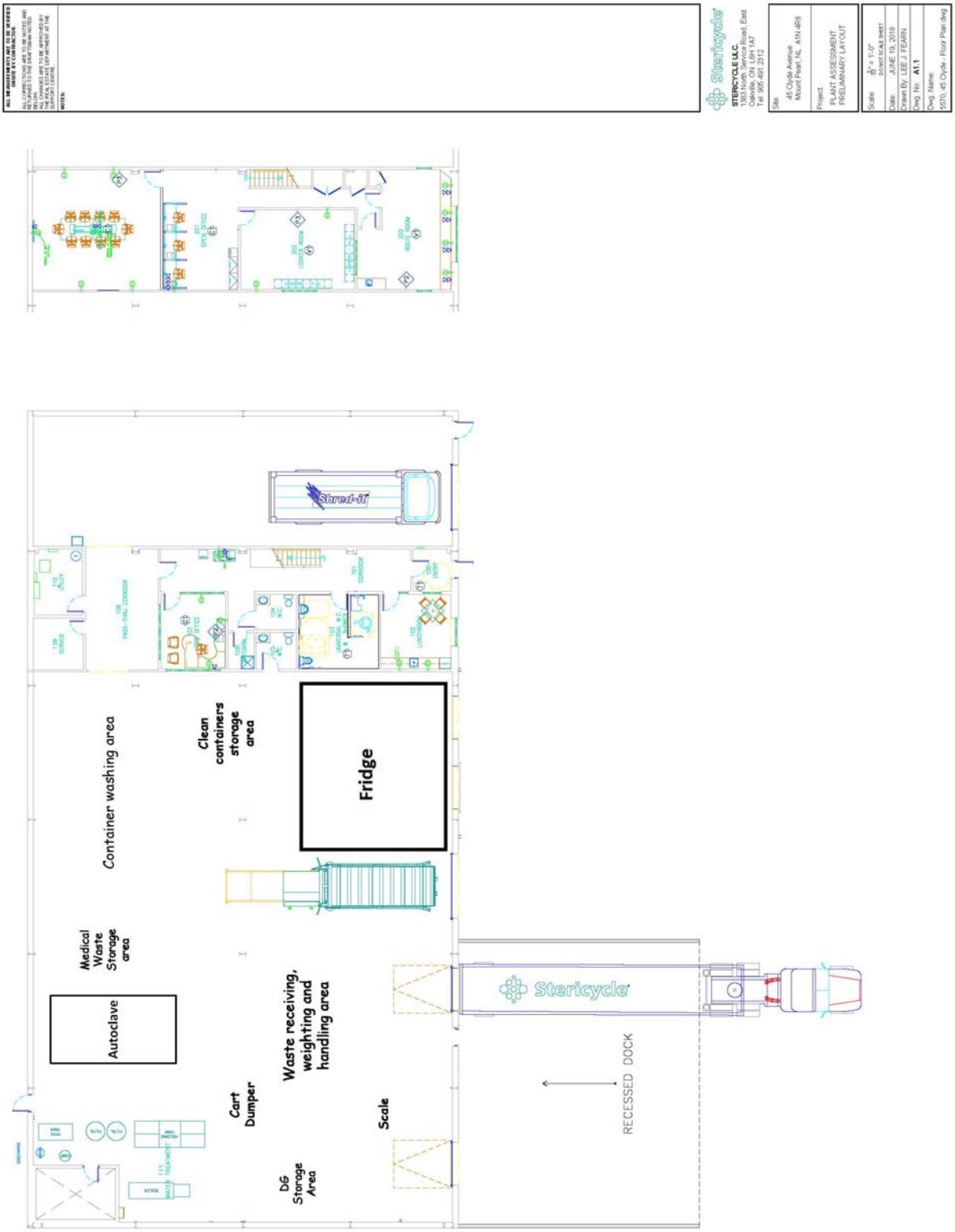
- Transportation Supervisor
- Facility Manager (On-Scene Commander)
- District Manager
- Safety Specialist
- Director of Health, Safety and Compliance

External Organizations include:

- Canadian Coast Guard Emergency Response Centre
- Ministry of the Environment Spill Response Organization
- Fire/Police
- ERTS (third party responders)
- Canutec

The attached telephone roster will describe the communication network to be used and provide clear operational instructions for the use of mobile phone, radios and other communication devices.

SITE PLAN


Shred-it
Container washing area
Clean containers storage area
Fridge
Medical Waste Storage area
Autoclave
Waste receiving, weighting and handling area
Cart Dumper
Scale
DG Storage Area
Stericycle
RECESSED DOCK

An inventory of emergency response equipment, a checklist of specific resources and items of equipment available in the facility (two in the warehouse and one in the office):

Spill Kit Contents:

1. Copy of the Contingency Plan

2. Emergency Response guidebook

3. Protective equipment:
    - two pairs rubber gloves
    - one pair safety goggles
    - two pairs disposable coveralls
    - one respirator
    - visibility vest

4. Clean-up equipment:
    - one small plastic broom
    - one plastic dust pan
    - one plastic shovel
    - flagging tape

5. Absorbent materials:
    - 80 L container of absorbent material (Absorb-all)
    - one roll paper towels
    - two 3x3 meter cloth sheets
    - 1 bale of water-based chemical absorbent pads (18” x 18” x 3/8”)
    - 2 rubber drain covers

6. Disinfectant:
    - 2 x 4.5 L container of quaternary detergent
    - 200 Chlorine tablets
    - Plastic water sprayer

7. Removal Packaging:
    - three cardboard boxes (box, double bag liner, ties, tape)
    - four yellow plastic bags plus twist ties
    - four “biohazard” labels

PREPAREDNESS

In order to maintain a state of readiness, annual training will be conducted and will provide drivers the capability for rapid and competent response, vital to the success in an emergency situation. All personnel who have an active role in this plan will be trained in the key aspects.

Practice drills and simulation exercises will allow Stericycle to scrutinize the plan under conditions which approximate an actual incident.

SPILLS

- Upon discovery of a spill, the team member must immediately evaluate the situation, contain the spill as much as possible and contact the On-Scene Commander (OSC) to inform him/her of:

    1) The amount and type of material involved
    2) The location of the spill
    3) If it is contained or not

- **Notification and Alerting Procedures:**
  When a spill is discovered the reporting/alerting mechanism must be activated. It should include:

  The OSC is to contact the Canadian Coast Guard Emergency Response Centre at 772-2083 or 1-800-563-9089 immediately upon becoming informed a spill has occurred. If the OSC is unavailable the team member is to contact the 24 hour Emergency Response Centre

- If it is a minor spill and within the team member control, he/she, should:

    1) Wear the appropriate personal protective equipment (PPE) during all phases of the cleanup.

    2) Follow proper spill response procedures (see below), as trained, using equipment in Spill Kit.

- If it is a major spill and beyond the control of the team member, he/she should:

    1) Isolate the area and do not allow any one near the spill/leak

    2) Wait for the OSC's instructions and guidance

Duties and Responsibilities of the On-Scene Commander (OSC):

The On-Scene Commander is the person in charge of the countermeasures phase of the operation. This person is a decision maker and a communicator who must be flexible in order to cope efficiently with a changing situation. This person is a manager who must be able to organize people into an effective team. The OSC is responsible for:

- Directing containment, clean-up, disposal and restoration procedures;
- Providing a focal point of information incorporating the concerns of the participating organizations the public and the media;
- Preparing a report covering all aspects of the spill;
- Collecting samples for possible analysis

Spill Control and Clean –up Procedures

- OSC will identify the nature and quantity of spilled material (biomedical waste, pharmaceutical waste or waste consumer packaged goods or other chemicals used in water treatment or container cleaning)
- OSC will ensure the spill is contained and is not reaching a drain or the natural environment
- In the event the spilled material has reached a drain or the natural environment, OSC will contact ERTS for additional resources to respond and clean up the spill
- Upon arrival of the responder, OSC will inform them of any health and environmental hazards related to the spill – this will include details regarding the material spilled (SDS if available) and overall knowledge of the operations. If medical waste is involved, the OSC will inform the responders about the blood borne pathogen risks, including needle stick risks.
- **For smaller spills where staff on site can respond**, the procedure below will be followed:

    1) Put on protective clothing: rubber gloves, goggles, coveralls.
    2) Pour the Absorb-all absorbent material around the spill to make a dike to keep any spilled liquid in the waste and the bleach from spreading.
    3) If the waste is biomedical waste, add sixty (60) chlorine tablets to the water in the sprayer. Close the lid and gently agitate for two minutes to mix. Number of tablets is based on 10 per liter.
    4) Completely wet the spill by spraying carefully with disinfectant. Let the spill sit for at least 30 minutes for the disinfectant to work.

5) Prepare a container (complete with liner).

6) After the disinfectant has been in contact with the spill for the required time, put on the goggles and gloves and pour absorbent material carefully over the spill area. Make sure that all liquid is absorbed by the absorbent material.

7) Clean up the debris using the broom and dust pan, and put it in the container.

8) Remove protective gear:
   - Put dustpan, and broom in a yellow plastic bag.
   - Put gloves and coveralls in the container for disposal.
   - Put the goggles and respirator in another yellow plastic bag.

9) Disposal of spilled material

- OSC will keep collected spilled material safely on-site and request instructions from the Director, SH&C as to the proper disposal of this material
- The nature of the spilled material and any disinfectant or other used to collect and clean the area will be used to determine the proper disposal of the collected material.
- Under no circumstances will spilled material be disposed of in a municipal landfill.

10) Report the spill using the Spill Report form at the end of the document

Restauration of the Spill Site

Once the spill has been properly cleaned up, site restauration may be required. This will be determined in consultation with the Department of Environment. The Direct, SH&C will initiate the discussion with the Department to ensure appropriate measures are put in place immediately.

Stericycle Spill Reporting Form

Instruction for Completing Form:

The Employee has the responsibility of reporting spills promptly. The Employee and Supervisors must fill out designated portions of this form and all parts must be signed, where indicated. The Supervisor is responsible for investigating the incident and for ensuring corrective action to prevent recurrence of the incident for due diligence purposes. If personal injury is involved all appropriate procedures must be followed as outlined in Stericycle's Emergency Response Plan and Medical/First Aid Procedures. This report must be completed and provided to the EHS Department for review.

Report Completed by: _____ Report Date: _____

Department: _____

SECTION 1-4 MUST BE COMPLETED BY EMPLOYEE AT THE SCENE OF THE INCIDENT

Please print clearly and tick the correct box

Type of Spill: ☐ Load ☐ Fuel ☐ Drum ☐ Pail

☐ Box ☐ Tote ☐ Tank ☐ Other _____

Material Description: _____ DG: ☐ No ☐ Yes **If Yes: Class (es)**: _____

UN Number (s): _____ **Shipping Name(s)**:

_____

MSDS Available: ☐ No ☐ Yes _____

Volume (L) Quantity (kg): _____

Medium or media in to which the spill occurred: ☐ Air ☐ Land ☐ Sewer

☐ Building ☐ Sewer ☐ Other _____

Duration of Event or Release: _____ **Containment Measures:**

_____

1. STERICYCLE EMPLOYEE INFORMATION

Name: _____ Phone: (H)_____ (W)_____

Address: _____ Sex: ☐ M ☐ F

_____ Date of birth:_____

_____ Position: _____

Experience in the job: _____ (years/months)

Start time: _____ ☐ am ☐ pm

Work arrangement: ☐ Casual ☐ Full-time ☐ Part-time ☐ Other

2. DETAILS OF INCIDENT

Incident Date: _____ Incident Time: _____

Reported to: _____

Date of Occurrence: _____ Time: _____

Location of incident: _____

Closest Intersection (if applicable): _____

City: _____ Province: _____

Incident Description: _____

_____

_____

_____

_____(Also complete diagram on page 3)

Did the Spill result in an evacuation? ☐ **No** ☐ **Yes**

What job function / task was being performed? _____

Check box or describe the surface conditions of the area where the injury occurred?

☐ **Wet** ☐ **Dry** ☐ **Oily** ☐ **Uneven** ☐ **Debris in area** ☐ **Other:** _____

If this injury involved **MATERIAL HANDLING** answer the following:

Material / Container type: _____

Weight of Material / Container Handled: _____ KG

Material issues or problems: _____

Position of Material / Container: _____

Check box off the type of exertion the employee was using:

☐ **Lifting** ☐ **Pulling** ☐ **Pushing** ☐ **Reaching** ☐ **Twisting** ☐ **Other:** _____

If this spill resulted in an injury → **FILL OUT INJURY REPORT**

Type of Injury: _____ Taken to Hospital: ☐ **No** ☐ **Yes** _____

3. DETAILS OF WITNESSES

Name: _____ Phone: (H)_____ (W) _____

Address: _____

_____

4. INCIDENT DIAGRAM

Type

Instructions for Transportation:

Indicate lanes, direction vehicles were travelling, building location, point of impact, etc.

Instructions of Plant/Warehouse:

Indicate location, point of impact, equipment used, etc.

5. OTHER PARTY INFORMATION

□ Incident does not involve another vehicle or pedestrian but only property damage → go to Section 6

Name: _____ Phone: (H)_____ (W)_____

Address:_____

Phone: (H)_____ (W)_____ (C) _____

Driver License #: _____ Class: ____ Prov: _____ Date of birth:_____

Passenger: □No □Yes → Name: _____ Telephone: _____

Injury: □No □Driver □Passenger →Pre-existing injury noted: □No □Yes _____

Type of Injury: _____ Taken to Hospital: □No □Yes _____

OTHER VEHICLE INFORMATION

Unit Nu: _____ Body type: _____ Year: _____ Make: _____ Model _____

License Plate: _____ Prov: _____ VIN _____

Insurance Company: _____ Policy #: _____
Description of Visible Damage: _____

_____

Point of impact on other vehicle: _____ Approx. cost of damages: $ _____

Other vehicle drivable: □Yes □ No Other vehicle load carrying: □ No □ Yes → Spill: □Yes □ No

Incident involves a pedestrian: □No □ Yes → Name: _____ Tel : _____

Address: _____

Injury: □No □Yes → Pre-existing injury noted: □No □Yes _____

Type of Injury: _____ Taken to Hospital: □No □Yes _____

6. NON VEHICULAR PROPERTY DAMAGE

If incident involves damages to other property (building, road barriers, fences, gates, etc...)

Owner's full name: _____ Tel: _____

Property address: _____

Description of damages: _____

_____

_____(Also complete diagram on page 3)

Approx. cost of damages: $ _____

7. ADDITIONAL INFORMATION

Attach separate sheet which includes but is not limited to:

a. _____ Maps and photos of Incident

b. _____ Product disposal (attach copies of Bill(s) of Lading)

c. _____ Containment Measures

d. _____ Description of all remediation activities

e. _____ Actions taken or anticipated to prevent future occurrences

f. _____ Additional comments which may be relevant to the spill event

List All Persons Notified of Spill:

Name	Agency/Company	Phone Number	City/Town
1.			
2.			
3.			
4			
5.			
6.			
7.			

8. INCIDENT INVESTIGATION (comments to include causal factors):

Investigated By: □ Supervisor □ WHSC Rep □ EHS Department □ Labour Canada Officer

Date of Investigation: _____

Questions: _____

_____

NOTES: (describe the events / actions leading up to the injury / incident)

_____

_____

_____

UNSAFE CONDITIONS	**UNSAFE ACTS – Describe in events sections**
□ Inadequately guarded □ unguarded	□ Operating without authority □ Operating at unsafe speed

□ defective tools, equipment, substance □ design or construction □ Illumination inadequate for task □ Ventilation inadequate □ PPE Incorrect □ Housekeeping deficient □ other: _____	□ Making safety devices inoperative □ Unsafe loading, placing or mixing □ Taking an unsafe position □ working on moving equipment □ Distraction, teasing or horseplay □ failure to use PPE □ other: _____

Was the Incident/Injury Preventable?: □ Yes □ No

If yes, explain:

_____

_____

_____

9. RISK ASSESSMENT

Probability of Recurrence: □ HIGH □ MEDIUM □ LOW

Severity of outcome: □ HIGH □ MEDIUM □ LOW

Level of risk: **1 2 3 4 5** (Circle One)

LOW HIGH

10. ACTIONS TO PREVENT RECURRENCE

Action	By whom	By when	Date completed

Corrective Measures (check all apply):

□ Reinstruction of person involved □ Reassignment of person □ Ergonomic Assessment
□ Improved PPE □ Equipment Repair/Replacement □ Correction of Congested Area
□ Installation of Guard or Safety Device □ Improve Work Procedure □ Substitute Tool/Equipment □ □Check with Manufacturer □ Improvement Inspection Requirements □ Improve Housekeeping
□ Improve Design/Construction □ Warning/Formal Reprimand □ Other: _____

11. ACTIONS COMPLETED

□ Feedback to person involved Date: _____

SUPERVISORS SIGNATURE: _____ **Date:** _____

12. FOLLOW-UP COMMENTS AND REVIEW

FOLLOW UP OF CORRECTIVE MEASURES:

_____

_____

_____

_____

_____

WHSC COMMENTS:

_____

_____

_____

_____

REVIEW:

Reviewed By Employee(signed): _____ Date: _____

Reviewed by WHSC (signed): _____ Date: _____

Reviewed by District Manager (signed): _____ Date: _____

Reviewed by EHS Department.(signed): _____ Date: _____

***NOTE: All WSIB / WCB documents must be filed with this report. Please ensure that a copy is provided to the District Manager to be placed in the employee file and to the ESH Department.**

Telephone Roster

Stericycle Contact Personnel:

Transportation Supervisor	Mathieu Losier	506-878-8316
Facility Manager	TBD	TBD
District Manager	Rob Jarvis	902-402-2251
Safety Specialist	Serge Goyette	450-645-3311
Director, SH&C	Jean-Pierre Pepin	819-743-4772

External Organizations:

Ministry of the Environment	800-563-6181
24 hour Pollution Line	800-563-2444
Fire/Police	709-729-3703
Canutec	613-996-6666
Canadian Coast Guard Emergency Response Centre	709-772-2083
	800-563-9089
ERTS	800-924-6804