OPERATIONS PLAN

NORLITE LLC
COHOES, NEW YORK
NYD080469935

PREPARED FOR:

NORLITE LLC
628 SOUTH SARATOGA STREET
COHOES, NEW YORK 12047

PREPARED BY:

NORLITE LLC
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June 2014

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1.0 CERTIFICATION AND FACILITY DESCRIPTION

Due to the operations and hazardous waste management activities performed at the Norlite LLC (Norlite) located in Cohoes, New York, Norlite LLC is required to obtain a Part 373 Permit from the New York State Department of Environmental Conservation (NYSDEC). As part of the Part 373 Permit application process, the NYSDEC required Norlite LLC to prepare this Operations Plan for the Norlite LLC (Norlite). The purpose of this Operations Plan is to: describe the hazardous waste management activities that occur at the facility and the procedures that have been implemented to properly manage waste in accordance with the 6 NYCRR 373 regulations; describe the design and operation of the hazardous waste management units located at the facility to ensure compliance with the 6 NYCRR 373 regulations; describe compliance with other applicable federal and state regulations; and present the procedures and safeguards implemented at the facility to prevent hazards from adversely impacting human health or the environment.

This Operations Plan is incorporated by reference into the Norlite LLC (Norlite) Part 373 Permit. In the event that changes are made to the facility that affect the content of this Plan, this Plan will be updated in accordance with the requirements of Condition D of Module 1 of the facility's Part 373 Permit.

1.1 Certification

I certify under penalty of law that this document and the Part 373 Permit Application, including all attachments and documents incorporated by reference, were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Date: _____ _____

Signature

Name: _____

Title: _____

Company: _____

1.2 General Description

Norlite LLC (Norlite) is located on the southern boundary of the City of Cohoes, New York. Norlite LLC is a wholly owned subsidiary of Tradebe Environmental Services LLC. Norlite's aggregate plant has been in existence since 1956. The facility consists of a production operation and a quarry for shale. Norlite's processing facility occupies about 12 acres of a 221 acres plot owned by Norlite.

The Norlite facility produces an expanded shale aggregate in two dry process rotary kilns. Raw materials are quarried on-site and transported to the kilns via a conveyor system. Kiln No. 1, manufactured by Taylor is 175 feet long, whereas Kiln No. 2, manufactured by Allis-Chalmers, is 180 feet long. Both kilns have an outside diameter of 11 feet and consist of a steel shell lined with 6-inch refractory brick, for an effective inside diameter of 10 feet. The operation is used in the production of lightweight building materials and construction products.

Norlite receives industrial organic wastes (hazardous waste), specification and off-specification used oil, fuel oil, and comparable fuels (in addition to natural gas) for use in its two kilns. These materials are tested in accordance with the Waste Analysis Plan (WAP) to ensure the wastes may be accepted at the facility under the facility's RCRA permit for use as liquid low grade fuel (LLGF). Additionally, the analysis is used to determine the composition of the waste to ensure compliance with emissions from the kilns.

Norlite uses a mixture of these energy sources as fuel for its two kilns. The raw shale and fuel source are fed into the hot end of the kiln at a specified feed rate. Temperatures within the kilns are maintained within the permit required range. Emissions from the kilns are then fed through an emissions control systems.

Both kilns have identical emission control systems. The systems include both wet and dry emission control devices for the collection and removal of particulate matter, hydrogen chloride (HCl), metals, and other gaseous species.

1.3 Facility Capacity

Capacity Authorized (Existing)

Current authorized storage area, waste types and capacity for LLGF is as follows:

AREA	ACTIVITY AND WASTE TYPE[1,2]	AUTHORIZED CONTAINER VOLUMES[3,4]	MAXIMUM VOLUME
CONTAINER MANAGEMENT AREAS			
LLGF and Solids Processing Building	Liquid Waste Storage in 5, 15, 30, 55 and 85 gallon drums. Emptying drums to Tank 200A.	5, 15, 30, 55 Gallon Drums	9,900 gallons in 180 55-gallon drum equivalents
Truck Unloading Area	Liquid Waste Storage in 5, 15, 30, 55 and 85 gallon drums	5, 15, 30, 55 Gallon Drums	4,785 gallons in 87 55-gallon drum equivalents
TANKER TRUCK AND ROLL-OFF MANAGEMENT AREA			
Tanker Truck & Onsite Roll-off Staging Area	Onsite generated non-liquid solid waste (baghouse bags, PPE) stored in roll-offs, Offsite generated solid or hazardous waste tankers and	Up to 50 cubic yard rolloff, 8,000 gallon tanker trucks, single trailer drum transport trucks	13 parking spaces (60’ x 200’)

	transports, Roll-off containers for transportation-related temporary storage and/or transfer		
TANK MANAGEMENT AREA			
LLGF Building	LLGF Storage and blending in tanks 100A, 100B, 100C, 200A, 200B, and 200C	 8,613 Gal 8,613 Gal 8,613 Gal 9,271 Gal 8,613 Gal 8,613 Gal	 9,491 Gal 9,491 Gal 9,491 Gal 10,663 Gal 9,491 Gal 9,491 Gal
Covered Tanks	LLGF Storage and blending in tanks 300, 400, 500, and 600	 26,682 Gal 26,682 Gal 26,682 Gal 17,974 Gal	 27,903 Gal 27,903 Gal 27,903 Gal 18,940 Gal
Equalization Tanks	LLGF Storage and blending in tanks 101A, 101B, 102A and 102B	 1,174 Gal 1,174 Gal 1,174 Gal 1,174 Gal	 1,266 Gal 1,266 Gal 1,266 Gal 1,266 Gal
LLGF and Solids Processing Building	LLGF Operating SP100 dispersion tank.	 527 Gal	 623 Gal

1. *Unit codes are as described in the Part A Application.*
2. *Specific waste types and waste codes are presented in Schedule 1 of Module I: Exhibit C (containers), and Exhibit D (tanks) and in the WAP incorporated by reference into this Permit.*
3. *85-gallon overpacks can be used to secure leaking/damaged drums.*
4. *The total volume stored in drums shall not exceed 14,700 gallons, which is equivalent to 267 55-gallon drums.*

1.4 Topographic Map

6NYCRR Subpart §373-1.5(a)(2)(xix) requires that the application contain a topographical map containing a variety of specified parameters. The map includes all of the specified parameters. The topographical map and wind rose included in this application are set forth as follows:

Drawing NY003-373-1 is a topographic map with a scale of 1 inch equals 200 feet and contour intervals of 5 feet. Drawing NY003-373-1 shows the facility legal property line boundaries, an area extending 1000 feet beyond the facility property line and surrounding land uses. It also contains the annual wind rose. The annual wind rose is based on data generated by the National Weather Service Station at the Albany, New York Airport. This weather station is located approximately 5.3 air miles west of the site and is the closest station to the site. This drawing also shows the 100-year floodplain area, surface waters including intermittent streams and direction of their flow.

The special additional information requirements for the protection of the groundwater of 6NYCRR Subpart §373-1.5(a)(3) are not applicable because Norlite does not operate hazardous waste surface impoundments, land treatment units or landfills.

1.5 Location Information: Floodplain Standard

The topographical map in Drawing NY003-373-1 shows the 100-year floodplain area at the facility and hazardous waste operations units at the facility. The 100-year floodplain information was obtained from the Flood Hazard Boundary Maps for the City of Cohoes prepared as part of the National Flood Insurance Program.

The hazardous waste operating units at the facility are not located within the 100-year floodplain and therefore are not affected by the 100-year floodplain requirements of 6NYCRR subpart §373-2.2(j)(1). Accordingly, the information requirements of 6NYCRR subpart §373-1.5(2)(xi)(b) are not applicable.

1.6 Traffic Information

6NYCRR Subpart §373-1.5(a)(2)(x) requires information on the traffic patterns in and around the vicinity of the facility. The intent of requiring submittal of the traffic related information is to insure that the movement of hazardous waste will be conducted safely to minimize the risk of accident. The traffic patterns at Norlite's facility support such a determination.

The hazardous waste movement at the plant for on-site processing and burning is minimal. Four (4) to seven (7) bulk tank deliveries of liquid waste and one (1) to two (2) truck loads of containers and/or roll offs are received daily on average. Daily volume received averages between 25,000 to 50,000 gallons. Approximately, two (2) to four (4) truck loads of drums containing the filter sludge, tank sludge and other ancillary waste material (an aggregate of 8,000 to 16,000 gallons) are shipped from the site annually, if not processed through the plant.

In addition to the above, up to 17 trucks per day of transshipments related to transfer station activities are received and/or shipped.

Figure B-1 shows the on-site traffic pattern. All roads are two-way. Waste delivery trucks are restricted to the entrance road from Elm Street, the road between the scale and the LGF/hazardous waste unloading area. Traffic control consists of a manned gatehouse at security gate 1, card access at security gate 2, and various traffic signs (for speed, directional, right of way, caution and flow) throughout the plant.

Fully loaded tankers and trailers of waste have a maximum gross weight of 80,000 lbs. All road surfaces consist of graded and compacted crushed shale as well as road rock base in

high truck traffic areas. Roads are designed to accommodate a gross weight in excess of 100,000 pounds of off-highway earth movers.

Earth movers and frontend loaders involved in the quarry and raw mill operation are generally confined in that area. Twenty (20) to fifty (50) trailer and dump truck shipments of finished lightweight aggregate and raw shale are made from the site daily. Approximately twenty-five (25) hopper bottom rail cars of lightweight aggregate are shipped from the site weekly. Movement of rail cars and the private siding is under control of the company.

Company pickup trucks, cars, maintenance trucks, fuel truck and water trucks have access to all roads on the site.

Figure B-2 shows the off-site traffic patterns. Trucks making deliveries of LLGF/hazardous waste to the facility proceed from the 23rd Street (Watervliet) exit of Interstate Route I-787 west on 23rd Street in the Town of Watervliet 0.10 miles to Broadway Avenue, then north 0.2 miles on Broadway Avenue to 25th Street. At 25th Street, the trucks proceed 0.5 miles west to Lansing Lane. At Lansing Lane, the trucks proceed north for 0.6 miles to Elm Street. The trucks proceed east on Elm Street to the entrance road to Norlite, 0.15 miles from Lansing Lane.

The route from I-787 to Lansing Lane is a regularly-traveled truck route for trucks serving industry along 25th Street, Lansing Lane and Elm Street.

2.0 PROCEDURES TO PREVENT HAZARDS

The following sections describe the procedures implemented at the Norlite LLC (Norlite) to prevent hazards that could otherwise adversely impact human health or the environment.

2.1 Applicability

Norlite LLC is a facility that receives, handles and burns RCRA hazardous and nonhazardous waste. The facility accepts F, K, P, U listed wastes and D characteristic wastes. The facility can accept wastes that are coded with the D002 and D003 waste numbers, but the waste cannot actually exhibit the characteristics of corrosivity or reactivity, respectively. Complete information about waste is found in the facility Waste Analysis Plan. As described in Sections 3.4 and 4.6 of this Operations Plan, the storage and processing areas are designed to protect against incidents involving flammable, incompatible and reactive materials.

2.2 Equipment Requirements

2.2.1 Internal Communications

Norlite has a warning system with a specific alarm signal consisting of a loud horn to initiate evacuation of all plant areas. Telephones are located throughout the plant to provide internal communication throughout the operating areas of the facility except for the quarry. Cellular telephones with two-way “push-to-talk” functionality are carried by most personnel. In addition to the alarm, the internal telephone system can be used to notify plant personnel as to the emergency's nature and the recommended action plan. From the most remote section of the hazardous waste storage area, an employee could obtain access to the internal/external communication system in less than a minute.

2.2.2 External Communications

External communications are managed through the telephone system described above in Section 2.2.1. At no time is there only one employee at the facility. From the most remote section of the hazardous waste storage area, an employee could obtain access to the internal/external communication system in less than a minute. All emergency communication practices are detailed in the facility's Integrated Contingency Plan.

2.2.3 Emergency Equipment

Norlite's emergency equipment is listed in the Norlite's approved Integrated Contingency Plan, which is incorporated by reference into the Permit.

2.2.4 Water for Fire Control

Norlite's facility has three fire hydrants for use by the fire department in case of an emergency. Norlite is connected to the city of Cohoes water system. Plant water is provided by a pumping system that uses water collected in the quarry. In addition, the Salt Kill, which crosses Norlite's facility, is a secondary water supply, which could be utilized in an emergency situation.

2.2.5 Testing and Maintenance of Equipment

Norlite's safety and emergency equipment is inspected to insure proper operation during emergency. The facility Security and Inspection Plan identifies the items inspected, the problems inspected for and the frequency of the inspection.

2.3 Aisle Space Requirement

6NYCRR Subpart §373-2.3(f) requires that a facility maintain aisle space sufficient to allow the unobstructed movement of emergency equipment and personnel in case of an emergency. Aisle space of, at least, thirty (30) inches between rows of containers will be

maintained. The proposed stacking pattern is found on revised Drawing NY003-2475-1 and NY003-3008. Containers will not be stacked more than two pallets high.

2.4 Integrated Contingency Plan

Norlite has made arrangements with local representatives in an effort to coordinate responses to emergency situations and to educate the response agencies on the particular hazards posed by the facilities. To facilitate a response to any emergency, Norlite will maintain an access road from the Northwest section of the property, coordinate portable radio frequencies access and provide detailed facility maps and updates as required. A detailed description of those arrangements is set forth in the Integrated Contingency Plan, which is incorporated by reference into the Permit.

Norlite has also made arrangements with West Central Environmental, Inc. to act as emergency response contractors to handle an emergency incident involving hazardous waste that cannot be reasonable handled internally. The details of that arrangement are described in the Integrated Contingency Plan, which is included incorporated by reference into the Permit.

2.5 Preventive Procedures, Structures, and Equipment

6NYCRR Subpart §373-1.5(a)(viii) requires that the applicant provide information on the procedures that will be taken to prevent accidents during loading and unloading operations, procedures to prevent undue contamination from the surface water runoff from hazardous waste handling area, procedures to prevent groundwater contamination, procedures to mitigate the damages from an equipment failure or power outage and procedures to prevent undue exposure of personnel to hazardous waste. This information is provided below.

2.5.1 Unloading Operations

Loading operations at the facility involve intermittent loading of containers for off-site disposal and loading/unloading of hazardous waste containers shipped from generators to Norlite. Containers are loaded/unloaded at the LLGF storage area using a forklift. Containers are

managed under the Containerized Waste Management Plan presented in Appendix 1. During loading/unloading operations, spills are unlikely. In the event of an accident, however, the material will be contained with absorbent booms and pads or other absorbent materials, in addition to the loading/unloading area containment trench. Contaminated materials will be collected and affected areas of the facility and contaminated equipment will be decontaminated. Spilled liquids that enter the containment trench are collected and treated on-site.

LLGF that is received in bulk via tank trucks and tank trailers is unloaded in the Loading/Unloading Areas # 1and #2. The vehicles back into Loading/Unloading Areas #1 or #2 which provides secondary containment for the operation. Prior to delivery, the transporter must certify that he understands the Norlite delivery and operating procedure as described in the Security and Inspection Plan. All LLGF unloading operations are subject to the following LLGF unloading regulations, which are posted in the area:

LLGF UNLOADING REGULATIONS

- NO UNLOADING WITHOUT NORLITE REPRESENTATIVE PRESENT
- NO SMOKING
- PARK IN DESIGNATED AREA
- TURN OFF ENGINE
- SET BRAKES
- SET WHEEL CHOCKS
- SECURE GROUND TO VEHICLE
- OPEN TRAILER TANK VENT BEFORE UNLOADING
- DO NOT REMOVE GROUND FROM VEHICLE UNTIL:
  - HOSES ARE DISCONNECTED AND SECURED
  - TRAILER TANK VENTS ARE CLOSED
  - YOU ARE READY TO LEAVE THE AREA
- DO NOT START ENGINE UNTIL YOU ARE READY TO LEAVE AREA

The mechanisms present in the tanks to prevent overfilling are described in Section 4 of the Operations Plan.

2.5.2 Runoff

Norlite's hazardous waste handling areas are not within a 100-year flood plain. Norlite has, however, taken precautions to handle surface water runoff from the hazardous waste

handling areas. Norlite's runoff control system for its container storage area is described in Section 3.0 and its runoff control system for its tank storage area is described in Section 4.0.

2.5.3 Water Supplies

Norlite has taken precautions to prevent contamination of the surface water and groundwater.

Groundwater contamination is prevented by performing transfer operations within secondary containment areas. The container storage area and loading/unloading areas are constructed of concrete and treated with chemical resistant coating to contain spills. A roof is provided over the Loading/Unloading Area #1 and the Solids Processing Building to divert precipitation. Similarly, a secondary containment system and precipitation diversion roof is provided for the tank pump and control valve area. Descriptions of the spill containment controls for the container storage area and for the tank storage area including a complete description of the design and construction of the LLGF storage and handling system are presented in Sections 3.0 and 4.0.

The soils underlying the tank storage area including the unloading area, container storage area and containment dike are comprised of a clay liner with a maximum permeability rate of 1E-07 cm/sec. The permeabilities of the soils have been laboratory tested. The results of those tests and a discussion of the site geology are included in Norlite's Part 360 application for the additional tank storage that was submitted to the DEC. Additional copies of that application will be submitted upon request.

2.5.4 Equipment and Power Failure

Power failure will not cause a release of hazardous waste or materials. In the event of power interruption, magnetic switches controlling all LLGF pumps at the storage area will release causing LLGF flow to stop. The pumps must be restarted manually.

In case of an equipment failure or power outage which does result in the release of hazardous waste, Norlite's emergency coordinator, will activate implement Norlite's Integrated Contingency Plan.

2.5.5 Personal Protective Equipment

Norlite personnel are protected from undue exposure to hazardous waste and hazardous materials. Norlite's personnel protective equipment is described in the emergency equipment provisions of the Integrated Contingency Plan. The personal use of the protective equipment is covered by Norlite's Personnel Training Plan in which is incorporated by reference into the Permit. Norlite's personnel training program satisfies both the requirements of 6NYCRR Subpart §373-2.2(h) and the requirements of the Mine Safety and Health Administrative Standards of 30 C.F.R. Part §46.

2.6 Prevention of Reaction of Ignitable, Reactive and Incompatible Wastes

2.6.1 Precautions to Prevent Ignition or Reaction of Ignitable or Reactive Wastes

Norlite does not receive or store reactive or corrosive waste. The procedure for acceptance of all waste is described in the Waste Analysis Plan. This plan will prevent storage of reactive or incompatible wastes at the Norlite facility. Waste analysis testing at Norlite is performed on each delivery prior to unloading to ensure compatibility as outlined in the Waste Analysis Plan.

The main safety concern posed by Norlite's storage operations is the potential hazard posed by an accidental ignition of the LLGF. Ignitable wastes are stored only in the following areas of the Plant: LLGF storage tanks and container storage area at the LLGF unloading station.

Norlite prevents the accidental ignition of LLGF by requiring the use of grounding and/or bonding cables during material transfer to prevent static electricity build up and discharge, by venting vapors directly to the kilns, and by displacing oxygen in the tank headspaces with a nitrogen blanket. The particulars of the tank design features and the management practices aimed at preventing accidental ignition are described in Section 4.0. During container transfer operations to tanks, in the area shown in Drawing NY003-3008, containers are grounded with grounding cables to prevent accidental ignition.

2.6.2 General Precautions for Handling Ignitable or Reactive Wastes and Mixing of Incompatible Wastes

To prevent the mixing of incompatible wastes, Norlite performs a compatibility analysis on a representative sample from all shipments. Only those deliveries found to be compatible with the current LLGF in the storage tank into which the LLGF is to be accepted and unloaded will be accepted. The details of Norlite's waste analysis procedure including its compatibility test are set forth in the Waste Analysis Plan. Containers are stored in such a manner as to segregate incompatible wastes as outlined in the Containerized (Drummed) Waste Management Plan Appendix 1

2.6.3 Management of Ignitable or Reactive Wastes in Containers

Measures to prevent accidental fire and explosion of ignitable waste include the proper storage of containers, providing proper secondary containment, area ventilation, and posting appropriate warning signs.

Prior to storage, each container is sealed to prevent precipitation from entering the drum. The containers are labeled to identify the contents of the container and the date wastes were generated. Container storage areas are required to be no closer than fifty (50) feet to the nearest property boundary. Norlite’s container storage area is located 500 feet from the closest company property line.

2.6.4 Management of Incompatible Wastes in Containers

Norlite does not receive or store reactive or corrosive waste. The procedure for acceptance of all waste is described in the Waste Analysis Plan. This plan will prevent storage of reactive or incompatible wastes at the Norlite facility. Testing at Norlite is performed on each delivery prior to unloading to ensure compatibility as outlined in the Waste Analysis Plan.

2.6.5 Management of Ignitable or Reactive Wastes in Tanks

Norlite prevents the accidental ignition of LLGF by requiring the use of grounding and/or bonding cables during material transfer to prevent static electricity build up and discharge, by venting vapors directly to the kilns, and by displacing oxygen in the tank headspaces with a nitrogen blanket. The particulars of the tank design features and the management practices aimed at preventing accidental ignition are described in Section 4.0. During container transfer operations to tanks, in the area shown in Drawing NY003-3008, containers are grounded using grounding cables to prevent accidental ignition.

2.6.6 Incompatible Wastes in Tanks

To prevent the mixing of incompatible wastes, Norlite does a compatibility analysis on a representative sample from the shipment. Only those deliveries found to be compatible with the current LLGF in the storage tank will be accepted. The details of Norlite's waste analysis procedure including its compatibility test are set forth in the Waste Analysis Plan.

3.0 MANAGEMENT OF WASTES IN CONTAINERS

The following sections describe the management of wastes in containers at the Norlite LLC (Norlite). Please refer to Section 1.3 for the container storage locations, waste types, container specifications and containment area capacities. The list of authorized hazardous waste codes is found in the Waste Analysis Plan.

3.1 Container Management

The truck unloading/containment and container storage areas are shown in Drawings Nos. NY003-3008, NY003-3319 and NY003-2475-1. The container capacity in the container storage areas includes all hazardous waste, nonhazardous waste and raw material containers/rolloffs.

The tanker staging area is used for staging waste tankers and trailers prior to unloading. This area is also used for transportation-related temporary storage and/or transfer activities in compliance with § 372.3(a)(6) and (7). This area is not used for transfer of drums between trucks.

Norlite accepts drums for treatment, storage or disposal at other off-site permitted TSD facilities. Norlite therefore also functions as a transfer facility for facilitating movement of waste to other permitted treatment facilities. Truck-to-Truck drum transfers can only take place in unloading areas #1 or through the solids processing building as shown in Drawing NY003-2475-1.

Hazardous waste that is physically solid can be stored on the concrete pad on the west side of the solids processing building. This is strictly for hazardous waste that is being shipped off-site to another TSD facility.

The types of transfer operations practiced by Norlite are covered in more detail in Norlite SOP #6-001, "TRANSFER STATION SCENARIOS PRACTICED AT NORLITE", located in Appendix 2 of this Operations Plan.

Norlite has provisions for:

- 1029 square foot container storage area in the Drum Processing Building (9,900 gallons capacity) suitable for storage of 180 drums
- 1440 square foot container storage area in Loading/Unloading Area #1 (4,785 gallons capacity) suitable for storage of 87 containers

The tanker staging area can also be used to store roll-offs. This area is 200 feet by 60 feet, and has space for staging up to 13 trucks, tanks wagons and/or roll-off containers.

All drums received or used are of the removable head type or bung hole top openings. Drums received from off-site generators are unloaded and stored in the Drum Processing Building or Truck Unloading Area #1 (see Drawing No. NY003-3008). During times that drums are being stored in the Unloading Area #1 only one truck will be parked in that unloading area.

The drum stacking pattern for the maximum arrangement of drums in each area is shown in Drawing No. NY003-2475-1. Drums are stacked no more than 2 tiers in height. The pallets will only be arranged as shown on Drawing No. NY003-3008 regardless of the size of the containers on the pallets.

The contents of the drums are transferred to the LLGF tanks in the Drum Processing Building shown in Drawing NY003-3008. Containerized wastes are transferred to the LLGF tanks using a vacuum transfer line to Tank 200A or are pumped onto a truck and subsequently transferred to another tank other than 200A. All drums are kept closed except when adding or removing material. The types of containerized wastes managed through this process are liquid and semi-solid materials including but not limited to oily sludges, tank bottoms, partially-cured paint and varnish materials, sorbents contaminated with organic materials and viscous resins. This process is used for wastes generated on-site and for those received from off-site.

The containers are off-loaded at Unloading Area #1 or directly into the Drum Processing Building shown in Drawing NY003-2475-1. Space is available for two (2) container trucks at

the Drum Processing Building and space is available for (2) container trucks Unloading Area #1. The trucks will backup to a point where the rear door opens over the containment structure. Unloading Area #1 is authorized for storage of a single row of palletized containers on the north side of the containment area. Tank Wagons may also be parked in Unloading Area #2 as shown in Drawing NY003-2475-1. In the event any spill does occur, the spill is contained, and will be promptly remediated with the spill control equipment described in the Integrated Contingency Plan.

3.2 Containers with Free Liquids

The container storage areas are designed and operated with the proper secondary containment, ventilation, vapor control and fire suppression. Descriptions of the container storage areas square feet and secondary containment are summarized in the table below.

Storage Area	**Container Capacity**	**Capacity Gallons)**	**Drawing No.**	**Area (Sq.Ft.)**	**Containment Volume (Gals)**	**% of Required Containment**
Truck Unloading Area #1	87 (55 gal drum equivalent)	4,785	NY003-3008 NY003-2475-1	1,440	9,048	1891 *when used for drum storage
LLGF & Solids Processing Bldg.	180 (55 gal drum equivalent)	9,900	NY003-3008 NY003-2475-1	1,029	2,042	194

The Container Capacity is based on 55-gallon drums. The total volume Capacity is based on the maximum number of 55-gallon drums that can be stored in the storage area. Although most containerized was received and stored at the facility is in 55-gallon drums, Norlite also receives waste in containers with capacities of 5, 15, and 30 gallons. 85-gallon overpacks are also used to manage smaller damaged or leaking containers. While the Container Capacity listed in the table above may be exceeded if the facility is storing a large number of smaller containers, the total volume Capacity will not exceed the volume listed above.

3.2.1 Basic Design Parameters, Dimensions and Materials of Construction

The Drum Processing Building is separated from the Loading/Unloading Area #1 by a 3.5 inch high concrete berm with a scupper providing overflow to the Loading/Unloading Area #1. It is constructed of reinforced concrete with a design strength of 4,000 lbs/in^2 and sealed to the existing slab.

The area is pitched toward the scupper as shown in Drawing NY003-3008. The drum storage area is coated with Protectoline 900 floor finish (or its equivalent), which is a protective phenolic coating. It is applied to the concrete slab and to the curbing at a thickness of 3/32" in accordance with the manufacturer's recommended procedure. Protectoline 900 floor finish has excellent solvent and abrasion resistance and good weathering characteristics. Selection data of the product is included in Appendix 3Details of the joints on the concrete pad, including both the truck unloading/containment and drum storage areas, are given on Drawing NY003-3008. A urethane sealant is used in the joints, SIKAFLEX-1(a) elastic sealant, a copy of the technical data is found in Appendix 4. The sealant has short-term resistance to organic solvents and it is compatible with the types of liquids delivered to Norlite.

3.2.2 Description of How Design Promotes Drainage

The current pad is presently in good condition, free of any gaps, holes or cracks. The scupper constructed in the curb between the drum storage area and the truck unloading/containment storage area allows any large spills (greater than 340 gallons) to overflow into the truck unloading/containment area providing tertiary containment. The pad is inspected daily as discussed in Security and Inspection Plan to insure that it remains intact and in good condition. All drum storage areas as well as the truck unloading/containment area and unloading pumps are covered by a roof to preclude collection of rainwater in these areas.

3.2.3 Capacity of the Containment System

The containment capacity of each truck Loading/Unloading Areas 1 and 2 are 9,048 gallons and 22,991 gallons, respectively. Each area provides greater than 110% containment of the largest volume tank truck received, 6,500 gallons or tractor/ trailer rig received (80 drums x 55 gal = 4400 gals). Secondary containment calculations for storage areas are provided as an attachment to the Part 373 Permit.

3.2.4 Provisions for Preventing or Managing Run-on

Precipitation run-on is prevented from entering all containment areas by the presence of a 3-1/2 inch curb at the perimeter of the storage area. In addition, the land surrounding all containment area is graded to encourage drainage away from the area. Run-off is prevented from leaving the containment area by the 3-1/2 inch curb at the perimeter of the storage area.

3.2.5 Accumulated Liquids

All containment structures within the storage areas are checked daily. If liquids are detected within the storage area, the source is immediately corrected and liquids removed, ensuring that the maximum containment capacity is available in the unlikely event that another spill or leak should occur. All liquids removed from a secondary containment system are sampled and handled as a hazardous waste in accordance with the Waste Analysis Plan.

3.3 Containers without Free Liquids

The Tanker Staging Area is authorized for the transportation-related temporary storage of roll off containers that contain hazardous waste that do not have free liquids. The area can hold up to 13 roll offs, which have a maximum individual capacity of fifty (50) cubic yards. The total maximum capacity of roll off storage is 650 cubic yards. Details of the area are found on Drawing NY003-3319.

3.4 Requirements for Ignitable or Reactive Wastes and Incompatible Wastes

The location of all storage areas is more than fifty (50) feet from the facility property line.

Using procedures described in the Waste Analysis Plan Section 4.3.3, Norlite does not store incompatible wastes or wastes that are incompatible with the containers in which they are stored.

4.0 MANAGEMENT OF WASTES IN TANKS

The following sections describe the management of wastes in tanks at the Norlite LLC (Norlite).

Please refer to Section 1.3 for the permitted tank storage area, tanks and permitted capacities. Each tank is authorized to store all hazardous waste (LLGF) identified as acceptable in the facility's waste analysis plan.

4.1 Existing Tank Systems

The following sections provide a description of the tanks systems existing at the Norlite LLC (Norlite).

4.1.1 Assessment of Existing Tank Systems

Norlite uses an independent engineer review the integrity testing on the tanks using 6 NYCRR 373-2.10(b) as reference.

Tank thickness measurements, if possible, will be conducted when the tanks are emptied and cleaned. In the past, measurements were made on the inside of the tank using an ultrasonic thickness gage such as Panametrics Model 5230. The glass coating on the inside of Tanks 300, 400, 500 and 600 impact the accuracy of the foregoing measurement device. It would not be possible, however, to take thickness measurements from the outside of the tank since the polyethylene liner system and clay cover system would have to be disturbed to expose the tank. Excavation of the tank would jeopardize the integrity of these systems. The location of the testing sites is shown on Stetson-Harza sheet, Appendix 5.

The following table shows the current data of each tank at the time of application:

TANK #	DIAMETER	SIDE LENGTH	SHELL THICKNESS	MAX. CAPACITY (GALS.)
300	10'11"	40'10"	>3/8"	27,903
400	10'11'	40'10"	>3/8"	27,903
500	10'11'	40'10"	>3/8"	27,903
600	9'2"	39'3"	>3/8"	18,940
100A	11'0"	11'0"	1/4"	9,491
100B	11'0"	11'0"	1/4"	9,491
100C	11'0"	11'0"	1/4"	9,491
200A	11'0"	11'1"	3/4"	10,663
200B	11'0"	11'0"	1/4"	9,491
200C	11'0"	11'0"	1/4"	9,491
101A	5'	7'6"	1/4"	1,266
101B	5'	7'6"	1/4"	1,266
102A	5'	7'6"	1/4"	1,266
102B	5'	7'6"	1/4"	1,266

*All dimensions are nominal

Daily pump inspections are scheduled as shown in Security and Inspection Plan, Section 3.5.2. The LLGF storage area including pumps is inspected three times each shift as indicated on the Trunnion Operators Shift LLGF Inspection Report.

The piping and instrumentation diagram for the LLGF system is shown Drawings NY003-1311, NY003-1312, NY003-1314, NY003-1315, NY003-5010, NY003-1317 and NY003-1903. Each pair of tanks in the Tank Farm Building (e.g. 100C and 200C) have identical loading, unloading, and control systems. The compatibility of the solvents with the carbon steel piping and the tanks is specified in the attached compatibility charts from "Technology for the Storage of Hazardous Liquids," NYSDEC January 1983 found in Appendix 6.

The tanks are filled with LLGF by off loading trucks at the truck unloading areas. For Tanks 200A, B, C and 100A, B, C; a high level switch on each tank shuts down all the transfer pumps if the switch is activated. The level switches are set to activate when the level reaches 12 inches from the top of the tank. Each tank is equipped with a level indicator, pressure and vacuum rupture discs and nitrogen blanketing.

For Tanks 300, 400, 500 and 600, there is a network of leak detection piping that was installed. This system consists of perforated drain pipes wrapped with filter fabric installed above each of the HDPE geo-membranes. The lower set of drain pipes discharge to the secondary spill containment area as shown. The liner is sealed to the drain pipes at the locations where the pipes pass through the liner. The sealing method is as follows: a prefabricated boot is slipped over the penetrating pipe. The base sheet is welded to the HDPE liner with a fusion welding gun. The boot, also of HDPE, is strapped to the pipe with a butyl seal and a 3/4" stainless steel band. Information on the method as well as further quality assurance data is provided in Appendix 7. The upper set of "tell-tale" drain pipes are installed as shown on NY003-5430. These pipes do not discharge to the spill containment slab but instead are used to pump out any liquid, which collects above the upper HDPE geo-membrane.

Tanks 300, 400, 500 and 600 are glass-lined (approximately 1/16 inch) for chemical and corrosion resistance. Glass-lined tanks have been shown to be very resistant to a variety of chemicals in a wide range of concentrations including solvents. For any failures in the glass lining, the 3/8" carbon steel shell will provide sufficient protection. Reported corrosion rates for solvents being stored with carbon steel are between 0.002 and 0.02 in/yr ("Corrosion Data Survey," 1967 Edision, G.A. Nelson, National Association of Corrosion Engineers). Using a median value of 0.011, and the assured shell thickness, the service life is calculated and presented in Appendix 8.

Corrosion to the external shell of the tanks will be prevented by the application of a corrosion resistant coating. Surface preparation was accomplished by sandblasting per SSPC-SP6 (commercial blast) prior to coating. Two coats of 5-7 mils each of Carbomastic 15 were then applied. The tanks were inspected for complete coverage by a registered professional

engineer. The specifications for Carbomastic 15, an aluminum epoxymastic manufactured by Carboline are found in Appendix 9.

A cathodic protection system was installed for additional corrosion protection. This system is shown on Drawing NY003-5430. The material in which the tanks are imbedded is also slightly alkaline, a condition which further inhibits corrosive activity. The clay cap and liner system also prevent groundwater from being introduced to the medium surrounding the tanks. The entire installation as described provides a complete system of corrosion protection and prevention. Detail is provided in Appendix 10. To protect against static electric charges, all the tanks were grounded in a loop, thereby reducing the charge separation.

A piping and instrumentation diagram showing the storage tanks, instrumentation, and valving is shown on Drawing NY003-1317. Inlet and outlet valving are manually operated except for the fire safe valve and solenoid valve on the tank outlet.

The tanks were tested for tightness prior to and after back filling with a soap test after pressurizing the tanks. A visual test was done on the external coating prior to backfilling. The cathodic protection system was also tested in accordance to the manufacturer's recommendation.

4.2 New Tank Systems

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4.3 Secondary Containment for Tank Systems

The Tanks 300, 400, 500 and 600 are imbedded in two (2) feet of coarse sand compacted with a vibrating plate to provide uniform support along the entire length of the tank as shown on Drawing NY003-5430. Beneath the sand is an impermeable liner consisting of the following components that were installed as follows:

-- one (1) 40 mil. HDPE geo-membrane.

-- one (1) layer consisting of 6"-12" compacted clay and sand.

-- one (1) 40 mil HDPE geo-membrane.

-- one (1) layer consisting of 12" of clay installed in two (2) 6" lifts compacted to 1×10^{-7} cm/sec.

This system provides three (3) impermeable barriers between the tank outer shell and the area beneath the compacted clay liner. The bottom of the excavation as well as the clay liner and HDPE geo-membranes are sloped towards the pump containment slab. The liner system was installed with seams necessary to connect the sections of geo-membrane. The liner system is extended upward on the sides and ends of the tanks and extended to connect with the pump containment slab.

The clay cover was installed to extend beyond the ends and sides of the tank and slopes down to the ground to prevent lateral transfer of rainwater towards the tanks. The clay cover is shown on Drawing NY003-5430.

Norlite has installed secondary containment on Tanks 300, 400, 500 and 600. The secondary containment consists of an impermeable liner which discharges to a concrete pad (the pump pad) that has been coated with an impermeable coating. That sealant is the Phenoline 300 sealant, which is the same sealant that has been used to coat the truck unloading pad.

The 100-series and 200-series tanks are above ground tanks that are housed in a concrete containment system with a capacity of 57,289 gallons. The required containment capacity is 9,271 gallons based on the largest tank (200A) housed within the structure. The floors are sealed with Phenoline 300 sealant.

The 101-series and 102-series tanks are above ground tanks that are also housed within a concrete containment system. The containment capacity is 5,214 gallons. The required containment capacity is 1,266 gallons based on the size of the four (4) tanks housed within the structure. The floors are sealed with Phenoline 300 sealant.

4.4 Double-Walled Tanks/Diked Tanks

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4.5 General Tank Operating Requirements

Tank level for all tanks is indicated in gallons by an ultrasonic or radar level indicator with digital readouts. The level range is 12 inches off the bottom to full capacity. Since the agitators do not create any significant waves or splashing, the agitators do not interfere with the tank level indicators. Data sheets for the indicators are found in Appendix 11. Tank pressure is indicated by a pressure gauge mounted on the vent of the tank. Pressure relief is provided by rupture discs. Tank 200A tank level is determined by manual gauging and sampling. Tank Sampling is described in SOP #4-007.

A high level alarm switch is included in the level indicator for Tanks 100A,B,C and 200A,B,C. The switch will operate when the tank level is 12 inches from the top. The switch actuates a solenoid valve in the discharge pipe of these tanks. For Tank 200A, the vacuum pump automatically shuts off when the tank is full due to lack of air flow.

For Tanks 300, 400, 500 and 600, a fire safe valve is in the discharge pipe from the tank. This is a spring-loaded gate valve with a 180°F fusible link that actuates at low pressure.

Each tank (100A,B,C; 200A,B,C; 300-600) is equipped with a rupture disc. Tanks 100A,B,C and Tanks 200B,C have 6-inch discs that fail at 20 psig pressure and 8 inches H_2O vacuum. Because it is a vacuum vessel, Tank 200A is equipped with a 6-inch disc that fails at 20 psig only. Tanks 300, 400, 500 and 600 use 3-inch discs that fail at 20 psig pressure and 8 inches H_2O vacuum. And Tanks 101A,B and 102A,B have 6-inch discs that fail at 20 psig pressure and 2 psig. The nitrogen vent from the tank is directly piped to the aggregate kiln eliminating any atmospheric emissions during normal operation. The tanks vent to the kiln at pressures greater than 6 psig. During tank filling operations venting is provided to the kiln

whereas when the tank is emptied during fueling for the kiln, nitrogen is supplied to the tank. Rupture disc certifications are found in Appendix 12.

For kiln fueling operation from Tanks 100B, 100C, 200B and 200C, the manual valve on the tank outlet is opened and the outlet pump is turned on. For Tanks 300, 400, 500, and 600, the manual valves on the kiln supply line and tank return are adjusted to provide the proper LLGF flow to the kiln and return to the top of the tank.

The following table indicates the circulation and agitation ability of each tank:

TANK #	Agitators	Recirculation	Recirculation by return from kilns
300	yes	Yes	yes
400	yes	Yes	yes
500	yes	Yes	yes
600	yes	Yes	yes
100A	yes	Yes	yes
100B	yes	yes, from the bell*	yes
100C	yes	yes, from the bell*	yes
200A	yes	Yes	yes
200B	yes	yes, from the bell*	yes
200C	yes	yes, from the bell*	yes
101A	yes	Yes	yes
101B	yes	Yes	yes
102A	no	Yes	yes
102B	yes	Yes	yes

*The tank has a suction line at the very bottom of the tank so that there is no static volume of material in the tank when recirculated

For Tanks 300, 400, 500 and 600; if there is a breach in the first liner, a leak would be detected by liquid exiting onto the containment slab from the tell-tale pipe under the tank. This pipe is a 4" perforated drain pipe that is positioned under the center of the tank and directly on top of the clay liner. The perforations face downward, and any liquid leaking from a tank and through the synthetic liner enters the pipe and runs out onto the pump containment slab. The flow capacity of the four inch perforated PVC drain pipe under the Tanks 300, 400, 500 and 600 has sufficient flow capacity to handle small leaks and only serves to provide indication of the beginning of a tank failure. For catastrophic failure of a tank, the sloped clay and polyethylene liner system directs large flows to containment areas. To prevent clogging,1-inch gravel was installed as a covering for the drain pipe. The pipes are wrapped with a geotextile filter fabric to prevent sand from clogging the drain pipes. The PVC pipe between the tanks and the spill containment slab is non-perforated as shown on NY003-5430.

4.6 Requirements for Ignitable or Reactive Waste Storage in Tanks

Norlite has not found LLGF to be reactive but it is ignitable. There are no sources of ignition such as an open flame and no smoking is permitted in the vicinity of the storage tanks. All electrical devices in the area are explosion proof, Class 1, Division 1 and 2, as required. Oxygen is excluded from the tank by the nitrogen blanketing system and all vapors are vented from the tank to the aggregate kiln eliminating any vapor discharge or build-up around the tanks. All the tanks are grounded to prevent the generation of static electricity. The inlet fill pipe and the mixing nozzles both direct liquid entry to the bottom of the tank eliminating any falling liquid from a top entry nozzle that could produce static free charges on the surface of the liquid. The tanks are located more than 50 feet from the facility property line and from the nearest building as requirements in the National Fire Protection Association's "Flammable and Combustible Liquids Code" (NFPA30).

The specifications for joints, flanges and threaded connections are presented in the piping specification in Appendix 13. For threaded connections, the sealant is teflon tape or paste. Its compatibility with solvents shown in Appendix 6. Flanges are joined with compressed gaskets, Garlock Style 8748. The compatibility of this material with solvents is shown in the attached Garlock "Guide for Choice of Gasketing" as Appendix 14.

The compatibility of the tanks with solvents is shown in the charts referenced above. In addition, corrosion charts for solvents and carbon steel are attached from "Corrosion Data Survey," 1967 Edition, G.A. Nelson, National Association of Corrosion Engineers as Appendix 15.

4.7 Requirements for Incompatible Waste Storage in Tanks

Due to the prescreening process described in the Waste Analysis Plan, Section 4.3.3, Norlite does not store incompatible wastes or wastes that are incompatible with the storage tanks in which they are stored.

4.8 Tank Inspection

In addition to the secondary containment provided by the liners under the Tanks 300, 400, 500 and 600, the LLGF building, used for Tanks 100A,B,C and 200A,B,C, also serves as a tertiary containment system for the outside tanks. In the event that the secondary containment system fills, liquid will overflow through a pipe to the LLGF storage building. The containment volume of this LLGF building is 33,940 gallons. This volume is sufficient to hold the entire contents of any LLGF tank that should fail.

Inspection of spill containment facilities will be conducted as follows:

Daily - The spill containment for loading/unloading areas, container sampling areas and drums stored in the unloading areas will be inspected for any spills.

4.8.1 Tanks without Secondary Containment

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4.9 Tank Spills and Leakage

In the unlikely event of an emergency arising from a tank spill or tank leakage, the procedures found in the Integrated Contingency Plan, Section II will be followed. Norlite personnel will act to minimize or remove the threat of any tank failure. As described in Section 4.3, the facility is designed to contain any spill of material from the tanks and prevent release to the environment.

4.10 Closure and Post-Closure Care

All LLGF stored in the tanks will be incinerated in the kiln, or, alternatively, pumped into tankers and transported to another permitted facility for treatment and/or burning as fuel. All LLGF sludge will be removed from the tanks by means of shoveling and placed into 55-gallon drums by a qualified environmental contractor. The material is then shipped off-site for proper treatment and disposal.

Full detail of closure activities is found in the facility's Closure Plan.

5.0 MANAGEMENT OF WASTES IN SURFACE IMPOUNDMENTS

Reserved

6.0 MANAGEMENT OF WASTES IN LANDFILLS

Reserved

7.0 MANAGEMENT OF WASTES IN BOILERS AND INDUSTRIAL FURNACES

The following sections describe the management of wastes in industrial furnaces at Norlite LLC (Norlite). The permit requirements for operation of the industrial furnaces can be found in Schedule 1 of Module 1, Exhibits A and E.

Location/Identification Number	Waste Types and Hazardous Waste Codes	Physical Form of Waste	Design Thermal Capacity	Waste Source
Kilns 1 and 2	All hazardous waste described in the Waste Analysis Plan (LLGF)	Liquids blended with sludges and semi-solids	62 MM BTU/Hr	Wastes received from offsite generators and wastes generated onsite as described in the Waste Analysis Plan

7.1 Design and Operation

Raw materials are quarried on-site and are conditioned by crushing and screening. The conditioned shale feed is stored in a silo and fed to the kiln via a gravimetric conveyor. Calcination of the shale occurs at a product temperature of approximately 1700^{o}F to 2000^{o}F. Within this temperature range the shale reaches a point of incipient fusion where it is in a semi-plastic state, which allows internal gases to expand, thereby creating voids. As the expanded product leaves the burning zone it begins to cool. Cooling continues as the product drops out of the kiln into a clinker cooler. The cooled vitreous clinker is then discharged and stockpiled. The shale feed rate limit to the kiln is 22 tons per hour.

Heat is supplied to the kiln by firing fuels as described in the table below. All fuel is injected countercurrent to the product flow through the kiln via burners at the discharge (front) end of the kiln. Virgin fuel oil, specification used oil fuel and comparable fuels are fed from Tanks R1, R2, M1 and M2, located in the tank farm adjacent to Tank 9. This delivery system is

not interconnected to the LLGF delivery system in any way. No hazardous or nonhazardous waste is delivered to the kiln through this system.

Feed	**Flow Measurement Instrument**	**Units**	**Recorded (manual/auto)**	**Inst/MRA/ HRA**	**Data Stored**	**AWFCO Valve**
LLGF/Waste Fuel B	Micro Motion	GPM	Auto	MRA/HRA	Yes	Yes
Spec Used Oil	Micro Motion	GPM	Manual	Begin/End of Shift	Yes	No
Off-Spec Used Oil	Micro Motion	GPM	Auto	MRA/HRA	Yes	Yes[4]
Waste Fuel A	Micro Motion	GPM	Auto	MRA/HRA	Yes	Yes[4]
Natural Gas	NA	Therms	Auto[1]	Monthly[2]	Yes	No
Diesel Fuel/ Kerosene/Comparable Fuels/ Fuel Oil #2, #4, #6	Micro Motion	GPM	Manual	Begin/End of Shift[3]	Yes	No
Water	Roto Meter	GPM	Manual	NA	Yes	No
Vapors	NA	NA	No	NA	NA	No
Air: Primary Atomization	Both Use Rosemount Pressure Transmitter	PSIG PSIG	NA Auto	Inst HRA	No Yes	No Yes

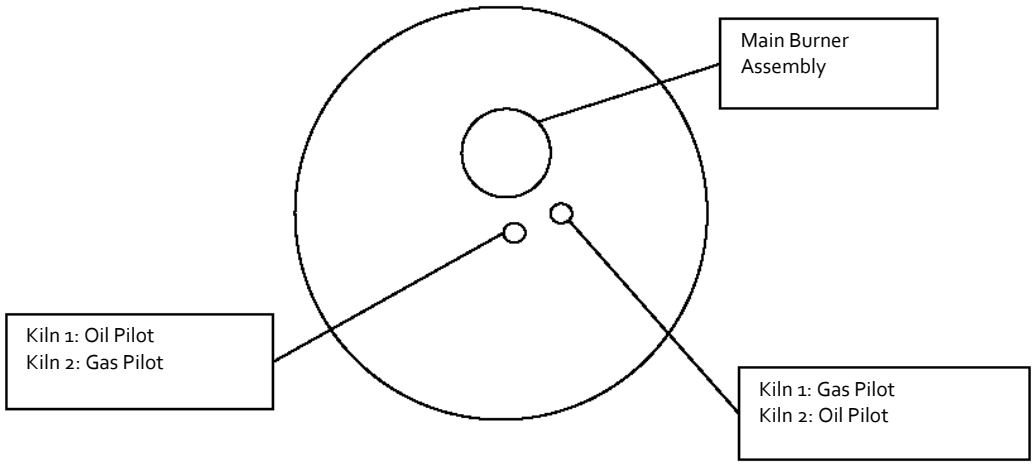
Note: NA = Not Applicable

1- Metered by utility company
2- Includes Kiln 1 & Kiln 2
3- Depends on feed through on-spec or off-spec feed line
4- AWFCO valve only applies when Carbon Monoxide (CO) is over 500 ppm

The various feed streams to the kiln are delivered based on the table below:

Feed	**Storage**	**Kiln Delivery**
LLGF/Waste Fuel B	100A, 100B, 100C, 200A, 200B, 200C, 300, 400, 500, 600	Main Burner Assembly
Spec Used Oil	M1, M2, R1, R2	Oil Pilot
Off-Spec Used Oil	Tank 9	Main Burner Assembly
Waste Fuel A	Tank 9	Main Burner Assembly
Natural Gas	NA	Main Burner Assembly Natural Gas Pilot
Diesel Fuel/ Kerosene/Comparable Fuels/ Fuel Oil #2, #4, #6	M1, M2, R1, R2	Oil Pilot
Water	NA	Main Burner Assembly
Vapors	NA	Main Burner Assembly
Air: Primary Atomization	NA	Main Burner Assembly

Each kiln has three injection points for these feeds: the main burner assembly, the oil pilot and the natural gas pilot. They are situated in the front end wall of the kiln as shown below:



Typical kiln combustion gas and material retention times are 4 to 5 seconds and 45 minutes, respectively. Draft for the kiln is supplied by a Barrons induced draft fan. Secondary

combustion air is supplied by forced draft fans from the clinker coolers. Secondary combustion air is preheated by passing it through a moving bed of hot product in the clinker cooler.

LLGF is pumped to the kiln's main burner at a maximum rate of 10.3 gpm. The facility has demonstrated and is requesting authorization to increase the maximum rate to 10.5 gpm. Fuel is supplied to the burner nozzle through an inner pipe while atomization air (or steam) is supplied through a concentric outer pipe.

Each kiln is manned on an around-the-clock basis by the burner operator from the kiln control room. The burner operator can monitor critical operating variables from the control room via a computerized data acquisition system (DAS). The burner operator can also make operational set point changes via the computer system. Equipment stop/start circuitry is housed in the kiln control room or in the field via motor control centers. All field instrument signals are processed through an Allen Bradley Programmable Logic Controller (PLC). Information from the PLC is gathered by the DAS and processed into visual information for the use of the burner operator. The PLC is in control of the Automatic Waste Feed Cutoff System (AWFCO) as described below at all times and operates independent of the DAS.

The burner operator is assisted by the kiln field operator and the mechanic who are responsible for activities outside the control room and burner floor area. The kiln field operator and mechanic perform routine inspections, make field only parameter adjustments, and perform routine mechanical maintenance of the kiln and air pollution control systems.

The burner operator in conjunction with the kiln field operator and mechanic make routine system adjustments to maintain the kiln at optimum conditions for the production of light weight aggregate while maintaining the system within the operating window as set forth by the AWFCO system.

In the event an AWFCO operating parameter has an excursion outside the operating window, LLGF is automatically cutoff by the AWFCO system. The burner operator will switch

to an alternate fuel such as natural gas or oil until corrections are made to bring the operation within the operating window.

In the event a non-AWFCO operating parameter has an excursion, the burner operator will attempt to make system corrections to bring the parameter within specification. Should the corrections not bring the parameter within specifications, the excursion will ultimately cause one or multiple AWFCO parameters to trigger the AWFCO system to operate.

In the event of a power failure, all systems shutdown including, but not limited to, LLGF flow, fuel farm feed systems, raw shale feed, main flame, etc. All systems require manual restart. A virgin fuel is fired to bring all operating parameters within the operating window prior to commencing LLGF feed.

The main flame of the kiln is either self-sustaining or sustained by the presence of a virgin fuel pilot. The main flame and the pilot flame are monitored by an electronic eye to have proof positive that a flame exists. In the event of a loss of signal by the electronic eye, the virgin fuel feed to the pilot, the main natural gas valve, the LLGF AWFCO valve, and the used oil feed valve are closed and a manual reset is required to re-establish a proof positive of flame. Should operating parameters fall outside the operating window during a flame failure, a virgin fuel is fired to bring all operating parameters within the operating window prior to commencing LLGF feed.

7.1.1 Kiln Emission Control Systems

Both kilns have nearly identical emission control systems. The systems include both wet and dry emission control devices for the collection and removal of particulate matter, metals, hydrogen chloride (HCl), and other gaseous species. The principal collection mechanisms employed by these devices are sedimentation, condensation, impaction, filtration and interception for particulates and metals, and absorption for HCl and other gaseous species.

Combustion gases and entrained particulates exiting Kiln 2 pass through a mechanical collector, a Processbarron (12) 24" tube multiple cyclone unit (multiclone) model no. 12AU2416CBK110-3X4, to remove large particulate matter. Combustion gases and entrained particulates exiting Kiln 1 pass through a mechanical dust collector, a Barrons multiple cyclone unit (multiclone), to remove large particulate matter. Particulates removed by these devices accumulate in a hopper from which they are pneumatically conveyed to the Dust Storage Silos. Dust from these silos is beneficially used in a block mix product.

Gases exiting the multiclone then pass to an air cooler, a closed cycle air to air heat exchanger. Process gases enter the heat exchanger at approximately 900^{o}F and exit at approximately 450^{o}F.

Following the heat exchanger, a three-module baghouse (fabric filter) is provided to remove fine particulates which are entrained in the gas. The baghouse is designed for operation on two modules while the third module is down for maintenance, however, hazardous waste is not fed unless all three modules are online. Hydrated lime ($Ca(OH)_2$) is continuously fed to the baghouse to enhance particulate removal and help control acid gases. Accumulated particulates and (partially) reacted lime is removed from the filter media by sequentially pulsing a small fraction of the filter bags at a time with compressed air. Particulates so removed accumulate in a hopper from which they are pneumatically conveyed to Dust Storage Silos. Like particulates removed from the multiclone, baghouse dust is beneficially used in a block mix product. A modulating damper located upstream of the baghouse automatically adjusts baghouse inlet gas temperatures (if required) to the range of 375^{o}F to 400^{o}F ($\pm$ 5^{o}F) by tempering with ambient air.

Immediately downstream of the baghouse is an induced draft fan which draws tertiary combustion air through the kiln, multiclone, heat exchanger and baghouse and provides forced draft to exhaust combustion gases through the wet scrubbers and mist elimination units. Additionally, the fan provides induced draft for a hood installed over the kiln shale feed chute to capture any fugitive emissions emanating from this area.

Two wet scrubbers are provided to capture particulates and to remove acid gases which escape capture/removal in the baghouse. The first is a BECO Venturi (MMV) scrubber. This scrubber is of a rod design which utilizes stainless steel tubes installed in rows across the throat to provide a series of smaller throats. The intent is to provide the effect of a small venturi throat without incurring the high pressure drop typically associated with conventional high efficiency venturi scrubbers. Further, the tubes provide additional impaction surfaces for enhanced particulate and HCl collection.

Clean water atomization headers are located at the entrance of the scrubber to cool and saturate combustion gases. The scrubbing medium is a sodium carbonate (soda ash) solution which is introduced through nozzles located directly above the venturi module. This solution is recycled through the unit at approximately 200 gpm and, at equilibrium, contains approximately 10% dissolved solids consisting principally of sodium carbonate, sodium chloride and/or sodium sulfate. Scrubbing solution is also injected into the transition segment located immediately downstream of the venturi scrubber.

Excess water/scrubbing solution drains from the venturi exit elbow to a settling/recycle tank. The pH of the solution in the recycle tank is continuously monitored by a pH probe and automatically maintained at a pH of 7.9 or greater by the introduction of a 5% sodium carbonate solution. A portion of the recirculated solution is removed (blown down) from the recycle pump discharge to maintain a stable solids concentration in the system. The blowdown rate ranges between 4 and 20 gpm, depending on the quantity of fuel burned as well as the chloride and sulfur contents. The second scrubber is a (Ducon) polishing scrubber/mist eliminator. This unit consists of a bundle of tubular baffles which are designed to capture droplets of scrubber solution entrained in gases exiting the BECO scrubber. Additionally, a mesh-type mist eliminator is fitted at the top of the unit, immediately preceding the exhaust stack. The mist eliminator is kept clean by a water spray. Finally, scrubbed gases are exhausted to the atmosphere, 120 feet above grade, via a 48 inch diameter stack.

7.2 Waste Analysis

The Waste Analysis Plan provides complete detail of the sampling and analysis procedures used to ensure that the LLGF feed complies with the operating limits set by the facility's Trial Burn. Critical feederate parameters are set for heat input, total halogens and various metals.

7.3 Performance Standards and Operating Requirements

The following table displays the operating limits as determined by the latest MACT Comprehensive Performance Test (CPT). The MACT CPT regulations have superseded RCRA Trial Burn testing.

Kiln Operating Parameters	Units	CPT Test Results			How Set	MIN or MAX	Cond. Used	Final OPL
		C2	C1RT	C1A				
Process & CEM Parameters --								
Total (and Pumpable) LLGF Feed	gpm	10.3	10.3	10.5	(a)	MAX	C1A	10.5
Kiln Production Rate (Shale Feed)	tph	22.8	23.6	23.6	(a)	MAX	C2	22.8
LLGF Atomization Pressure	psi	29.6	37.7	35.9	(b)	MIN	C1A	35.9
Back End Temperature	°F	990	895	895	(c)	MIN	C1A	895
Heat Exchanger Exit Temperature	°F	450	434	436	(c)	MAX	C1A	436
Flue Gas Flowrate	wet scfm	35,691	34,425	45,625	(c)	MAX	C1A	45,625
CO Conc. @ 7% O_2	ppm	41.7	34.5	45.5	(d)	MAX	N/A	100
APCS Parameters --								
Baghouse Inlet Temperature	°F	400	386	383	(c)	MAX	C2	400
Venturi Pressure Drop	in. w.c.	6.1	6.2	8.6	(c)	MIN	C2	6.1
Scrubber Recirculation Rate	gpm	174.7	172.7	171.1	(c)	MIN	C2	174.7
Scrubber Blowdown Rate	gpm	14.6	13.9	14.1	(c)	MIN	C2	14.6
Scrubber Liquid Ph	pH	8.1	8.0	8.0	(c)	MIN	C2	8.1
Scrubber Tank Liquid Level	% Ht.	58.0	56.5	56.7	(c)	MIN	C2	58.0
Scrubber Liquid to Gas Ratio	gal / 10^3 ft^3	4.9	5.0	3.8	(c)	MIN	C2	4.9
Lime Feed Rate	lb/hr	250	270	270	(c)	MIN	C2	250
Lime Carrier Fluid Flow Rate	scfm	151.8	150.8	150.1	(c)	MIN	C2	151.8
Constituent Feed Rates --								
Total Chlorine	lb/hr	119.2	93.4	119.2	(c)	MAX	C2	119.2
Total SVM (Cd & Pb)	lb/hr	6.56	1.26	1.68	(c)	MAX	C2	29.3
Total LVM (As + Be + Cr)	lb/hr	6.46	4.74	5.03	(c)	MAX	C2	16.6
Total Pumpable LVM	lb/hr	2.86	0.85	1.17	(c)	MAX	C2	5.55
Total Mercury	lb/hr	0.0109	0.0018	0.0022	(c)	MAX	C2	0.036

(a) Average of the maximum hourly rolling average for each run
(b) Based on manufacturer recommendation and Norlite operating experience
(c) Average of the test run averages. For metals, also based on extrapolation; see Table 4-11 and associated text.
(d) Regulatory citation

Table Key: LVM=Low Volatile Metals, SVM=Semivolatile Metals, C1A=Condition 1A, C1RT=Condition 1 Retest, C2=Condition 2

Table 4-11 Metal Extrapolation Calculations

Parameter	Units	Volatile Metals **VM**	Low Volatile Metals **LVM**	Semivolatile Metals **SVM**
Surrogate Metal for the CPT	--	Hg	Cr	Pb
Test Condition Used	--	C2	C2	C2
Average CPT Feed Rate	lb/hr	0.0108	5.63	6.20
Average CPT Emission Rate	µg/m³	33.6	36.6	54.5
	lb/hr	1.91E-03	2.05E-03	3.03E-03
Test Average Surrogate SRE	%	82.37%	99.965%	99.955%
MACT standard for LWAKs	µg/m³	120	110	250
MACT standard equivalent	lb/hr	0.0164	0.0150	0.0342
90% of the MACT standard	µg/m³	108	99	225
Stack Gas Flowrate	dscfm	36,504	36,504	36,504
Stack Oxygen Concentration	%	14.99	14.99	14.99
Extrapolated Feed Rate Limit at 90% of the MACT Standard	lb/hr	0.036	16.603	29.349
Established Feed Rate Limit	**lb/hr**	**0.036**	**16.6**	**29.3**
Minimum Required SRE to meet the MACT Standard	%	34.781%	99.885%	99.763%

Note: The MACT standard and the average CPT emission rate (µg/m³) are corrected to 7% oxygen.

7.4 Monitoring and Inspection

The kilns' PLCs, Continuous Monitoring Systems and Continuous Emission Monitoring Systems are interlocked with the automatic waste feed cutoff (AWFCO) systems. All operating parameters are monitored at their required frequencies and are on display in the kiln control room and recorded on the kiln data reports.

Inspection of the kilns is described in the Security and Inspection Plan.

7.5 Closure

Norlite's two lightweight aggregate kilns are cylindrical, horizontally-mounted rotary kilns. The kilns are constructed of steel shells, with a six-inch refractory lining. The system involves piping and intermediate pumping station for feeding waste from the LGF storage tanks

to the kilns, the kilns, a mechanical collector, a heat exchanger, baghouse, a venturi and ducan scrubber for air emissions from the kilns and an exhaust stack.

Since the LGF is filtered prior to burning and due to the very high destruction efficiency of the kilns, there is no remaining hazardous waste residues within the kilns. Therefore, closure procedures associated with closure of the kiln operations will involve the decontamination and dismantling of waste feed lines to the kilns; disposal of contaminated washwaters generated from decontamination procedures; and, definition, excavation and disposal of any contaminated surface soils.

If closure of the hazardous waste energy recovery operations at the kiln occur in accordance with the procedures outlined, the operation of the kiln may continue following closure with the use of non-waste fuel. Thus, dismantling or demolition of the aggregate kilns and their ancillary equipment (i.e., air pollution control equipment, etc.) is not included in the final closure procedures. To indicate successful decontamination of the kiln upon cessation of the use of LGF, the kiln will be operated in a "burnout" mode with only auxiliary fuel fired for an appropriate time period, but not less than four hours, maintaining at least the minimum temperature specified in the permit. This will allow for the combustion of any remaining organic constituents within the kiln system. As soon as practical, allowing for the kiln to properly cool prior to entry, a set of wipe samples (minimum of ten locations scattered throughout the kiln) will be taken. Wipe sampling will involve sampling kiln surfaces exposed to the LGF and/or exhaust gases. Each wipe sample collected will be a 100 sq. cm. sample. Decontamination will be deemed successful if the resulting analytical results for the specified parameters, using appropriate GC methods of analysis in accordance with SW-846, do not exceed regulatory standards in effect at the time of closure.

8.0 MANAGEMENT OF WASTES IN CONTAINMENT BUILDINGS

Reserved

9.0 MANAGEMENT OF WASTES IN MISCELLANEOUS UNITS

Reserved

10.0 AIR EMISSION STANDARDS

The following sections describe compliance with the air emissions standards at the Norlite LLC (Norlite).

10.1 Air Emission Standards for Process Vents - Subpart AA

RESERVED

10.2 Air Emission Standards for Equipment Leaks - Subpart BB

The details for compliance with Subpart BB are provided in Appendix 16 of the Operations Plan. The charts identify the requirements for each piece of equipment that is subject to Subpart BB.

10.3 Air Emission Requirements for Tanks, Surface Impoundments and Containers - Subpart CC

10.3.1 Waste Determination Procedures

Norlite does not operate any exempt tanks and presumes that all hazardous waste received contains greater than 500 ppmv. No actual analysis is performed to demonstrate that hazardous waste received or stored is eligible for the exemption. All tanks are operated with Level 2 controls.

10.3.2 Standards for Tanks, Surface Impoundments and Containers

Norlite Corporation (Norlite) operates six vertical above ground tanks, four horizontal covered aboveground tanks, and five other ancillary tanks for a total storage capacity of 155,579 gallons as per 6 NYCRR 373-2.29. These tanks are subject to routine and scheduled inspections as per 6 NYCRR 373-2.29(e)(7)(iii)(a): the fixed roof and its closure devices shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions. The closure devices shall be designed to operate such that when the closure device is

secured in the closed position there are no visible cracks, holes, gaps, or other open spaces in the closure device or between the perimeter of the cover opening and the closure device. For the purpose of this inspection, closure devices on the tanks are flanged and the inspection will focus on the flange connection. Overall defects to inspect for include, but are not limited to, visible cracks, holes, or gaps in the roof sections or between the roof and the tank wall; broken, cracked, or otherwise damaged gaskets; and broken or missing hatches, access covers, caps, or other closure devices. As per 6 NYCRR 373-2.29(i)(2): the owner or operator shall develop and implement a written plan and schedule to perform the inspections and monitoring required. The owner or operator shall incorporate this plan and schedule into the facility inspection plan required under subdivision 373-2.2(g) of this Subpart.

This section serves as a written plan and schedule to perform the required inspections and monitoring detailed in 6 NYCRR 373-2.29(e)(7)(iii)(a). As detailed in 6 NYCRR 373-2.29(e)(7)(iii)(c)(3): the owner or operator shall perform an initial inspection of the air emission control equipment and thereafter, the owner or operator shall perform the inspections at least once every year. Norlite will conduct an annual visual inspection for defects, cracks, holes, gaps, damaged gaskets or other defects which could result in air pollution emissions in conjunction with one of the quarterly Subpart BB inspections conducted by Norlite personnel. The results of the visual inspections will be kept on-site for three years and then stored off-site for the life of the facility.

10.3.3 Inspection and Monitoring Requirements

Norlite personnel will inspect the tanks listed in Schedule 1 of Module I of the Part 373 Permit. Specific drawings for these tanks and their associated equipment can be found on engineering drawings NY003-5010, NY003-1312, NY003-1314, NY003-1315, and NY003-1317. While 6 NYCRR 373-2.29(e)(7)(iii)(a) specifies a visual inspection of only the fixed roof and its closure devises, where accessible Norlite will visually inspect the entire outer tank surface plus any closure devices on the tank surface. Any other ancillary equipment attached to the tank is covered under 6 NYCRR 373-2.28 and will not be included in this inspection.

10.3.4 Recordkeeping and Reporting Requirements

As per 6 NYCRR 373-2.29(j)(2), the owner or operator shall record: a. a tank identification number as selected by the owner or operator, b. the date of the inspection was conducted, and c. any defects found. For each defect found during the inspection, the following information will be recorded: the location of the defect, a description of the defect, the date of detection, and corrective action taken to repair the defect. If the repair of the defect is delayed in accordance with the provisions of subdivision 373-2.29(e)(11), the owner or operator shall also record the reason for the delay and the date that completion of repair of the defect is expected.

As per 6 NYCRR 373-2.29(e)(11): the owner or operator shall repair each defect detected during an inspection as follows:

(i) The owner or operator shall make first efforts at repair of the defect no later than 5 calendar days after detection, and repair shall be completed as soon as possible but no later than 45 calendar days after detection.

(ii) Repair of a defect may be delayed beyond 45 calendar days if the owner or operator determines that repair of the defect requires emptying or temporary removal from service of the tank and no alternative tank capacity is available at the site to accept the hazardous waste normally managed in the tank. In this case, the owner or operator shall repair the defect the next time the process or unit that is generating the hazardous waste managed in the tank stops operation. Repair of the defect shall be completed before the process or unit resumes operation.

As per 40 CFR 265.1084(d)(1): the test shall be conducted in accordance with the procedures specified in Method 21 of 40 CFR part 60, appendix A. Each potential leak interface on the cover and associated closure devices shall be checked. Norlite currently conducts Method 21 testing on the agitators of all the tanks listed previously in this document. As per 40 CFR 265.1084(d)(9): for the seals around a rotating shaft that passes through a cover opening, the arithmetic difference between the maximum organic concentration indicated by the instrument and the background level shall be compared with the value of 10,000 ppm. If the difference is less than 10,000 ppm, then the potential leak interface is determined to operate with no detectable organic emissions. Norlite uses a limit of 500 ppm as a determination of leak. Any readings over 500 ppm will trigger maintenance to be conducted on the agitator packing.

Please see Appendix 17 for an example of the form which will be used to conduct and document the annual Subpart CC inspection.

11.0 REQUIREMENTS OF OTHER FEDERAL AND STATE LAWS

This section is presented to demonstrate compliance with 6 NYCRR 373-2.5 entitled, "Manifest System, Recordkeeping and Reporting," as well as annual generator and hazardous waste reduction reporting requirements, at the Norlite LLC (Norlite).

11.1 Manifest Requirements

As discussed in previous sections of this Operations Plan, the Norlite LLC (Norlite) manages hazardous waste under the following scenarios:

- Receipt of hazardous waste for blending and burning in two rotary kilns to produce lightweight aggregate.
- Receipt of hazardous waste as part of transportation related transfer and temporary storage.

As a result, the manifest requirements applicable to generators of hazardous waste pursuant to 6 NYCRR 372.2(b) are complied with by Norlite LLC for both hazardous waste transported to the Norlite LLC (Norlite) facility, as well as for hazardous waste transported from the Norlite LLC (Norlite) facility for off-site treatment and disposal. In addition, as required by the Land Disposal Restrictions, the required recordkeeping in accordance with 6 NYCRR 376.1(g) is maintained on-file at the facility.

11.2 Operating Record

In accordance with 6 NYCRR 373-2.5(c), the Norlite LLC (Norlite) is required to maintain an operating record at the facility. A description of the items included in the operating record follows:

- Date, type, location and quantity of hazardous waste stored;
- Date, type, location and quantity of hazardous waste generated;

- Records and results of waste analyses;
- Summary reports and details of all incidents requiring implementation of the Norlite LLC (Norlite) Integrated Contingency Plan;
- Records and results of inspections (only required to be maintained for three years);
- Monitoring, testing or analytical data and corrective action where required;
- For off-site facilities, notices to generators as specified in 6 NYCRR 373-2.2(d)(2);
- Manifests (only required to be maintained for three years); and,
- Closure plan and closure cost estimates.

In addition, as required by 6 NYCRR 373-2.5(c)(2)(ix), a certification is submitted to the NYSDEC, no less often than annually, that a program is in place to reduce the volume and toxicity of hazardous waste that is generated to the degree determined by Norlite LLC to be economically practicable. Further, Norlite LLC certifies that the method of storage, treatment and disposal is the most practical method currently available to the Norlite LLC which minimizes the present and future threat to human health and environment. A copy of this certification is maintained in the operating record at the Norlite LLC (Norlite).

11.3 Availability, Retention and Disposition of Records

In accordance with 6 NYCRR 373-2.5(d), the operating record listed in the previous section will be retained until facility closure and will be available for inspection at all reasonable times by a representative of the NYSDEC. The operating record is maintained at the Norlite LLC (Norlite).

11.4 Annual Report

As a generator of hazardous waste within the State of New York, Norlite LLC is required to comply with the annual reporting requirements specified in 6 NYCRR 373-2.5(e). A Hazardous Waste Report is prepared annually by Norlite LLC for the Norlite facility and

submitted to the Commissioner of the NYSDEC by March 1st for the preceding calendar year. Copies of the annual reports are maintained for at least three years at the Norlite LLC (Norlite).

11.5 Hazardous Waste Reduction Plans

Since the Norlite LLC (Norlite) generates greater than 25 tons of hazardous waste per year and has received a Part 373 Permit from the NYSDEC, it was required to develop and submit a Hazardous Waste Reduction Plan (HWRP) in July 1, 1991. In subsequent years, Annual Status Reports and Biennial Updates to the HWRP have been prepared and submitted to the NYSDEC in accordance with the provisions of the Hazardous Waste Reduction Act.

Norlite LLC is strongly committed to reducing the volume of hazardous waste generated at the Norlite facility and will continue to comply with the applicable requirements of the Hazardous Waste Reduction Act including the submittal of Annual Status and Biennial Update reports.

12.0 GLOSSARY

Term	Definition
6 NYCRR	Title 6 of the New York Codes, Rules and Regulations
40 CFR	Title 40 of the Code of Federal Regulations
AWFCO	Automatic Waste Feed Cutoff
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CEMS	Continuous Emission Monitoring System
CMS	Continuous Monitoring System
CPT	Comprehensive Performance Test
(US)DOT	(United States) Department of Transportation
DAS	Data Acquisition System
FIA	Federal Insurance Administration
GC	Gas Chromatograph
GPM	Gallons Per Minute
HCl	Hydrogen Chloride
HDPE	High Density Polyethylene
HRA	Hourly Rolling Average
HWM	Hazardous Waste Management (facility)

Term	Definition
HWMU	Hazardous Waste Management Unit
HWRP	Hazardous Waste Reduction Plan
LGF	Low Grade Fuel
LLGF	Liquid Low Grade Fuel
MACT	Maximum Achieveable Control Technology
MMV	Modified Multivane
MRA	Minute Rolling Average
NACE	National Association of Corrosion Engineers
NFPA	National Fire Prevention Association
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OSHA	Occupational Safety and Health Administration
P.E.	Professional Engineer
PLC	Programmable Logic Controller
PPE	Personal Protective Equipment
PPMV	Parts Per Million by Volume
PSIG	Pounds per Square Inch Gage
PVC	Polyvinyl Chloride
RCRA	Resource Conservation and Recovery Act
SOP	Standard Operating Procedure
SEQRA	(New York) State Environmental Quality Review Act
TSDF	(hazardous waste) Treatment, Storage or Disposal Facility
USEPA	United States Environmental Protection Agency
VO	Volatile Organic