Beneficial Use Determination (BUD) Application
The Compost Plant L3C
Revisions Submitted 10/20/2022

Summary: The Compost Plant L3C (TCP) is a Rhode Island-based, waste organics hauling business, with offices at 182 Swan Street in Providence. We work with businesses that produce food waste, ranging from restaurants and universities to large-scale food processing facilities. Since our founding in 2013, we have diverted over 25,000 tons of food waste and organic material from going to local landfills where it contributes to the production of harmful greenhouse gasses. We transport food waste in customized collection vehicles to regional farms producing high-quality compost and anaerobic digesters producing renewable energy.

TCP proposes to site a Source Separated Organics (SSO) pre-processing facility at our headquarters on Swan Street in Providence. We are proposing an operation with technology that will grind the food waste we collect into a homogeneous slurry form that will make it more efficient to transport in larger quantities by tanker truck to area anaerobic digesters and commercial compost facilities.

The proposed processing capacity is 100 tons a day of SSO, utilizing three 10,000 gallon storage tanks. As this is a new type of facility that has not yet been demonstrated in Rhode Island, we propose the Beneficial Use Determination application allows TCP to build the facility in its entirety, as conceived, and step capacity up based on performance and environmental impact. Initial approval of the B.U.D. application could allow the use of one of the 10,000 gallon storage tanks to start with, for example, and the additional two storage tanks could be brought into service after an initial trial period, based on agreed upon metrics of success.

Terms and Definitions: For the purposes of clarification, the following terms and definitions will be used in this application:

Source Separated Organics (SSO): refers to organic material including food residuals, food processing residuals, and compostable paper that has been separated from non-compostable material or non-organic items. This does not include any animal mortalities or parts, biosolids, sludge, septage, or other waste with significant pathogen content.

Feedstock: the raw ingredients and input materials for compost production and/or anaerobic digestion. They are organic materials (capable of decomposition), including liquids and solids.

Contamination: non-compostable or non-organic items, including food packaging (plastic film or bags) glass, metal (aluminum foil, serviceware), and styrofoam. Since bins are designated only for food and organic waste and monitored regularly, chemical or biological contamination are not relevant to our application or operation. In 9 years of our operations, we have never had an issue of chemical or biological contamination of material.

Questions below taken from http://www.dem.ri.gov/programs/benviron/waste/pdf/budpol.pdf

1. How will any environmental hazards associated with the proposed recycling of solid waste will be minimized or eliminated?

With food and organic waste, the biggest potential environmental hazards and impacts come from poor management practices during hauling and processing. Our focus remains the same as when we started The Compost Plant in 2013: providing a high level of service to deal with the challenging characteristics of organic waste. We have focused all of our energy and attention on customer service and maintaining a clean stream of source-separated organics. We offer consistent and frequent pickups (to minimize or eliminate the potential for odor), customized dump trucks with hydraulic lifters and leak-proof dump beds (to handle the weight and moisture content of food waste without any leakage) as well as pressure washer systems onboard all trucks so bins can be efficiently emptied and cleaned onsite after unloading (clean bins minimize any risk of residual odors). We supply our customers with leak-resistant rolling bins designed specifically for organics, and we accept all food waste, so sorting is simple and manageable for our customers.

From what we have observed and seen in the industry, the interest in managing organic waste is following the same model as recyclables: accept mixed and contaminated material on the front end, and put considerable resources and technology into post-consumer separation of material into value streams. Our model is different: we believe front-end, pre-consumer contamination control is absolutely critical, and possible at scale. Our strict quality control measures, including clear messaging, direct engagement with customers, and some manual material removal, has kept our contamination rates consistently below 1%. We do not accept any non-compostable items (including plastics, glass, metal, styrofoam), and we do not accept any compostable PLA products, including compostable plastic trash bags, cold cups, or cutlery. The proposed SSO pre-processing facility will only be utilized by The Compost Plant's trucks and customers directly, and will not be a facility open to other waste hauling companies.

2. To what degree will the recycled solid waste material be analogous to commonly used raw materials and how will the use of this material result in a viable and beneficial substitution of a discarded material for a commercial product or raw material?

The analogous equivalent of a raw material feedstock for anaerobic digesters would be mixed food waste loads (including solids and liquids), delivered directly to facilities. But there are two inhibiting factors to this being economically or logistically practical: 1) the efficiency of transport in small collection trucks to area facilities versus aggregated loads moved by tanker trucks; and 2) the restricted capability of many regional digesters to receive only pumpable slurry loads, with no receiving pit or hopper for dumping mixed SSO loads.

Grinding and slurrying food waste is not a novel concept; from a volume reduction and pumpability standpoint, the technology is straightforward. Once mixed food waste is in a slurry form, it is a pumpable waste product that can fit into existing infrastructure for safe storage and

transport: storage tanks, tanker trucks, and vacuum and pump systems that can handle a liquid slurry. Tanker trucks can move up to ~50,000 pounds of food waste at a time, so we estimate that this would equate to 5-6 equivalent TCP truck trips to regional facilities within 75-100 miles. By consolidating the equivalent of 5-6 small loads into a single tanker truck load, we would be able to transport increased SSO volume to these additional facilities at a rate that is economically viable, reduces the equivalent CO2 emissions from transport by over 80%, and gives us the flexibility to manage and expand our food waste collections base in Rhode Island.

One of the key differentiators in the value of the slurried SSO we are proposing is how "clean" (contamination-free) the material is coming in, which negates the need for high technological separation costs. Based on our composting experience and conversations with leading national anaerobic digestion industry experts, a clean, homogeneous slurry from mixed sources (proteins, vegetables, high-BOD liquids, etc.) would be a highly valuable feedstock input at scale for anaerobic digesters. Food waste in this form would be uniform and could be analyzed and "graded" as a recipe input based on desired parameters (e.g. moisture content, pH, particle size, carbon: nitrogen ratio, total solids vs. volatile solids, etc.)

3. How will the proposed recycling and reuse of the solid waste in question protect the natural resources of the State? In addition to discussing how and to what extent the reuse of the solid waste in question will conserve the limited and finite capacity of the State's solid waste landfills, your response must also address why the proposed use of the recycled solid waste will not present a threat to public health or the State's groundwater, surface water, air, or other environmental resources.

The scale of wasted food in the US is staggering: EPA estimates that 63.1 million tons of food waste was generated in the commercial, institutional, and residential sectors in 2018 (21.6 percent of total MSW generation). USDA's *Why should we care about food waste?* website states it plainly: food is the single largest category of material placed in municipal landfills, where it emits methane, a powerful greenhouse gas. Municipal solid waste landfills are the third-largest source of human-related methane emissions in the United States, accounting for approximately 14.1 percent of these emissions in 2017.

Rhode Island's central landfill is expected to reach full capacity in less than 25 years, so there is widespread agreement that food and organic waste needs to be diverted as quickly as possible and at significant scale. Based on RIRRC's 2015 Waste Characterization Study, roughly 85,000 tons of food waste are buried at the Central Landfill annually: 37,000 from commercial mixed solid waste (MSW) sources, 47,000 tons from municipal/residential MSW.

The proposed SSO pre-processing facility would significantly increase local processing capacity for food and organic waste, moving the needle towards increased diversion and beneficial reuse. The facility would help Rhode Island showcase a better system for capturing, diverting, and processing food and organic waste with a high capture rate and a focus on emissions reductions and circular economies, including renewable energy and soil.

Food and organic waste diversion and management presents a serious challenge for the traditional waste management industry models: it is heavy, wet material, with a high risk of odor and high risk of attracting vectors. Given RI's size and demographics, the proposed SSO pre-processing facility could be an organics management template replicable for any similarly-sized metro region/foodshed in the country.

This proposal poses no direct effect to Rhode Island's surface or groundwater resources. The proposed processing activity takes place within a warehouse and is not subject to the effects of rainfall or runoff. Domestic wastewater from the office and restroom are discharging to the sanitary sewer system, but the slurried SSO will be processed in a closed loop system within the warehouse and will have its own designated spill containment areas to prevent any spillage from leaving the interior of the building. Drainage for the exterior bermed area designated for pumpout to tanker trucks will be plumbed and pumped to an interior storage tank within the building to process any slurried SSO spilled during tanker truck loading or collected rainwater. (Collected rainwater would be used in the processing system to facilitate the formation of a slurry from the SSO). In the event of an extreme weather event, rainwater would simply overflow the bermed area and enter the stormwater drainage system of the site. Any remaining rainwater in the bermed area would then be pumped into storage tanks and used in the slurry process once the weather event had ceased.

Dust will not be generated during the processing of SSO into a pumpable slurry due to the wet nature of the food waste collected. TCP collection trucks are equipped with power washing systems to clean bins of SSO after emptying it into the truck bed. All of the wash water from the cleaning process goes into the dump bed of the truck with the food waste, and would be emptied into the receiving hopper and processed at the facility. Due to the high level of moisture in each load, no dust is created when a TCP collection truck dumps an SSO load.

Operational procedures and design features of the SSO processing facility discussed herein will minimize nuisance conditions and negative impacts to human health, local natural resources, and neighborhood quality of life. Appendix A outlines key areas of concern given the operational nature and location of the proposed facility, and specific prevention/mitigation strategies that will be incorporated into the design and operational procedures of the facility.

4. To what extent is there a guaranteed end market for the recycled solid waste material to be produced?

We are engineering and siting this project in partnership with Vanguard Renewables (Vanguard), a national leader in the development of food and dairy waste-to-renewable energy projects focused on anaerobic digestion. Based in Wellesley, Massachusetts, Vanguard is committed to advancing decarbonization by reducing greenhouse gas emissions from farms and food waste and supporting regenerative agriculture best practices on partner farms. Vanguard operates six northeast on-farm anaerobic digesters and plans to expand to 100+ sites nationwide by 2025. They also operate an Organics Recycling Facility in Agawam, Massachusetts, built to depackage and grind food and beverage products, with the slurried food waste going to their own anaerobic digesters. While we are not replicating their depackaging

operation, their system of tanking and transporting clean, slurry to their digesters has confirmed that this project would have enormous value to their operation, with guaranteed end markets for the slurried loads. Slurried loads from the proposed Providence SSO pre-processing facility would be sent to Vanguard's Jordan Dairy Farm sites in Spencer and Rutland, MA, but their additional four other facilities in Massachusetts and Vermont provide redundancy if either the Spencer or Rutland locations are not available to receive loads. Anaergia's anaerobic digester in Johnston would also provide an additional option, as they have pumpout capacity for slurried loads as well. In conclusion, the seven regional anaerobic digesters within trucking distance to the proposed Providence facility offer significant capacity and redundancy to receive slurried SSO well beyond the proposed 100 tons per day volume.

5. How will the proposed recycling and reuse of solid waste improve the environment?

According to the USDA, food waste is estimated at between 30-40 percent of the US food supply, corresponding to approximately 133 billion pounds and $161 billion worth of food in 2010. The food waste problem is not only massive in scale, but is compoundingly detrimental in terms of environmental impacts. Food waste is the single largest category of material placed in landfills, where it produces methane under anaerobic conditions. Municipal solid waste landfills are the third-largest source of human-related methane emissions in the United States, accounting for approximately 14.1 percent of these emissions (in 2017).

According to Further with Food and the Center for Food Loss and Waste Solutions, the large amount of food loss and waste in the United States signals an urgent need to consider new technologies and innovative approaches to improve efficiencies and reduce unnecessary expenses. This is particularly critical with regard to food waste collection, pre-processing, and transport, as this is the conduit between food waste generators (restaurants, institutions, food processing facilities) and end-use facilities (anaerobic digesters and compost facilities).

Pre-processing food waste into a slurry would enable us to capture and divert more material and to more sustainably transport it within the region in a stable form; this would not only reduce methane emissions further from RI's Central Landfill, but would also increase local renewable energy production from digesters with increased volumes of SSO as inputs.

TCP's proposed pre-processing facility will be an improvement for preserving the life of Rhode Island's Central Landfill and conserving Rhode Island's environmental resources. The proposed facility will be a closed loop system: food waste diverted from commercial customers would be emptied into designated hoppers (only from TCP trucks or current customers transporting gaylords with clean SSO), all liquids/solids would be processed through the grinder to create a pumpable slurry, the slurry would be pumped into onsite tanks and pumped out into tanker trucks and transported to AD facilities.

Appendix A outlines key areas of concern given the operational nature and location of the proposed facility, and specific prevention/mitigation strategies that will be incorporated into the design and/or operational procedures of the facility to minimize environmental impacts.

6. Identify and discuss the controls (e.g. environmental, engineering, institutional … etc.) that will be used to properly and safely recycle and reuse the solid waste. This discussion should include, but not be limited to, information regarding the following:

a. The quantity of solid waste material to be received and recycled;

We are engineering the Swan Street facility to be able to handle 100 tons a day at maximum capacity. This would be from a combination of TCP organics collection trucks (10-12 loads per day, roughly 5 tons each) and received gaylords transported by tractor trailer from food processing facilities in Rhode Island. (We have identified two large clients that are actively looking for this solution for their organic waste). The food waste in gaylords would be processed directly at Swan Street, with recycling or disposal of cardboard and recycling of pallets (see Question 5, sub-answer i below). No other waste materials would be received, and no other waste haulers would be utilizing the facility under any circumstances.

Given the fact that this is a new type of pre-processing facility, we propose that the facility is designed and built in its entirety, as conceived, with a stepped capacity provision based on performance metrics. For example, BUD approval could allow the use of one of the 10,000 gallon storage tanks as a trial period, with additional storage tanks brought into service based on agreed-upon metrics of success.

b. The maximum quantity of solid waste material to be stored at the site at any one time;

Given maximum capacity considerations, we anticipate storage capacity consisting of three 10,000 gallon cone-bottom mixing tanks. We are considering an additional storage tank for non-potable water (potentially a rainwater cistern) to achieve proper moisture content for the slurry depending on inputs, based on learnings from Vanguard Renewables' Agawam facility.

We have discussed tank storage with Vanguard Renewables' on-staff project engineer (with a BS-MS in Chemical Engineering and an MS in Environmental Engineering): their Agawam facility has had no off-gassing emissions from tank storage, given the consistent throughput of material and paddle-mixer tanks utilized. This was echoed by the Danish experts from RenewEnergy during their presentation to DEM and CommerceRI on anaerobic digestion and organics management last month. Given DEM's concerns about gas production from tank storage,The Compost Plant proposes two key mitigation strategies: 1) to install gas detection sensors (specifically for methane and hydrogen sulfide) above and/or near tanks to ensure the safety of employees and neighbors; and 2) to include in our operational plan the requirement that the maximum time limit for slurried SSO to be stored in onsite tanks will be 7 days.

c. The source of the solid waste, including the name and address of the generator;

TCP remains committed to focusing on capturing and diverting commercial, institutional, and industrial food waste at scale. We currently have close to 100 accounts of varying sizes, all

within the State of Rhode Island. There is no single generator, but we would be happy to provide a list of accounts if needed for review.

d. A detailed narrative and schematic diagram of the production, manufacturing, and/or residue process by which the waste material is produced;

Clean SSO will arrive at the Swan Street facility in TCP collection trucks or from TCP accounts that utilize tractor trailer trucks containing palletized cardboard gaylords to transport food production waste. Each load will be processed individually in a batch process system, to ensure adequate controls are in place (such as inspecting for non-organic contamination), and emptying the hopper completely before additional material is loaded. There will be two separate procedures for unloading SSO from TCP trucks vs. SSO arriving by tractor trailer:

TCP trucks will back into our warehouse through an overhead garage door that will then be closed once the truck is inside. The truck will then tip its load of SSO into a 20 cubic yard hopper, for final inspection and processing.

TCP accounts arriving by tractor trailer will back up to a loading dock and the palletized cardboard gaylords containing SSO will be unloaded by forklift inside the building. The forklift will then tip the gaylords into the same 20 yard hopper, for final inspection and processing.

From the hopper, the SSO will be augered up into a shoot that feeds a heavy-duty grinder. Food waste passing through the grinder is mixed with non-potable water (rainwater from cistern) or city water to create a pumpable slurry that is then pumped to one of three 10,000 gallon holding tanks. Residual liquids from the SSO loads will be pumped from the hopper directly into the grinder to help facilitate the creation of an optimal moisture content for the slurry. The slurry in the storage tanks will then be homogenized by a tank-top mounted paddle mixer. A tanker truck will pull alongside the building and couple a hose to an external hose fitting to receive the SSO slurry from the storage tanks.

We have created a preliminary flow chart for the process, which is included as Appendix B with this BUD application

e. The expected consistency of the waste material;

As discussed above, mixed SSO (solids and liquids) would be received at the Swan Street facility. Once processed through the grinder, consistency when tanked/transported would be a homogeneous slurry, likely with at least 20% moisture content.

f. How the generator has minimized the quantity and toxicity of the waste material;

The proposed SSO pre-processing facility will only receive clean SSO from TCP trucks or customers delivering palletized gaylords with clean SSO: no other waste haulers will be allowed to utilize this facility. By grinding and processing waste, we will be minimizing its volume and

ensuring it is in a form for safe short-term storage (<1 week) and transport. Given that we are working only with licensed food service facilities and establishments and have a 9+ year track record of bringing clean SSO to licensed compost and AD facilities without incident, we have no reason to anticipate toxicity issues with the SSO material.

g. Adequate and regular inspection of the waste material upon receipt;

TCP uses bright yellow, color coordinated organics bins (hot stamped with “COMPOST ONLY” and/or “FOOD SCRAPS ONLY” on the sides and lids) to visually differentiate the bins from mixed solid waste (MSW) and recycling bins and to minimize any contamination of SSO with plastic packaging or other non-organic materials.

Organic waste picked up is inspected a total of 3 times prior to final receipt: 1) at time of pickup, lids are flipped and a “top of bin” visual inspection is done, with manual removal of any non-organic contaminants such as plastic food packaging, metal serviceware, etc; 2) bins are then emptied into our trucks, and a 2nd visual inspection is done from washing platforms looking down into the dump beds, with additional manual removal if needed; 3) the full load is inspected when dumped at end-use facility. In the case of this project, this would be a visual inspection of the hopper, prior to processing. We keep rakes and manual grabber arms onboard all vehicles for manual removal of any non-organic contamination. Our crews take photos of any bins with non compostable material and photos are sent to owners/managers with directives to correct the problem. If an account has multiple bins with plastic or other non-organic contamination, we discontinue service of that account.

h. Adequate site controls relating to the storage, handling and processing of the waste material, including the extent to which the recycled solid waste material will be handled to minimize loss;

Our Swan Street headquarters is located in a 10,000 sq foot industrial building in a M-MU Mixed-Use Industrial District, appropriately sized and located for the proposed use. Our landlord is actively working with the City of Providence to expand this area into a mini-industrial park (Swan Business Park), with full support for the project from the City of Providence Planning Department and our City Councilman.

As referenced above, the proposed facility will be a closed loop system. Appendix A provides additional detail related to potential impacts on human health, environmental health, and neighborhood quality of life, with specific prevention and/or mitigation strategies that will ensure proper site controls are in place for each stage of the operation.

i. Adequate controls for handling and disposing of any residual solid wastes, including the location of final disposal for any residual solid wastes;

The only other solid wastes related to the operation would be cardboard (from received gaylords) and pallets. Lawrence Waste Services already provides general trash and recycling

service for TCP at Swan Street, and would handle removal of all cardboard. JS Pallet Company, Inc (based in Pawtucket, RI) would handle all pallet removal and recycling/remanufacturing of pallets.

j. Appropriate odor, sediment, stormwater (runoff), and erosion control measures, etc.

As referenced above, the proposed facility will be a closed loop system (almost exclusively indoors), so there are no runoff, sediment, or erosion controls relevant to this BUD application. With the development of the Swan Business Park, the landlord/developer is actively working with the City of Providence Planning Department on stormwater management plans for the future Business Park. Stormwater runoff would be outside the purview of this project, as the entire operation would be in or adjacent to our leased building, and would not impact current or future stormwater management plans.

Odor is a critical risk area for this project, given the decomposition potential of SSO. We have identified odor risk points in Appendix A, and have outlined specific mitigation steps we are proposing to address these risks and concerns.

7. Explain why the proposed recycling of solid waste is not simply an alternate method of disposal. The Director may require information regarding the estimated value of the solid waste material both before and after it is recycled.

At the Federal level, food waste diversion from landfills to composting and anaerobic digestion facilities is recognized and codified as a beneficial reuse: in September 2015, EPA and USDA announced a domestic goal to reduce food loss and waste by 50% by the year 2030, aligned with EPA's Food Recovery Hierarchy.

At the State level, Rhode Island's State Food Strategy *Relish Rhody* was released by Governor Raimondo in May 2017. It was created as an actionable vision for the future of the state's food system, with "Minimize Food Waste & Divert It from the Waste Stream" as one of the 5 top-level priorities of the State food plan. There have also been a number of bills requiring and mandating food waste diversion from landfills, with regulatory frameworks and local infrastructure lagging far behind:

- Rhode Island's Food Waste Ban (Section 23-18.9-17) included within the Refuse Disposal Law, states that as of January 2016, mandates businesses and educational institutions that produce significant volumes of organic waste per week to divert it from landfill if located within 15 miles of an authorized composting or anaerobic digestion facility.
- The Rhode Island School food waste law requires, starting on January 1, 2022, all schools to comply with the state's Food Waste Ban to divert waste from landfills and promote the donation of nonperishable foods.
- Solid Waste 2038 comprehensive plan for Rhode Island. The solid waste management plan developed by the Rhode Island Division of Planning describes existing practices,

programs, and activities in all major solid waste management areas, and recommendations specific to each. One of the Plan's elements is supporting food waste diversion in the commercial sector through policies, regulations, and statutes that encourage development of private processing facilities. *Source: Center for Eco-Technology*

8. What degree of processing has the solid waste material undergone and degree of further processing is required, if any? The applicant must demonstrate that any mixing of different types of material improves the usefulness of the recycled solid waste material.

Our collections service picks up food waste generated directly by a range of customers across Rhode Island. There is no pre-processing of this organic waste: it is in a mixed liquids/solids form, including fruit and vegetable residuals, grains, coffee grounds, dairy, raw and cooked meat, seafood and shellfish, bakery items, etc.

9. Where the project in question includes the reuse of any soil impacted by known or suspected contamination, or the use of any recycled solid waste as a "manufactured soil product" (i.e.: solid waste that is or has been altered or rendered into a material with soil type properties), the applicant must demonstrate the use of these materials at the location in question. *N/A*

10. Whenever the proposed end use for a recycled product involves land application, the applicant shall address the need for applicable engineering standards and controls in accordance with the Solid Waste Regulations(e.g. final cover systems, leachate collection and removal systems, and gas control and recovery systems) to provide for the safe land application end use of BUD materials. End uses involving land application shall be presumed to be low utility uses subject to heightened scrutiny as to whether the use constitutes beneficial reuse or is simply an alternative means of disposal. *N/A*

11. Provide a characterization plan that includes protocols for sample collection and analyses designed to provide a representative characterization of the waste material. The characterization plan shall address:

a. How the samples will be collected (i.e. locations, times, frequency per volume etc.).

We anticipate six to eight TCP collection truck loads per 10,000 gallon tank. After the final load is received, determined by the "full" level in the 10,000 gallon storage tank, TCP will take a one pint sample from the mixing storage tanks (from a sample port on the side of the mixing tanks) as representative of the entirety of the tank. This sample will be sent to a local laboratory for analysis. (See Appendix C for a sample SSO analysis, with parameters outlined below in 11d). These samples will be used to identify each load that goes out by tanker truck, for record-keeping and to monitor consistency vs. variability of the slurry over time.

b. The types of samples to be collected (i.e., discrete, grab, composite, etc.).

We will pull a grab sample (roughly 1 pint) from a sample port on the side of the storage tank for each load going out by tanker truck. Given that the storage tanks will have paddle mixers and regularly agitate the loads, we are confident this will give a representative sample of the full load pumped into the tanker truck.

c. How substances in the solid waste will be identified. *N/A*

d. The physical and chemical analyses to be performed (i.e. size, density, percent solids, liquid content, pH, reactivity, leachability [TCLP test], etc.).

The test parameters for each sample will be determined by the industry standard for anaerobic digestion facilities that will be utilizing slurry. Each sample will be processed by R.I. Analytical Laboratories, Inc. and will include but is not limited to the following parameters: Total Volatile Solids, Total Solids, Chemical Oxygen Demand, Metals (Arsenic, Cadmium, Chromium, Copper, Lead, Molybdenum, Nickel, Selenium, Zinc), Percent Solids, Mercury, and Moisture Content. See Appendix C for a sample laboratory report. TCP will be taking 2-3 trial samples in October/November 2022 from our current loads going directly to compost and anaerobic digestion facilities, and slurrying samples utilizing a small-scale mobile grinder pump. Lab reports from these trial samples will be shared with DEM.

e. Analysis for biological properties of the waste (i.e. pathogens).

No sampling for pathogens would be required by anaerobic digestion facilities.

f. The variability of the substances present in the solid waste.

As described and defined above, the solid waste would only be SSO (liquids and solids).

g. The number of samples required to be collected and analyzed in order to adequately determine the physical, chemical, and biological properties of the waste.

See responses *a*, *b,* and *d* above.

h. The human health and ecological risks associated with the proposed reuse of the solid waste in the proposed manner and location.

We believe this project can be successfully built and operated to minimize risks to human health and local ecological systems, with a significant improvement over the current status quo of food waste mixed with general solid waste and sent to open landfills. We have built our business on consistency, reliability, and customer service, ensuring the highest standards of controls to minimize odor and prevent any leakage of materials. Appendix A outlines key risk areas, with specific steps TCP proposes to eliminate or mitigate these risks.

i. Verification that the sampling and analytical methods used have identified all constituents present in the waste, and a detailed written report describing the concentration and distribution of all substances which may be contained in the waste material.

All food waste entering the facility will be from TCP collection trucks or direct customers of TCP. As discussed above in section *6f and 6g*, TCP has tight controls in place to ensure that SSO material has no contamination, and that any non-compostable items are removed prior to processing. With the receipt of gaylords of SSO transported by one of our customers, the account will have been vetted prior to taking them on as a customer and visually inspected upon receipt and after emptying into the hopper, again ensuring only clean SSO is received and processed. The composition of the slurried outgoing food waste will be tested for the previously mentioned parameters as outlined in section *11 a - d*. Records of test samples for outgoing loads will be kept on file at our office.

12. Any person involved in the storage, handling, processing or use of solid waste for beneficial reuse shall be required to provide financial assurance that:
a. The project approved in the BUD will be completed; and/or
b. Any unused solid waste/beneficial reuse material will be properly removed and disposed of upon completion of the project or if project operations cease for any reason.

See Appendix D for a Closure Plan and Closure Cost Estimate (CCE), with estimated costs to remove all waste materials and clean up the site upon closure of the facility.

All operating, engineering, and other plans which comprehensively identify all activities at the facility will be stamped by a professional engineer once a design for the pre-processing facility is finalized, as appropriate and in accordance within the discipline, as required by R.I. Gen Laws - 5-51-1.

On behalf of The Compost Plant, we certify to the best of our knowledge, the accuracy of the information contained in the submittal, and that it is complete and accurate representation including all known facts required therein.

The Compost Plant L3C certifies that the facility(ies) where the solid waste is processed for reuse and the facility(ies) where the processed material is to be used are not the subject of any actual or potential statutory or regulatory environmental violations (state or federal), or, if actual or potential violations exist, that the processing of the waste or its use are part of a final settlement or remedy approved by DEM.

Leo Pollock Nat Harris
Co-founders and Managing Partners, The Compost Plant L3C

APPENDIX A
Organics Pre-Processing Facility Areas of Concern and Prevention/Mitigation Strategies

The following multifaceted standard operating procedures and specific mitigation strategies for each "stage" of the operation are outlined below, addressing the specific concerns in RIDEM's Comments letter dated August 2, 2022: spillage prevention/mitigation and SSO containment, odor and gas prevention/mitigation, vector control, and contingency scenarios. Collectively, these controls address three overarching areas of concern: impacts on human health or public health; impacts on the natural environment (including surface water, groundwater, and air); and impacts on neighborhood quality of life.

Siting/Neighborhood Quality of Life Considerations:

The proposed SSO pre-processing facility is located in a M-MU Mixed-Use Industrial District, appropriately zoned for the proposed use and suitable to the activities of this proposal. Our location is bordered to the east by Interstate 95, to the west by other commercial businesses such as a body shop and appliance warehouse, to the south by vacant lots and commercial buildings and to the north by other commercial tenants and Rhode Island Hospital. The location provides a buffer to the residential zones west of the site and minimizes neighborhood impacts from commercial activities of the business such as noise and truck traffic.

Our zoning use will be updated to be *Industrial-General* with the permitting of the proposed SSO pre-processing facility, a use explicitly allowed in this type of zone. The *Industrial-General* zoning use allows for the manufacturing of products from processed or unprocessed raw materials (including processing, treatment, and storage), and allows for "noise, vibrations, illumination, or particulate that is perceptible to adjacent land users but is not offensive or obnoxious." (City of Providence Zoning Ordinance, Article 12-28)

SSO Receiving:

Our SOP for receiving SSO loads will follow the following general guidelines:

TCP collection trucks will enter the facility and unload food waste into a receiving hopper, designed to handle at least twice the volume of a collection truck to prevent the possibility of overflow or spillage during unloading. (There will be no floor dumping at all at the facility). TCP will batch process loads (no continuous dumping): only one truck will unload at a time, and the next load will only be received once the previous load has been inspected and processed, with the hopper emptied completely.

TCP accounts arriving by tractor trailer will back up to a loading dock and the palletized cardboard gaylords containing SSO will be unloaded by forklift inside the building. The forklift will then tip the gaylords into the same receiving hopper, for final inspection and processing. Similarly as with the SOP for dumped loads, TCP will batch process gaylord loads (no continuous dumping) to prevent the possibility of overflow or spillage during unloading. An industrial floor cleaning machine will be utilized at the end of each day to clean all floors within the warehouse to maintain a clean shop area.

Given the specific odor concerns regarding the receiving hopper, and after discussing with Danish experts from RenewEnergy, we propose to include a “hood” over the receiving hopper with a suction pipe connected to a portable carbon filter odor control system to ensure we are targeting any potential odor profile from the hopper/receiving area.

Processing/Tank Storage:

Once processed, the slurried SSO will be pumped to one of three 10,000 gallon indoor storage tanks for homogenization and temporary storage. Any additional liquid not conveyed by the auger will be pumped into the grinder via an auxiliary pump and associated plumbing to facilitate the creation of a slurry. Pipes for transfer will be equipped with high pressure shut-off sensors to prevent excessive back pressure and the possibility of a burst pipe in the event of a clog in the pipe.

All tanks will be pressure and water tested in advance of the facility startup and certified by a professional engineer. The three proposed 10,000 gallon storage tanks include a 1.75 design volume safety factor to ensure adequate flexibility and capacity. The storage tanks will be located within a containment berm to prevent the seepage of any spills into the work area where it could present a slip hazard. The bermed containment area will ensure cleanup of any spilled material is contained and confined away from other general work spaces. (Pumps and equipment that may need disassembly for routine maintenance or to clear a blockage will also be located inside the bermed containment area to prevent the creation of slippery conditions on the shop floor). Each of the storage tanks will be equipped with level control sensors and automatic shut-off sensors to the loading pump to prevent the risk of overflow.

Properly applied weight loaded tank vents will be installed to minimize tank emissions. The vents open only when necessary to relieve pressure or vacuum; at all other times, the vents are closed to ensure no odor profile from the tank’s vapor space is released into the building. TCP proposes to install a portable odor control and capture ventilation system connected to the tank vents, ensuring that any displaced tank vapor from tank filling is captured and controlled.

Because the tanks are used as day tanks, the residence time of the slurried food waste inside the tanks will not be long enough to create conditions where the food waste begins to decompose and generate any gasses from decomposition. Vanguard Renewables’ on-staff project engineer (with a BS-MS in Chemical Engineering and an MS in Environmental Engineering) has experience with tank storage considerations for food waste slurry, and their Agawam facility has had no off-gassing emissions from tank storage, given the consistent throughput of material and paddle-mixer tanks utilized. (This was echoed by the Danish experts from RenewEnergy during their visit with CommerceRI and RIDEM staff in September 2022). As a preventative measure, The Compost Plant proposes to install gas detection sensors (specifically for methane and hydrogen sulfide) above and/or near tanks to ensure the safety of employees and neighboring businesses.

Should an employee need to enter one of the tanks to perform maintenance or repair procedures, employees will follow the practices and procedures from the tank manufacturer and general OSHA guidelines to protect themselves from the hazards of entry into permit-required confined spaces.

Tanker Truck Transfer/Pumpout Area:

Tanker truck loading will occur in a designated bermed area outside of the 182 Swan Street building. TCP proposes to use the same portable carbon filtration system to capture displacement air from tanker trucks as it is filled, to mitigate any odor profile. Storage tank level will be noted and level sensors will be utilized to determine the appropriate volume to be pumped into the tanker truck, preventing the risk of overloading (either by weight or volume). A "deadman" switch will be installed in the loading area on the outside of the building to enable emergency shutoff of the loading pump in the event of a problem during loading. Pump hoses used for loading tanker trucks will be disconnected at the end of each day and evacuated/cleaned inside the building, with any residual SSO or washwater cycled pumped into storage tanks directly.

Vector Concerns and Mitigation Strategies:

Potential vectors at the Facility include insects, rodents and birds. Facility personnel will implement preventative measures toward controlling insects, rodents and birds through routine good housekeeping procedures and regular grounds inspections. Rapid and timely handling of food waste into the processing equipment assures little potential for insect and rodent attraction because the material is located indoors and in the receiving hopper for a very short period of time. Overhead doors will be kept closed at all times when food waste is loaded into the hopper, except for moving TCP collection vehicles in and out of the building. Any openings in and around building foundations, waste containers, and holding areas will be eliminated. To deal with the potential vectors, TCP already has a contract with Big Blue Bug, Inc., a licensed company that provides vector control services for the current facility

Contingency Plans:

Our priority will be consistent preventative maintenance of machinery and equipment. Given the inevitability of an equipment breakdown, the facility would be closed immediately to any additional material, and TCP trucks would be diverted to alternate facilities with which we already have existing partnerships (one of permitted compost facilities in RI or MA and/or the anaerobic digester in Johnston). We also have the capability to empty SSO gaylords into TCP trucks directly, so in the case of a facility closure, incoming SSO gaylords would be loaded into TCP trucks and diverted to alternate facilities as well.

In the case of failure to the hopper/grinder, any remaining material would be manually removed; in a worst case scenario, TCP would rent a mini excavator to clear material into one of our dump trucks, which would then be sent to a partner facility.

In the case of tank leakage: any remaining slurry in the tank would be pumped out into another of the storage tanks or a tanker truck immediately, and the tank would be taken offline for service. The redundancy of having 3 tanks would enable the operation to continue to operate until the damaged tank was repaired and tested/certified for use.

Delivery of unacceptable material: the facility would only be utilized by TCP organics collection trucks and received gaylords transported by tractor trailer from food processing facilities in Rhode Island that have been fully vetted for source-separated organics. No other waste materials would be received at the facility, and no other waste haulers would be utilizing the facility under any circumstances.

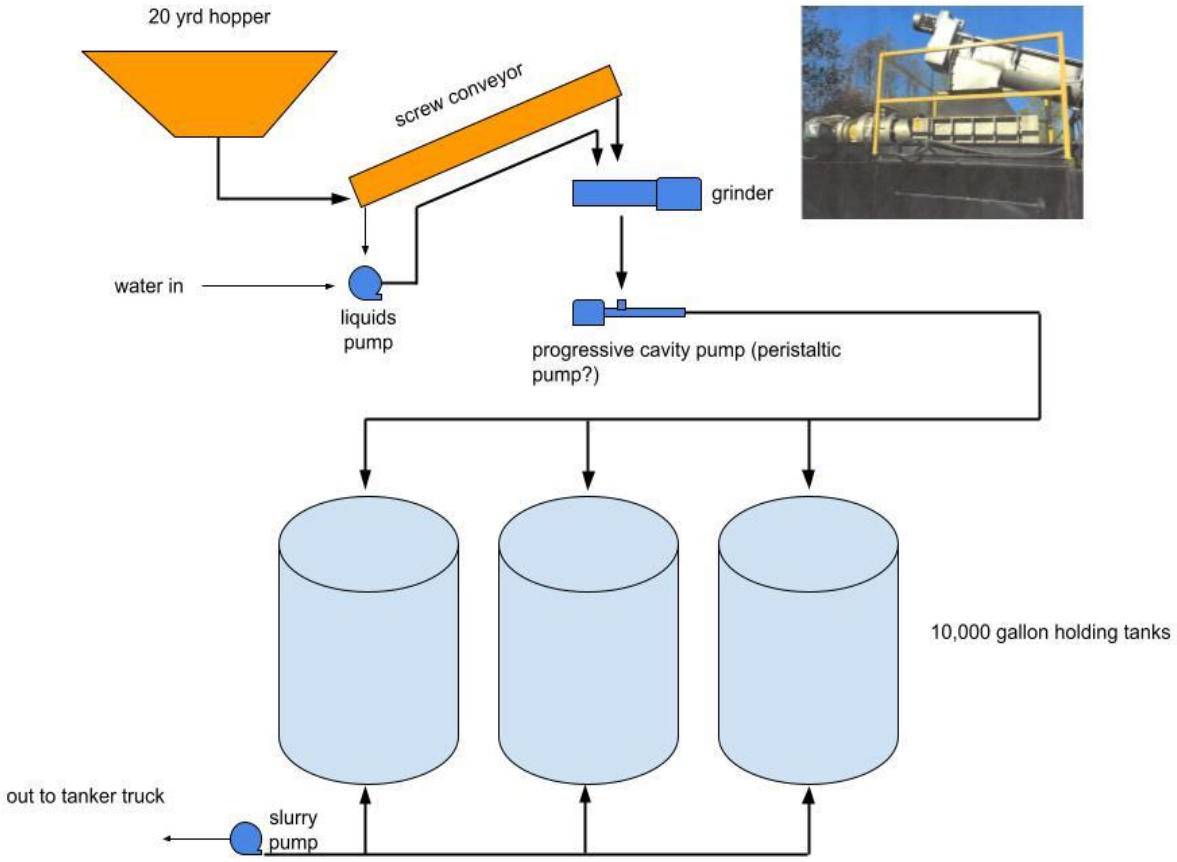
Fires: the building on Swan Street is located in an Industrial District, and our building is fully up to code with inspected fire alarm and overhead sprinkler systems. In the event of a fire, the facility would be closed until the fire was fully contained and damage evaluated.

In the case of an extreme weather event, TCP staff would ensure all storage tanks, hopper and grinding system were empty and cleaned of SSO prior to the forecasted weather event to prevent unprocessed SSO from creating odorous conditions or off-gassing from prolonged storage. In the event of a sudden and prolonged power loss: The Compost Plant would rent a suitably-sized generator for temporary use until power is fully restored.

Should an odor event happen, specific actions will be taken to address complaints if unacceptable odors occur beyond the property line of the facility and RIDEM receives a complaint:

1. The location and direction of the odor complaint as it relates to the facility will be noted and verified by TCP staff
2. The source of the odor will be identified and eliminated immediately.
3. Management practices will be altered or adjusted as needed to ensure the source of the odor is fully addressed and the odor issue is not replicated.

APPENDIX B
Preliminary Flow Chart



APPENDIX C

Sample SSO Analysis

R.I. Analytical Laboratories, Inc.

Laboratory Report

[redacted]

Work Order #: 2205-07494

Project Name: [redacted] FEEDSTOCK

Sample Number: 001
Sample Description: [redacted]
Sample Type : GRAB
Sample Date / Time : 5/02/2022

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED		ANALYST
Total Volatile Solids	86000	0.00005	mg/kg wet	SM2540G 18-21ed	5/9/2022	20:00	TP
Total Solids	93000	10	mg/kg wet	SM2540G 18-21ed	5/9/2022	20:00	TP
COD	200000	130000	mg/kg wet	SM 5220D	5/10/2022	9:58	KPG
Total Metals Analyzed by ICP							
Arsenic	<0.30	0.30	mg/kg dry	SW-846 6010C	5/11/2022	8:59	SAR
Cadmium	<0.030	0.030	mg/kg dry	SW-846 6010C	5/11/2022	8:59	SAR
Chromium	<0.18	0.18	mg/kg dry	SW-846 6010C	5/11/2022	8:59	SAR
Percent Solids	83.2		%	SM2540G 18-21ed	5/10/2022	10:20	SGM
Total Metals							
Mercury	<0.0060	0.0060	mg/kg dry	SW-846 7471B	5/10/2022	14:22	BB
ICP Digestion				SW-846 3050B	5/10/2022	13:09	BB
Moisture	16.8		%	SM2540G 18-21ed	5/10/2022	10:20	SGM
Mercury Digestion				SW-846 7471B	5/10/2022	13:38	BB

Sample Number: 002
Sample Description: [redacted]
Sample Type : GRAB
Sample Date / Time : 5/03/2022

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED		ANALYST
Total Volatile Solids	91000	0.00005	mg/kg wet	SM2540G 18-21ed	5/9/2022	20:00	TP
Total Solids	100000	10	mg/kg wet	SM2540G 18-21ed	5/9/2022	20:00	TP
COD	170000	57000	mg/kg wet	SM 5220D	5/10/2022	9:58	KPG

APPENDIX D

Closure Plan and Closure Cost Estimate

This Section provides information concerning the closure and post closure activities and a cost estimate for a third party to provide such services.

Assessment of Closure Conditions

Following cessation of operations, a qualified environmental professional will visit the site to assess the conditions, estimate the amount and type of equipment necessary to manage materials, and identify the methods and locations for removing any solid waste and recyclables to approved off-site facilities.

Estimated Cost: $ 1,500

Disposal of Materials

30,000 gallons of slurried SSO feedstock present in storage tanks at the facility at the time of closure represents full capacity of the facility. Although there is value to the organic materials, to be conservative we assumed that they contain no monetary value as the material would be accepted at similar organics processing facilities or at anaerobic digestion facilities. We further assume that the average costs for hauling is $0.14 per gallon and $30 a ton tip fee for disposal of the slurried SSO materials to another organics processing or disposal facility within Rhode Island or Massachusetts.

Estimated Labor Cost	$ 800
Estimated Hauling, slurried SSO	$ 4,200
Estimated Disposal Cost, slurried SSO	$ 2,700
Subtotal	$ 7,700

Site Restoration Costs

Site restoration costs include the cleaning of the receiving hopper and the organics processing equipment, sweeping of all paved surfaces, and removal and disposal/recycling of incidental oils and other materials used in the Facility's operation. The activities are expected to be completed in one day.

Estimated Cost: $ 3,000

Oversight/Final Closure Report

Oversight and final inspection of closure activities as they occur by a qualified environmental professional. A final report will be prepared that describes closure activities, provides copies of manifests and shipping logs, and a statement regarding the final integrity of the site.

Estimated Cost: $ 4,000

Sub-total Cost Closure Estimate: $16,200

Contingency

Contingency funds (20% of total estimated closure costs) ensure that additional funds are available in case further assessment is required or costs have been underestimated.

Contingency funds (20%): $ 3,240

Total Cost Closure Estimate: $ 19,440