Johnson, Sabrina O

From: Black, Alexis
Sent: Thursday, October 29, 2020 7:13 AM
To: SWD_Waste
Subject: FW: Yard Waste/ Leachate Evaluation
Attachments: 2020 Annual Yard Waste registration.pdf; 9 3 2020 Leachate System Initial Evaluation.pdf

Alexis Black
Environmental Specialist II
Compliance Assurance Program
Florida Department of Environmental Protection
Southwest District

From: Joshua L. Younce <Joshua.Younce@citrusbocc.com>
Sent: Wednesday, October 28, 2020 4:16 PM
To: Black, Alexis <Alexis.Black@FloridaDEP.gov>
Cc: Henry C. Norris <Henry.Norris@citrusbocc.com>
Subject: Yard Waste/ Leachate Evaluation

Here are the documents as requested, let me know if there's anything else I can do to assist. Thank you, have a great night!

Joshua Younce
Compliance Manager
Citrus County Solid Waste Management Division
230 W. Gulf to Lake Hwy.
Lecanto, FL. 34461
Office: (352) 527-7679
Joshua.Younce@citrusbocc.com

Florida Department of Environmental Protection

Bob Martinez Center
2600 Blairstone Road
Tallahassee, Florida 32399-2400

August 01, 2020

Henry C. Norris, Jr.
Citrus County Bocc
P.O. Box 340
Lecanto, FL 34460

Dear Henry C. Norris, Jr.:

Your registration application for Citrus County Central Landfill, located at 230 W. Gulf to Lake Highway, Lecanto, in Citrus County has been received. The application indicated this facility is operating as a:

___ Yard Trash Transfer Station
__X__ Yard Trash Recycling Facility
___ Manure Blending Operation
___ Vegetative, Animal Byproducts or Manure Composting Facility

And processing the following:

__X__ Yard Trash (including clean wood)
___ Manure
___ Animal byproducts (composting)
___ Vegetative wastes (composting)
___ Pre-consumer vegetative (composting)

The registration application is complete, and is valid until August 1, 2021. The WACS identification number for this facility is 00039859. The receipt number for the registration fee you paid is 34837.

You must comply with the requirements specified in Rule 62-709.320, and Rules 62-709.330 or 62-709.350, Florida Administrative Code (F.A.C.), in order to maintain qualification for the registration program. A summary of the operating requirements is enclosed.

If you need further information, please contact the Division of Waste Management, Waste Registration Section at the above address, Mail Station 4550, phone 850-245-8707 or email Waste.Registration@dep.state.fl.us.

Sincerely,

Lauren O'Connor
Waste Registration Section

Enclosure

cc: Melissa Madden, Southwest District
Steven Tafuni, Southwest District

Requirements for source-separated organics facilities qualifying for registration - Chapter 62-709, F.A.C.

Rule/Referenced Rule	Provision
Specific to all	
62-709.300(7)(a)	No person shall cause or allow objectionable odor in violation of Chapter 62-296, F.A.C.
62-709.300(7)(b)	Rule 62-701.300, and subsection 62-701.320(13) apply to facilities regulated under 62-709.
62-701.300(1)(b)	Stored or processed in a way or location that does not violate air quality or water quality standards.
62-701.300(2)(a)	Geological formations or subsurface features must provide support for the facility
62-701.300(2)(c)	Not in a dewatered pit unless permanent leachate containment and special design techniques used.
62-701.300(2)(d)	Not in any natural or artificial water body(e.g., ground water and wetlands within DEP jurisdiction).
62-701.300(2)(f)	Not be placed on the right of way of any public highway, road, or alley.
62-701.300(3)	No open burning in the recycling area of the facility and controlled burning complies with DEP rules.
62-701.300(14)	No CCA treated wood in material applied as a ground cover, soil or soil amendment.
62-701.300(15)	No unconfined emissions of particulate matter in violation of paragraph 62-296.320(4)(c), F.A.C.
62-709.320(2)(a)	Have the necessary operational features and equipment - unless otherwise specified, including
62-709.320(2)(a)1.	effective barrier to prevent unauthorized entry and dumping
62-709.320(2)(a)2.	Dust and litter control methods
62-709.320(2)(a)3.	Fire protection and control provisions to deal with accidental burning of solid waste, including
62-709.320(2)(a)3.a.	20-foot all-weather access road all around the perimeter
62-709.320(2)(a)3.b.	No material shall be mechanically compacted
62-709.320(2)(a)3.c.	No material shall be more than 50 feet from access by motorized firefighting equipment
62-709.320(2)(b)	Operate in a manner to control vectors
62-709.320(2)(c)	Operate in a manner to control objectionable odors per with Rule 62-296.320(2), F.A.C.
62-709.320(2)(d)	Keep any installed drains and leachate or condensate conveyances cleaned
62-709.320(2)(e)	Process received solid waste timely as follows
62-709.320(2)(e)1.	Size-reduce or remove yard trash within 6 months or time needed to receive 3,000 tons or 12,000 cubic yards, whichever is greater. Separated logs with 6 inch diameter or greater can be stored for up to 12 months before being size-reduced or removed.
62-709.320(2)(e)2.	Putrescible waste (e.g., vegetative wastes, animal byproducts or manure) shall be processed and incorporated into the composting material, or removed from the facility, within 48 hours.
62-709.320(2)(f)	Containerized and removed immediately any treated or untreated biomedical waste; hazardous waste; or any materials having (PCB) concentration of 50 ppm or greater.
62-709.320(2)(g)	All residuals, solid waste and recyclable materials removed and recycled or disposed upon ceasing operations. Any remaining processed material shall be properly used or disposed.
62-709.320(4)(a)	Keep monthly records of incoming and outgoing material for at least three years..
62-709.320(4)(b)	If temperature used to show disinfection or vector attraction achieved, keep records for 3 years.

Specific to yard trash only facilities	
62-709.300(7)(b)	Rule 62-701.300, and subsection 62-701.320(13) apply to facilities regulated under 62-709.
62-701.300(12)(a)	At least 100 feet from off-site potable water well that existed before facility registered.
62-701.300(12)(b)	At least 50 feet from any body of water, including wetlands. Not including parts of permitted stormwater system, or water bodies totally within facility with no discharge to surface waters.
62-709.330(2)	Processed material gone from facility within 18 months, unless longer storage authorized by permit.
62-709.330(3)	Accept only yard trash, and bags used to collect yard trash. Containerized any other material

Specific to composting of vegetative wastes, animal byproducts or manure, or blending manure	
62-709.300(7)(b)	Rule 62-701.300, and subsection 62-701.320(13) apply to facilities regulated under 62-709.
62-701.300(2)(b)	Be more than 500 feet off-site potable water well that existed before facility registered
62-701.300(2)(e)	Within 200 feet from any body of water, including wetlands. Not including parts of permitted stormwater system, or water bodies totally within facility with no discharge to surface waters.
62-701.320(13)(b)	Not within 10,000 feet of any licensed and operating airport runway used by turbine powered aircraft, or within 5,000 feet of any licensed and operating airport runway used only by piston engine aircraft, unless applicant demonstrates that the facility is designed and will be operated so that it does not pose a bird hazard to aircraft.
62-709.350(2)	Carbon:nitrogen ratio of the blended feedstocks shall be greater than 20.
62-709.350(3)	Piles do not exceed 12 feet in height.
62-709.350(5)	All material removed within 18 months, unless longer storage authorized by permit.
62-709.350(6)	Show that disinfection achieved. not required if made from only pre-consumer vegetative waste
62-709.350(7)	Vector attraction reduction controls shall include either (a) or (b) below:
62-709.350(7)(a)	Composted for at least 14 days, with temperature no lower than 40 degrees Celsius and average temperature of the material being composted higher than 45 degrees Celsius; or
62-709.350(7)(b)	Specific oxygen uptake rate (SOUR) for material being composted or blended shall be equal to or less than 1.5 milligrams of oxygen per hour per gram of total solids (dry weight basis) at a temperature of 20 degrees Celsius

TECHNICAL MEMORANDUM

Citrus County
Central Landfill Leachate System Evaluation

TO: Henry Norris, Solid Waste Director (Citrus County)

FROM: Troy Hays, PG; Gregg Fruecht; Mike Clark, PE; Mark Hadlock, PE; Thomas LeBlanc, EI (Jones Edmunds)

DATE: September 3, 2020

SUBJECT: Initial Recommendations for Upgrades to the Leachate Collection System
Jones Edmunds Project No. 22500-068-01

Jones Edmunds met with County Staff at the Central Landfill on August 13, 2020, to review the leachate collection and disposal system in each of the landfill phases. The site visit was to evaluate the leachate system components and maintenance procedures and to identify any immediate needs or repairs to the system that would help keep it in operation. This Technical Memorandum documents the observations from the site visit and provides recommendations for the system.

TECHNICAL AND OPERATIONAL ITEMS DISCUSSED

During the site visit, we observed and discussed with County staff the following leachate system components:

- Submersible Pump Equipment status and elevation in each wet well.
- Pressure Transducer status and elevation in each wet well.
- Each Phase's Control Panel and Electrical Equipment.
- Remote Telemetry Unit (RTU) and Supervisory Control and Data Acquisition (SCADA) System, provided by DataFlow Systems (DFS).
- Leachate Lift Station.
- Transducer Operation and Communications.

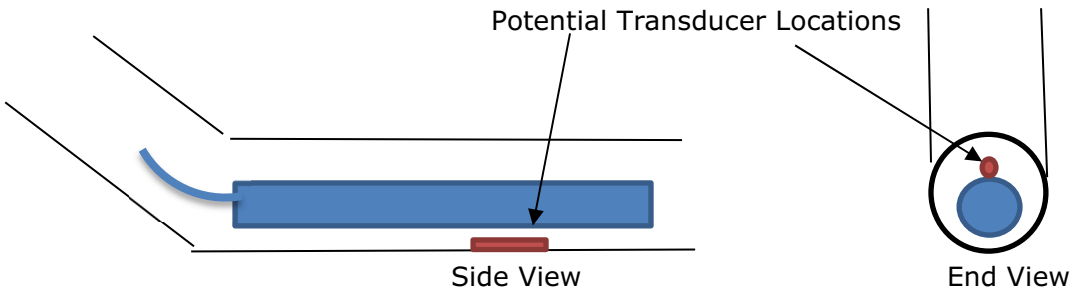
One of the key objectives that was discussed at length for this project is to compile reliable information pertaining to each leachate sump and riser construction along with verifying the installed elevations for the Pumps and Transducers. The bullets below summarize the discussions during the site visit and are our understanding of the major issues that the County is facing with the Leachate System:

- Phase 2 has incurred multiple Pump failures, so on July 8, 2020, one 5-horsepower (HP) Pentair Mfg. Pump was installed and energized in the Primary Well and one 1-HP Grundfos Mfg. Pump was installed and energized in the Secondary Well. Both Pumps are

considered temporary installations until preferred Pumps can be installed. New Pumps were ordered by the County.

- County Operations believes the Transducer setpoints for the Pumps are set too low and result in quick cycling and potential cavitation before the auto shut-off of the pump. The County has some videotapes that demonstrate that some pumps evacuate all of the leachate in the Horizontal Sump area. The Horizontal Sump area is the lowest part of the landfill and the landfill is designed for all leachate in the cell to flow to the sump locations for pumping out of the landfill. The landfill is required to keep less than one foot of leachate on the liner and since the Transducers are in the Horizontal Sumps below the main liner elevation, a reading of one foot of leachate from the Transducer may not represent one foot of leachate on the Liner. This will cause the Pumps to turn on and off (cycling) more frequently than necessary.

- All Pumps are lowered into the Horizontal Sump position in each Side-Slope Well of Phases 1, 2, and 3. The transducers are affixed to the Horizontal Pump Motor 12 inches from the Pump intake screen. During the Pump installation procedure, the Pump may rotate within the Horizontal Sump, so the transducer's exact orientation is unknown each time the Pump is lowered into the Sump (example: 3, 6, 9 or 12 o-clock position?).



- Jones Edmunds will coordinate with Citrus County Utilities to retrieve Transducer Elevation Logs and any Pump Installation and Maintenance Logs.

- Phase 1 Side-Slope Wells were partially collapsed and refurbished several years ago with Stainless Steel Inserts to reform and re-round each well to facilitate pump insertion and operation.

- The Closed Landfill (7-acre site) has two Vertical Leachate Wet-Wells with submersible pumps that evacuate leachate and transfer it to the Site Leachate Lift Station (west of Phase 2).

- The Site Leachate Lift Station has a singular wet-well with two submersible pumps that operate on a float system. The Site Leachate Lift Station has aboveground manifolded piping with check valves and a below-grade vault that also contains flow meter transmitters. The Control Panel at the Lift Station also provides functions to Phase 1A Leachate System, which discharges its effluent into the Lift Station. The Site Leachate Lift Station has two 5-HP pumps and typically pumps 450 gallons per day (gpd). The pumping cycle is typically 5 minutes.

- DFS RTUs are installed to monitor Leachate pumping at each Phase of the Leachate Well system. Telemetry Control Units (TCUs) are installed at all locations with the exception of the Site Leachate Lift Station – which uses a DFS Programmable Logic Controller (PLC) Telemetry Panel. All DFS panels report to a SCADA system terminal and screen at the Administration Building. Utilities technicians conduct daily site visits to record field readings, record SCADA readings onto a Daily Leachate Collection System Sheet and transcribe notes into a logbook that is at the SCADA terminal. The Daily Sheet also indicates readings from the Leachate Storage Tanks and the Landfill Gas Methane Flare Burner System.

- RTUs/TCUs have a maximum capability of receiving two input signals from separate transducers. A supplemental switching panel box could be installed to add a backpack transducer within each well.

- SCADA/RTU is configured for on-site monitoring only; no provision for remote control is available. However, DFS does have the capability to a dial-up system to monitor or troubleshoot at the County Solid Waste Department's request.

- Mader Electric (Tampa) aids the County with Control Panel and/or Pump Equipment. Mader has submitted a proposal to fabricate two replacement Control Panels – one panel for Phase 2, and another for the Site Leachate Lift Station. This was only to purchase the panel; panel installation was not included in the proposal.

- Barney's Pumps provides semiannual inspections of ALL Pumps and Blowers (February and September). Voltage, Amps, and Elapsed-Time Meter (ETM) readings are recorded. Full function of controls is also tested. Where possible, wet wells are washed down. Observations and recommendations are provided to the County.

- Central Florida Control provides Flow Meter inspections and calibrations every 2 years.

- County Utility Department electrical technicians and other Utility technicians provide assistance to the Solid Waste Department based on County-distributed internal Work Order Request sheets. These activities are based on and responded to on three criteria: Emergency, ASAP, Normal/Safety. The Utility Department is typically contacted twice a month to perform some maintenance/repair effort.

FIELD OBSERVATIONS:

- The grounding systems in all of the panels are in poor condition. These components have a shorter life expectancy than most of the other electrical equipment and are critical system components in Florida due to our extreme lightning occurrences. Additionally, many of these components are one-time use since they only protect for one lightning strike and then need to be replaced.

- The County staff has observed that Duke Energy has experienced some Phase Losses to County equipment. Without the proper phase-monitoring equipment inside of the control panels, equipment can be damaged.

- Historically, the County has experienced some overload faults to pumps.

PHASE 3

- The Control Panel at Phase 3 was provided by Mader Electric approximately 10 years ago and is in good condition.
- County Staff needs a Local Access code to view the Operator Interface Terminal (OIT) for the Control Panel.
- The SCADA screen could be updated to include a separate pop-up screen for Phase 1. (Currently configured as a subscreen to the Site Leachate Lift Station).
- No check valves are installed on the surface piping allowing leachate to flow back into the landfill cells.

PHASE 2

- The OIT display at Phase 2 is not functioning; however, the County believes that the data transmitted to the SCADA system in the Administration Building is accurate.
- Check valves have been recently installed on aboveground piping.

PHASE 1

- High-density polyethylene (HDPE) Well Casings have Stainless Steel Insert Sleeves.
- Flow Meter and Level signals are processed through the Site Leachate Lift Station Control Panel and DFS PLC panel.
- All Surge Protection Devises (SPD) are old and may require replacement.
- All ball valves may require replacement.
- Conduit replacement is required.
- Concrete well pipe supports are damaged and require replacing.

GENERAL

- Duke Energy is actively replacing the aerial electrical service drops to selected on-site locations including the Site Leachate Lift Station and Leachate Tanks.
- All three Landfill Phase's Leachate is pumped to the Leachate Holding Tanks.
- Approximately 15,000 gpd of leachate is pumped for off-site treatment to the County's Meadowcrest WWTF.

RECOMMENDATIONS

1. **System Hydraulics:** A review of the leachate system hydraulics needs to be conducted to verify exactly where each cell is pumping to/from and the pressure on each system component. This will allow a determination to be made on where piping modifications and or additional valves/check valves are needed. This will also ensure the system is not pumping against itself and just recirculating leachate between the cells. A thorough review of the system hydraulics is further needed to verify flow and system pressure issues. Piping modifications can be designed to limit and control the system interactions after the system review.

2. **Pump Check Valves:** All pumps should have check valves installed on them to protect the pump. The Citrus County Central Landfill is unique in that the pump risers are over 100 feet long, causing a large column of leachate to continually be on top of the pumps.

Without the check valve installed on top of the pump, all of the leachate in the riser will flow back into the cell through the pump. This causes two issues:

- The liquid level in the leachate sump to rise and hard-start the pump while the leachate is flowing back through the pump.
- The constant flow of leachate back into the cell from the riser will cause the pumps to cycle on and off significantly more frequently than necessary.

Both of these issues will cause undue wear and tear on the pumps. A check valve should be installed on the top of each pump. The County has moved forward with installing in-line check valves at the leachate headers on Phase 2, since apparently when the pumps in Phase 2 are off, leachate from the other phases is being pumped into Phase 2. The check valves will stop the flow of leachate into Phase 2 from the other pumping in other phases. However, when the new pumps are installed in Phase 2 with the check valves on the top of the pump, there may be an issue with vacuum buildup between the two check valves. The County may need to install a vacuum relief valve between the check valves.

Lastly, the Flow Controls should have a time delay whenever a transducer calls for a pump run signal to allow the flow in the system to settle down and ensure that the call for the pump to run is required.

3. **Power and Controls:** This facility is suffering from many years of legacy repairs and upgrades, with systems being demolished and other systems put in their place without completely understanding or providing an integrated system. Control panels have been modified to remove significant numbers of components and adding new components but leaving the legacy hardware and wiring. This creates maintenance issues and confusion for those working on the systems if they were not directly involved with the original work. Maintenance personnel are unable to know if the legacy equipment and wiring is still pertinent or the cause of their issues. In addition, primarily due to these previous modifications, the enclosures of many of the control panels and electrical equipment have degraded and often may not meet their intended weather-exposure rating. An area around the stations is considered classified by the National Electric Code (NEC) and as such needs to comply with hazardous locations Division I Class I and Class II.

   For the short term, the electrical and control systems need to be upgraded to ensure compliance with the NEC and its classified area designations and legacy hardware and equipment replaced that have deteriorated or is suspect to ensure the safe operations of the facility and staff moving forward. These upgrades and replacements can be done on an as-needed basis based on the systems that have deteriorated or degraded the most.

   Additionally, a general degradation of the grounding system has occurred throughout the site. Grounding conductors appear to be broken or degraded significantly. Since the grounding system is intended to help ensure the clearance of faults and electrical discharges, these inconsistencies represent potential hazards to personnel and hardware. This is especially true at facilities such as landfills that are open and subject to lightning issues, where strong positive grounding aids in the mitigation of faults and can help minimize damage. The grounding system throughout the facility needs to have an in-depth review and suspect or degraded systems need to be upgraded or replaced.

Other systems such as those for Phase 3 are in reasonably good condition; the upgrades needed at these facilities might be considered more long-term. The County has already taken steps to consider other long-term system upgrades such as the SCADA hardware and software implementation by recently releasing a Purchase Order for upgrades to portions of the system. These upgrades would need to continue throughout the system, replacing antiquated legacy hardware to ultimately provide a completely upgraded system that will allow staff to properly operate and manage the system.

Moving forward, regardless of what systems are upgraded or modified, a unified and focused approach toward preventative maintenance and long-term sustainability of the systems needs to be initiated. Electrical and mechanical components degrade over time and are susceptible to damage by outside influences (lightning, surges, etc.), and with most electronic components these days, they outlive their active life becoming no longer supported by the manufacturers. Long-term planning needs to occur to focus on key components and facilities that may be susceptible to damage. Future updates or modifications of the systems need to be straightforward and less susceptible to rework. The easiest way to accomplish this type of system is to require modular-type installations wherein separate components or systems are replaced entirely when upgraded. This approach rather than a piecemeal approach would tend to not leave the type of legacy system that is now present.

IMMEDIATE NEEDS/ACTION ITEMS:

1. Review the system hydraulic model to determine flow conditions throughout the leachate collection system. The hydraulic model should show where we have backflow in the system and where the different landfill phases may be pumping against each other. Review of the model will also allow Jones Edmunds to propose piping modifications and verify that a larger issue with the leachate system flow conditions is not occurring.

    - **Action Item:** Jones Edmunds is working with the County to determine if a hydraulic model of the leachate system has been prepared. We are reviewing the past submittals for the facility to try to find any information on a previously prepared model. An understanding of the system hydraulics is required to verify that the site piping is correct and for the future programing of the new SCADA system to ensure that the various parts of the system are not pumping against each other. A review of the model will also allow us to determine if the correct pumps are installed that meet the pumping conditions in each wet well. Developing an entirely new hydraulic model is outside the purview of this project, but one may need to be prepared to accurately determine the system dynamics.

2. The electrical and control systems need to be upgraded to ensure compliance with the NEC and its classified area designations and legacy hardware and equipment that have deteriorated or is suspect replaced to ensure the safe operations of the facility and staff moving forward. The grounding system in all of the panels needs to be replaced to protect the electrical equipment. These upgrades and replacements can be done on an as-needed basis based on the systems that have deteriorated or degraded most, or we can move forward with a new design of the panels and SCADA system that will control the pumping of the leachate based on the system hydraulics.

- **Action Item:** Two options are available to move forward with getting the leachate electrical system into compliance and upgraded with the appropriate controls:
    - The County can start replacing the parts in the panels that need replacing. Jones Edmunds can help with this by providing a list of specific parts and recommending replacement priority in each panel. This will prolong the issue of the legacy repairs; however, the panels will be brought into compliance with the NEC and adequate grounding will be provided. Moving forward with this option is delaying the inevitable in that some of these panels need to be replaced. All of the panels and equipment need new grounding/lightning hardening.
    - Design new panels and retrofit the newer site panels with new equipment. This will also include working with DFS and the County's new SCADA system so that the system will work as a whole and not pump against each other. After reviewing the system hydraulics, we could include additional automated controls so that the pumps are not pumping against each other.

The County is already moving forward with some of these upgrades with the purchase of the new SCADA system and the solicitation for new panels. No matter which path forward the County prefers, new grounding needs to be installed to protect any new equipment.