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January 16, 2020

FID # 405132860
Brown County
SW / Approval

Dean Haen, Director
Brown County Port & Resource Recovery Department
2561 South Broadway
Green Bay, WI 54304

Subject: Conditional Plan of Operation Approval for the Brown County South Landfill, Town of Holland, Brown County, DNR monitoring no. 3565

Dear Mr. Haen:

The Department of Natural Resources (department) has reviewed and approves the plan of operation for the proposed Brown County South Landfill (BCSLF) subject to compliance with chs. NR 500 through 538, Wis. Adm. Code, and the conditions listed in the attached approval. Please include the attached approval in the written operating record for the landfill as specified in s. NR 506.17, Wis. Adm. Code.

The enclosures to this letter include a project summary and the plan of operation approval. Please carefully read the approval and the summary since they contain additional requirements for the construction and operation of the landfill. Environmental monitoring tables, as well as, closure and long-term care cost estimate tables are also attached. This approval replaces the project summary and updates the existing site conditions and proposed landfill operations and supersedes conditions of the 1999 plan of operation.

Please note that there are two conditions, which require further actions by the Brown County Port and Resource Recovery Department (BCPRRD). Condition #6 requires an evaluation of groundwater flow directions and the monitoring network after the construction of Phase 2 since it appears there is not currently a groundwater monitoring point downgradient of the Phase 2 sump. Depending on the results of the evaluation, an additional groundwater monitoring well(s) and a plan of operation modification may be required. Condition #5 requires a revised storm water management plan sheet, associated calculations and other information for the East stockpile since it appears that the storm water drainage features associated with the stockpile were not included in the plan of operation. Also, note the department is concerned with the height of the stockpile and its proximity to the property boundary. Ensure that the storm water management design meets the requirements of s. NR 504.09, Wis. Adm. Code, (specifically s. NR 504.09(1)(h) and (i), Wis. Adm. Code).

The BCSLF is designed to be the regional landfill for Brown, Outagamie and Winnebago counties in accordance with an agreement between the counties and the BCSLF plan of operation. An October 14, 2019 letter from the BOW (Brown, Outagamie, Winnebago) County directors indicates the intent to operate Brown County and Outagamie County landfills at the same time at a future date. Prior to implementing proposed changes, the BOW directors will need to submit a plan of operation modification request for the BCSLF to address changes in landfill operations, such as phasing and any other applicable items.

Please be aware that a condition of this approval requires proof of financial responsibility for closure and long-term care be established and submitted with the construction documentation for the first phase of liner. The proof of financial responsibility must be established based upon the approved costs contained herein and ch. NR 520,

Wis. Adm. Code. Please contact Dustin Sholly, owner financial responsibility specialist, at Dustin.Sholly@wisconsin.gov or 608-267-3133 if you have questions.

Prior to placing waste within the landfill, BCPRRD will also need to obtain a landfill license by submitting the Landfill License Application, Form 4400-019 and a copy of the Solid Waste Land Disposal Site Affidavit, Form 4400-067, demonstrating the site has been recorded in the office of the register of deeds in each county where the site is located. Contact Geoff Pfeiffer, Environmental Program Associate, at Geoffrey.Pfeiffer@wisconsin.gov or 920-662-6166 regarding licensure and the submittal of the documentation. Note that the department will not issue a landfill license until after proof of financial responsibility is established and the department has approved the construction documentation report for the initial phase of the landfill liner.

Please keep in mind that this approval does not relieve BCPRRD of obligations to meet all other applicable federal, state and local permits, as well as zoning and regulatory requirements. If BCPRRD has any questions regarding this approval, please contact Sally Hronek by telephone at 920-662-5493 or email at Sally.Hronek@wisconsin.gov or Jackie Marciulionis at 920-662-5433 or email at Jacqueline.Marciulionis@wisconsin.gov.

Sincerely,

Kristin DuFresne
Waste and Materials Management Program Supervisor
Northeast Region

Enclosed
- Project summary
- Approval and attachments
    - Attachment 1 - Environmental Monitoring Tables
    - Attachment 2 - PAL and ACL Tables
    - Attachment 3 - Cost Estimate Tables

cc: Chad Doverspike – Brown County (via email Chad.Doverspike@browncountywi.gov)
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PROJECT SUMMARY
BROWN COUNTY SOUTH LANDFILL

GENERAL INFORMATION

AUTHORIZED CONTACT:

Mr. Dean Haen
Director of Solid Waste
Brown County Port & Resource Recovery Department
2561 S. Broadway Street
Green Bay, WI 54304

LICENSEE AND PROPERTY OWNER: Brown County Port & Resource Recovery Department (BCPRRD)

SITE LOCATION: The Brown County South Landfill (BCSLF) will be located in the E ½ of the SW ¼ of Section 18, Township 21N, Range 20E, Town of Holland, Brown County, Wisconsin.

ACREAGE AND ACCESS: The proposed disposal area will be approximately 69.9 acres within an approximate 313-acre parcel of land owned by BCPRRD. Access to the facility will be via the existing route for the site from County Road IL. Vehicles traveling from U.S. Hwy 41 to State Trunk Highway (STH) 96 and STH 32/57 will access the facility via County Road IL. Vehicles traveling from the east will access the site via STH 29 to STH 32/57 or County Trunk Highway NN to STH 96 and County Road IL.

CAPACITY AND SITE LIFE: The proposed landfill will provide approximately 9,303,000 cubic yards (cy) of design capacity. The estimated site life will be 10.5 years. BCPRRD anticipates that it will receive approximately 886,000 cy of waste annually.

WASTE TYPES AND GENERATORS SERVED: The BCSLF will serve as a regional landfill for Outagamie County, Brown County, and Winnebago County. Currently, the Outagamie County Northeast Landfill (OCNELF) is serving as the regional landfill; however, once OCNELF reaches capacity BCSLF will serve as the regional landfill. There will be a period of transition when both landfills are operating concurrently. Proposed acceptance of waste is not limited to within the service area boundary. The BCSLF is expected to receive waste types similar to the current OCNELF and has proposed to screen wastes types using a Special Waste Management Plan. The waste types include the following:

- Municipal solid waste (MSW)
- Construction and demolition (C&D) waste
- Industrial and special waste, including but not limited to:
    - Paper mill sludge
    - Municipal wastewater treatment plant sludge
    - Auto shredder fluff
    - Fly ash and bottom ash from energy production facilities
    - Materials generated from qualified C&D Processing Facilities
    - Coal/wood ash
    - Asbestos (friable and non-friable)
    - Foundry sand/slag
    - Car wash grit
    - Contaminated soils
    - Residues from materials recovery facilities (MRF)
    - Other miscellaneous non-hazardous wastes

PERIOD OF LONG-TERM CARE RESPONSIBILITY: BCPRRD must, by law, provide financial assurance sufficient to care for the landfill for a period of 40 years following landfill closure. However, BCPRRD will be responsible for long term care of the facility in perpetuity.

SITE CHARACTERISTICS

For a detailed description of the site characteristics refer to the feasibility determination for the proposed expansion to the BCSLF issued by the department October 23, 1996. Many of the site characteristics such as the land use and zoning, site topography, regional and site-specific geology and hydrogeology are the same or similar to those described in the feasibility determination with a few notable exceptions, which include wetlands, baseline groundwater quality, and private water supply wells within 1,200 feet of the proposed limits of waste, which are explained below.

WETLANDS: In 2017 due to updated changes in criteria used to classify wetlands, BCPRRD reassessed the property to evaluate if wetland extents remained the same since the 1996 feasibility determination. BCPRRD confirmed existing non-impacted wetlands, identified and delineated impacted wetlands, and identified several wetlands as artificial. On November 15, 2018, the department determined the artificial wetlands are exempt from permitting requirements because they were created as a result of approved development activities related the landfill. On August 13, 2019, the department issued a fill permit (IP-NE-2019-5-01286) for approximately 3.52 acres of existing non-exempt wetlands that will be impacted by construction of the landfill and associated features. On October 3, 2019, the Army Corps of Engineers also issued a fill permit (# MVP-2017-03839-JRS) for those wetland areas that will be impacted by landfill development. The wetland impacts will be mitigated through wetland bank credits that have been purchased by BCPRRD.

BASELINE GROUNDWATER QUALITY: Due to the amount of time since baseline groundwater quality was established, BCPRRD collected baseline groundwater samples between December 2017 and February 2019 to evaluate if groundwater quality conditions remained the same. The 1996 feasibility determination indicated several substances including arsenic, cadmium, fluoride, manganese, nitrate plus nitrite (as N), selenium, and sulfate attained or exceeded ch. NR 140, Wis. Adm. Code, preventive action limits (PALs) or enforcement standards (ES) and granted several exemptions in accordance with s. NR 140.28, Wis. Adm. Code. Baseline groundwater quality generally remained the same, but vanadium and chloride were identified as additional substances that exceed ch. NR 140, Wis. Adm. Code, groundwater quality standards, and selenium, cadmium, and fluoride did not exceed standards in the new baseline data collected. Furthermore, changes to ch. NR 140, Wis. Adm. Code, since the feasibility determination include establishment of PALs and ESs for boron and ammonia, establishment of a health-based PAL and ES for manganese, and a lower PAL and ES for arsenic. The new baseline data collected was evaluated relative to those new standards. This plan of operation approval is granting exemptions to the ch. NR 140, Wis. Adm. Code, groundwater quality standards based on the new baseline data, where needed, and rescinding exemptions that are no longer needed. New indicator parameter PALs and alternative concentrations limits (ACLs) are also established based on the new baseline data collected and will replace those approved in the April 7, 1999 conditional plan of operation approval.

PRIVATE WATER SUPPLY WELLS: The 1996 feasibility determination identified six private water supply wells within 1,200 feet of the proposed limits of waste and granted exemptions from s. NR 504.04(3)(f), Wis. Adm. Code. As part of this review, the department will be rescinding the exemption to three wells because although these wells are within 1,200 feet of the 1996 proposed monofill, BCPRRD is not pursuing the monofill as part of this approval request. As part of this review, the department is issuing an exemption from s. NR 504.04(3)(f), Wis. Adm. Code, for a new well (YG310) constructed within 1,200 feet of the proposed MSW limits of waste. Finally, the department has included a future proposed well (P-1) in the monitoring program that BCRPPD will be constructing for on-site personnel use. Therefore, a total of five private water supply wells will be within 1,200 feet of the landfill and are included in the monitoring program.

PROPOSED LANDFILL DESIGN

PRELIMINARY CONSTRUCTION: As part of the 1999 plan of operation, the department gave BCPRRD approval to perform initial construction of clearing and grubbing of approximately 70-acres and construction of stormwater features. The existing site has cleared and grubbed areas, vegetated soil stockpiles, stormwater features, some infrastructure roads, seeded and vegetated undisturbed areas, and a partially excavated Phase 1 as a soil borrow for other Brown County projects.

SUBBASE GRADES: The proposed subbase grades range from about 660-feet mean sea level (MSL) in the northeast corner of Phase 1 to about 680-feet MSL in the southwest corner of Phase 3. At least 25 feet of fine-grained soil will be located below the subbase grades meeting the definition of a fine-grained soil environment.

UNDERDRAIN OR GRADIENT CONTROL SYSTEM: Since the landfill was proposed with base grades beneath the water table, the proposed landfill is considered a zone of saturation landfill. The results of the uplift analysis indicated a groundwater underdrain system will be required for liner stability. Therefore, the landfill design includes an underdrain or groundwater gradient control system consisting of the following:

- A geocomposite drainage material with a minimum transmissivity of 1×10^{-4} square meters per second (m^2/sec) placed over the entire floor of each phase extending a minimum of 10 vertical feet up the side slopes;
- Groundwater collection trenches consisting of a 6-inch diameter (dia.), standard dimensional ratio (SDR) 11 high-density polyethylene (HDPE) perforated pipe installed in a 2-feet wide by 2-feet deep trench. The perforated pipe will be surrounded with a 6 ounce per square yard (oz/sy) non-woven geotextile to minimize migration of fine particles. A minimum of 6-inches of pipe bedding material consisting of 1½-inch coarse aggregate material will be placed beneath the pipe and mounded a minimum 1-foot over the pipe;
- Cleanouts on both ends of each pipeline segment with long sweep bends at each change of direction and slope;
- Groundwater removal system located directly beneath the leachate collection system consisting of groundwater collection sumps, 12-inch dia., SDR 11 polyethylene (PE) side slope riser pipes, and submersible pumps; and
- Two groundwater head monitoring wells per major phase of development to monitor the hydraulic head of the groundwater beneath the composite liner of the landfill.

BASE GRADES: The proposed base grades range from approximately 664-feet to 684-feet MSL and occurs below the water table, which ranges in elevation across the site from approximately 690-feet in the northwest corner of the landfill to approximately 720-feet MSL in the southeast corner. The interior sidewalls are designed at a maximum 3 horizontal to 1 vertical slope from the base to the top of the berm. The base grades are designed with an approximate 2.0% to 4.8% slope.

COMPOSITE LINER: The proposed design meets s. NR 504.06(2), Wis. Adm. Code, requirements. The proposed composite liner consists of 4-feet recompacted clay and 60-mil geomembrane.

LEACHATE COLLECTION SYSTEM AND TREATMENT: The proposed leachate collection system design meets the s. NR 504.06(5), Wis. Adm. Code, requirements. The base grades are designed and sloped in a herringbone drainage configuration and slope toward the 6-foot deep leachate sumps. The leachate collection sumps are designed with a 1-inch thick sheet of HDPE placed beneath the side slope riser pipe. The v-shaped leachate collection trenches will contain 6-inch dia., SDR 11 HDPE perforated piping. The proposed drainage layer design consists of a protective 12 oz/sy non-woven geotextile overlaying the geomembrane and a minimum 1-foot coarse aggregate drainage blanket placed over the geotextile.

The transfer system design consists of 18-inch dia., SDR 11 PE side slope riser pipes extended to the top of the perimeter berm to junction manholes. BCPRRD will transfer leachate from the manholes via a double-encased (3-inch dia., SDR 11 HDPE inside 6-inch dia., SDR 32.5 HDPE) leachate force main pipeline to an on-site 158,000-gallon underground, concrete storage tank.

The proposed storage tank is designed to provide 5-days of holding capacity. The tank design contains a divider wall along the centerline to allow cleaning of one side while operating the other. BCPRRD will manage discharge in either compartment or both compartments simultaneously via pipes and valves. In addition, the interior design of the tank consists of a geomembrane or a spray-on polyethylene liner coating. The exterior design of the tank consists of a 30-mil layer of PVC for double-casing, 1-foot perimeter sand layer, and a 2-inch dia. sch. 80 PVC riser pipe to provide a leak location monitoring point.

Leachate tanker trucks will collect leachate over a catch basin that directly drains back into the tank. The NEW Water wastewater treatment plant in De Pere, Wisconsin is the primary leachate treatment location with the City of Green Bay NEW Water treatment plant as the alternate treatment facility. Leachate will also be recirculated, which is discussed in more detail below.

LEACHATE LEVEL MONITORING: BCPRRD will monitor leachate levels via two leachate head monitoring wells in each major phase of development. The design consists of a 4-inch dia., schedule (sch.) 80, non-perforated polyvinyl chloride (PVC) pipe with a 10-foot slotted pipe section for the screen.

BCPRRD will monitor leachate recirculation in accordance with s. NR 507.215(1) through (4), Wis. Adm. Code, which includes liquid mass balance, leachate head, leachate characteristics and landfill gas monitoring. Refer to the attached environmental monitoring tables.

PHASING: BCPRRD is part of an intergovernmental solid waste disposal agreement (Agreement) between Brown, Outagamie, and Winnebago Counties (BOW), that establishes a single regional landfill within one of the three counties that services all three counties at one time. The Agreement currently stipulates disposal will transition to BCSLF when the Outagamie County OCNELF reaches capacity. Phasing proposed in the plan of operation for the BCSLF is based on the current BOW Agreement and assumes all the waste disposed in the BOW service area will be disposed in the BCSLF. The design currently includes three horizontal construction phases (north to south) as outlined below, one vertical filling phase, and five final cover sequences.

Construction Phases	**Phase 1 Liner**	**Phase 2 Liner**	**Phase 3 Liner**
Phase size (acres)	25.7	20.4	23.5
Design capacity (cy)	2,531,000	2,330,000	4,442,000
Active life of phase (yrs)	2.9	2.6	5.0

Once each phase reaches final waste grades, BCPRRD will place intermediate cover over those areas. BCPRRD will construct the final cover system and seed the areas in accordance with the final cover sequencing plan. While the final cover system is being constructed, BCPRRD will install permanent service roads and drainage structures.

FINAL COVER: The final cover system meets the s. NR 504.07, Wis. Adm. Code, requirements. The final cover system consists of the following from top to bottom:

- 6-inch topsoil layer
- 2.5-foot rooting zone layer
- geocomposite drainage layer
- 40-mil linear low-density polyethylene (LLDPE) geomembrane layer
- 2-foot compacted clay layer
- 6-inch grading layer

As noted above, the design currently includes five final cover sequences. BCPRRD will delay installing final cover for 2-years after BCSLF has reached final grades. Final cover construction will depend on filling rate and reaching approved final waste grades. See plan sheets 12, 13, 15 in the plan of operation submittal and plan sheet 14R in addendum 1 for details of the proposed final cover areas.

Final Cover Sequences	Sequence 1	Sequence 2	Sequence 3	Sequence 4	Sequence 5
Sequence size (acres)	7.4	5.0	9.7	24.7	22.9

BCPRRD proposes to use a wild flower and prairie grass seed mix for the final cover and Wisconsin Department of Transportation (WDOT) highway mix for the roadside ditches, stockpiles, and other property areas. BCPRRD proposes to monitor and maintain final cover to ensure continual vegetative cover and discourage cover erosion, storm water ponding, and woody vegetative growth.

SURFACE WATER DRAINAGE: The proposed surface water management system is designed to comply with chapters NR 151 and NR 504, Wis. Adm. Code. Surface water control structures consist of diversion berms, down slope pipes, perimeter drainage ditches, culverts, a sedimentation basin, and a biofilter that discharges offsite and eventually into the East River. Temporary diversion berms constructed on the intermediate cover are designed to divert surface water runoff away from the active cell area. Vegetation will be established on the diversion berms to minimize erosion.

Before commencing operation of the proposed BCSLF, the BCPRRD is required to apply for and be issued a Tier 2 industrial storm water permit. BCPRRD is required to obtain coverage under either the Tier 2 industrials storm water permit or a construction storm water permit during construction of the landfill.

GAS EXTRACTION SYSTEM: The vertical gas extraction system meets the s. NR 504.08, Wis. Adm. Code, requirements. BCPRRD will use a vertical gas extraction system as the primary system and install vertical gas wells when areas reach final waste grades. Horizontal gas wells will be installed as temporary control devices during active filling to control gas prior to the time when vertical gas wells will be installed.

The temporary horizontal gas extraction wells will consist of a series of trenches spaced 300-feet apart horizontally and 30-feet vertically. The horizontal gas extraction wells will typically be offset 75-feet from leachate recirculation trenches and 150-feet from horizontal gas wells in adjacent lifts. The horizontal gas wells will be constructed with 6-inch perforated, SDR 11 HDPE pipe embedded in aggregate. Each horizontal gas extraction well is designed to have a typical gas extraction well head to control flow and vacuum and monitor gas parameters.

The gas extraction system is designed to consist of driplegs to collect gas condensate, which gravity drains to the leachate collection system. BCPRRD will control gas emissions via a blower and flare system.

Before commencing construction of the proposed BCSLF, the BCPRRD is required to apply for and be issued air pollution control permits. The department issued 19-RSG-132 construction permit and air pollution control operation permit 405251550-P01 dated January 2, 2020. The facility will need to control its air emissions in accordance with applicable local, state and federal regulations. Federal New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) for Municipal Solid Waste Landfills are included in the construction and operation permits as applicable, including a requirement to conduct surface emission monitoring (Part I). State Hazardous air pollution regulations in ch. NR 445, Wis. Adm. Code, may apply to emissions from equipment not covered under the NESHAP.

FACILITY OPERATION

The proposed BCSLF operations meet ch. NR 506, Wis. Adm. Code. Additional details specific to BCSLF include those outlined in this section. BCPRRD will operate during posted hours. In general, BCPRRD will follow their Dust, Litter, and Odor Control Plan, as well as, implement the following during inclement events, such as:

- wet weather: ensure all-weather access roads, truck maneuverable active disposal area, and stormwater is diverted away from operations;
- cold weather: clearly mark access and prohibited areas, as well as, perform snow clearing and de-icing activities where necessary;
- windy weather: appropriately place portable wind screens, dispose waste in the lowest levels of the active area, accept only certain types of waste, perform frequent windblown litter clean-up, and cease disposal operations during extreme conditions; and
- dry weather: implement dust control measures, such as watering roads.

DISPOSAL OPERATION: BCPRRD will fill each phase via the approved access roads and initially place waste in a layer approximately 6 to 8-foot thick over the entire leachate collection blanket in each phase. Subsequent disposal operations will include placing waste in as small as practical active area, compacting the waste into minimum 2-foot layers, and covering the waste at the end of each operating day with 6-inches of daily cover or approved alternate daily cover (ADC) material. For each 30-vertical feet of waste placement, BCPRRD will construct temporary horizontal gas extraction wells and leachate recirculation trenches. Disposal operations will continue to the approved intermediate and final waste grades.

WASTE SCREENING: BCPRRD will screen waste at the transfer station and at the on-site scale. BCPRRD proposes a special waste management plan for waste requiring prior approval or special handling, such as asbestos, naturally occurring radioactive material, etc. If BCPRRD determines that a load is unacceptable, the hauler is responsible for removal and proper disposal.

ALTERNATE MATERIAL USE: BCPPRD proposes to use Posi-Shell® spray-on synthetic daily cover, contaminated soil, source separated shredded wood and other waste materials for ADC and other beneficial uses in BCSLF as outlined in the table below.

Alternative Use	Category	Approved to Use
Alternate daily cover (requires material source specific approval)	Paper Mill Sludge	Appvion
		Proctor & Gamble
		Neenah Paper (Neenah & Appleton)
		Fox River Fiber
		Clearwater Paper
	Foundry Sand & Slag	De Pere Foundry
		Anchor Casing
	Shredder Fluff	Alter Metals
	Boiler Ash	Ahlstrom-Munksjö (Rhinelander) – fly ash
		UW-Oshkosh – bottom & fly ash
		Weston (Schofield, WI) -fly ash
Internal roadways and staging deck (requires material source specific approval)	Foundry Sand & Slag	De Pere Foundry
		Anchor Casing
	Shredder Fluff	Alter Metals
	Shredded Wood	Source separated that is not coated
	Boiler Ash	Ahlstrom-Munksjö (Rhinelander) – fly ash

Alternative Use	Category	Approved to Use
		UW-Oshkosh – bottom & fly ash
		Weston (Adams Street, Green Bay) -fly ash
Screening berms (requires material source specific approval)	Foundry Sand & Slag	De Pere Foundry
		Anchor Casing

In accordance with the special waste plan, BCPRRD will analyze contaminated soils, other than untreated petroleum contaminated soils, intended for use as ADC or beneficial use for the contaminants of concern (e.g. total solids [mg/kg] analysis rather than TCLP analysis) and compare the results to the ch. NR 720, Wis. Adm. Code, industrial direct contact residual contaminant levels (RCLs). BCPRRD will not beneficially use contaminated soils with impacts above NR 720, Wis. Adm. Code, industrial direct contact RCLs within the landfill without prior written department approval.

BCPRRD will remove ADC material with low permeability prior to additional waste placement to minimize barrier layers that inhibit leachate drainage to the leachate collection system. BCPRRD will stockpile these materials within the active area of BCSLF.

SOIL BORROW AND STOCKPILING PLAN: BCPRRD will use in-situ clay and soils that are excavated from the landfill footprint to establish subbase grades and for construction and operation of the site (i.e., perimeter berms, clay liner, daily and intermediate cover, final cover, access roads or other features). Excess material will be stockpiled for later use. BCPRRD will excavate soils during construction of each major phase, identify the different materials, and separate into designated onsite stockpiles. BCPRRD will use soil stockpiles on the north and east to screen landfill activities (existing forested areas will offer screening from the south, east, and west).

BCPRRD determined through the geotechnical investigation (conducted as part of the 1996 feasibility report) that on-site soil would meet s. NR 504.06, Wis. Adm. Code, requirements for clay liner and final cover layers. For this plan of operation review, BCSLF determined the current material balance of on-site soils as follows: general fill (1,586,000 cy), select clay fill (1,586,000 cy), topsoil (303,000 cy), and excess soils (271,000 cy). BCPRRD will obtain select granular fill, pipe bedding, base course, and riprap materials from commercial borrow sources. BCPRRD has approval to use excess cubic yards of excavated soil (not needed for BCSLF construction and operation) for other Brown County projects.

ORGANIC STABILITY

Due to the importance of MSW landfills implementing their plan during active filling, achieving organic stability within 40-years after closure, and ensuring continual compliance, the department has incorporated conditions in the approval that ensure a means of monitoring the waste degradation progress.

GOALS OF THE ORGANIC STABILITY PLAN: BCPRRD's organic stability plan outlines the approaches to significantly reduce the amount of degradable organic material remaining after site closure to reduce the amount of time the landfill will take to achieve landfill organic stability. BCPRRD's objective and goals include the following:

- A monthly average total methane plus carbon dioxide gas production rate less than or equal to 5% of the maximum monthly average total gas production rate observed during the life of the facility, or less than 7.5 cubic feet of total gas per year for each cubic yard of waste in the facility;
- A steady downward trend in the rate of total methane plus carbon dioxide gas production;
- Production of total methane plus carbon dioxide gas cumulatively representing 75% or greater of the projected total gas production of the landfilled waste; and
- Reduction of the time necessary to reach landfill organic stability to 40 years or less after site closing.

BCPRRD's general approach to decrease the time required for the BCSLF to reach organic stability includes:

- Increase the moisture content in the waste mass to increase the waste degradation rate
- Evaluate the potential to divert additional organics from the landfill by expanding compost operations

Increasing the moisture content is the primary strategy to reduce the amount of time required to reach organic stability. The organic stability plan proposed that moisture content will be increased through leachate recirculation and delayed final capping. However, the proposed capping delay is two years, which has become standard practice at municipal solid waste landfills to account for settlement. Calculations demonstrating the impact this two-year delay would have on organic stability were not provided; therefore, leachate recirculation is considered the primary strategy to increase moisture content.

LEACHATE RECIRCULATION: BCPRRD will recirculate leachate within the setbacks per s. NR 506.135, Wis. Adm. Code, of 100-feet from the exterior side slopes and 20-feet above the leachate collection system. BCPRRD will begin leachate recirculation after a minimum of 20-feet of waste is in the cell and a gas collection system is in place.

BCPRRD will obtain leachate from the leachate extraction sumps and or from the leachate collection tank and integrate leachate into the waste mass via the following methods:

- Direct application of leachate to the working face of the landfill
- Temporary horizontal trenches
- Permanent horizontal trenches with direct connections to the leachate extraction system

If permanent horizontal trenches are utilized, they will be constructed on the same lift as horizontal gas collection wells. The leachate recirculation trenches will be offset from each horizontal gas wells by 75 feet on each side.

Recirculating leachate helps accomplish the following:

- Stabilization of the waste mass through accelerated biodegradation
- Reduction of leachate treatment costs
- Improving compaction and maximization of approved airspace
- Improving waste mass stability and ultimately long-term integrity of the final cover through reduced post-capping differential settlement
- Enhancing gas production

Warning Symptoms

Leachate recirculation will be suspended upon discovery of warning symptoms and may not resume in the area where the problem occurred until changes are made to the system or the warning symptoms have declined to acceptable levels. The department will be notified in writing within 7 days of the discovery of warning symptoms and suspension of leachate recirculation. Warning symptoms may include the following:

- Leachate head build up in the leachate head monitoring wells
- Leachate seeps developing on either the interior or exterior slopes
- Flooding of the gas collection pipes
- Excessive pressures within the waste mass
- Elevated gas temperatures indicating a potential subsurface fire
- Ponded leachate over recirculation trenches or on the active fill area
- Gas or odor emissions that require major adjustments of the gas extraction system to control

Failure Thresholds

Leachate recirculation will be suspended whenever any of the failure thresholds are exceeded. Leachate recirculation may not resume until the department has reviewed and approved changes to the system that will

result in meeting the thresholds. The department will be notified within 3 days of the discovery of exceeding any failure threshold. Failure thresholds may include the following:

- Presence of flowing seeps with constant liquid output from the waste mass or exterior slopes
- Unusual cracks or openings in the waste which may be an indication of a slope failure
- Instability of the waste mass which can be felt at the surface
- Major operational problems such as haul trucks and equipment sinking in the waste
- Collapse of haul roads
- Visible changes in the waste mass indicating instability
- Massive odor problems which cannot be controlled by the gas collection system
- Excessive pressures within the waste mass
- Extended periods of time when leachate pumps are not in operation

YARD WASTE AND ORGANICS COMPOSTING: BCPRRD will continue to divert material suitable for composting to approved composting operations. Yard waste is diverted from the landfill through the operation of 14 municipal yard waste drop-off sites located throughout Brown County. In addition, the Brown County Food and Organic Waste Program is a pilot program open to residents that diverts food wastes from the landfill by composting organics.

DELAY FINAL CAPPING: BCPRRD will delay installing final cover for 2-years after BCSLF has reached final grades. Delaying final cover installation allows additional moisture to reach the waste mass and promote decomposition, promote additional gas generation, and allows additional settlement for greater cover stability.

MONITORING AND EVALUATION: BCPRRD will monitor and evaluate the effectiveness the organic stability plan. The department will require BCPRRD to collect waste samples at 20-foot intervals from borings for vertical gas extraction wells and analyze the samples for moisture content and organic matter content. The department will require BCPRRD to document the elevations of any standing leachate levels in the borings for all vertical gas well borings. The department will require BCPRRD to report results in the construction documentation report for gas extraction wells and summarize in the applicable organic stability reports.

Contingency Plan

BCPRRD will implement a contingency plan if monitoring and evaluation of the organic stability plan indicate the facility is unlikely to achieve the goals outlined in s. NR 514.07(9)(c), Wis. Adm. Code, and stated above. If it is determined that liquid addition may not achieve the landfill organic stability goals due to technical, operational, or political issues, BCPRRD will evaluate the other options available at that time for achieving organic stability and will update the contingency plan as part of the annual reporting process. Contingency plan options could include but are not limited to the following:

- Diverting composting items to off-site source
- Diverting other organic waste streams from the landfill
- Pre-processing organic or hybrid waste (e.g. composting or shredding) before placement in the landfill
- Implementing aerobic bioreactor approach to landfill operations
- Delaying final cover installation for a longer period of time

REPORTING: BCPRRD will prepare annual progress reports per s. NR 514.07(9)(d), Wis. Adm. Code. Each annual report will include an evaluation of whether changes are needed in the plan to correct problems or improve results. BCPRRD may update the contingency plan at this time also. BCPRRD may submit the annual organic stability report as part of the landfill annual report required by the attached approval. Every 5 years, BCPRRD will examine progress against the approved plan to evaluate the likelihood that the plan will enable the facility to reach the goals listed above and determine whether the contingency plan will be implemented. BCPRRD will submit a report describing the evaluation and determination to the department as part of the annual report for that

year. The department may require that the contingency plan be implemented if its review finds that the progress the landfill has made is significantly different than the approved plan.

ENVIRONMENTAL MONITORING

Environmental and performance monitoring will extend through active site operation and long-term care. BCPRRD will report monitoring data to the department in an electronic format specified by the department, as required by s. NR 507.26(3), Wis. Adm. Code. See attachments.

CLOSURE AND LONG-TERM CARE COSTS

Although BCPRRD will be perpetually responsible, in accordance with s. 289.41(1m)(c), Wis. Stats., for the long-term care of this landfill, proof of owner financial responsibility is only required for closure of the most expensive area, and for long term care of the entire facility for a period of 40 years. Actions to be taken during closure and long-term care, along with the associated cost estimates, are summarized in the attached tables. Closure costs reflect the most expensive area to close, which includes 61.9 acres of the BCSLF. The closure costs include:

- purchasing, hauling, placement and documentation testing of all the final cover materials including soils, membranes, fabrics, and grids and topsoil;
- seeding, fertilizing, mulching and labor;
- installation of gas removal and treatment devices; and
- preparation of an engineering report that documents the work performed and a 10% contingency per s. NR 520.02(2), Wis. Adm, Code.

Long-term care costs include:

- land surface care;
- gas removal, treatment and monitoring;
- unsaturated zone monitoring;
- leachate pumping, transportation, monitoring and treatment;
- groundwater monitoring including sample collection and analysis;
- leachate collection line cleaning on an annual basis;
- annual cost of electricity for maintaining the closed site; and
- 10% contingency per s. NR 520.02(3), Wis. Adm. Code

BEFORE THE
STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

CONDITIONAL PLAN OF OPERATION APPROVAL FOR THE BROWN COUNTY SOUTH LANDFILL MONITORING NO. 3565

FINDINGS OF FACT

The Department of Natural Resources (department) finds that:

1. Brown County Port & Resource Recovery Department (BCPRRD) is proposing to construct a non-hazardous solid waste disposal facility (Brown County South Landfill [BCSLF]) in the E ½ of the SW ¼ of Section 18, Township 21N, Range 20E, town of Holland, Brown County, Wisconsin.

2. The department issued a conditional plan of operation approval for BCSLF on April 7, 1999. BCPRRD did not construct a major phase of the landfill within 2-years from the date of the plan of operation approval; therefore, BCPRRD was required to reapply for approval to construct the landfill in accordance with s. NR 504.06(1)(b), Wis. Adm. Code.

3. The department issued a determination of need and feasibility for the BCSLF on October 23, 1996.

4. On April 30. 2019, Foth Infrastructure & Environment, LLC (Foth) on behalf of BCPRRD, submitted to the department a plan of operation for the proposed BCSLF. The department received the review fee of $7,700 for the plan of operation on May 20, 2019.

5. The information submitted as part of the plan of operation includes the following:

   a. A report and appendices titled "Plan of Operation, Brown County South Landfill Development" and 41 accompanying plan sheets, dated April 30, 2019. This submittal was received by the department on April 30, 2019.

   b. An addendum and appendices titled "Addendum No. 1 to the Plan of Operation Report, Brown County South Landfill Development" and 9 accompanying revised plan sheets, dated October 11, 2019. This submittal was received by the department on October 18, 2019.

   c. An e-mail from Foth on behalf of BCPRRD, dated December 17, 2019, providing Figures 10 through 13 which were missing from Addendum No. 1 to the Plan of Operation Report.

   d. An addendum and attachments titled "Addendum No. 2 to the Plan of Operation Report, Brown County South Landfill Development" dated December 20, 2019. This submittal was received by the department on December 20, 2019.

   e. An e-mail from Foth on behalf of BCPRRD, dated January 9, 2020, providing comments in response to e-mails from the department pertaining to a draft project summary, ch. NR 140, Wis. Adm. Code, groundwater quality exemptions, draft environmental monitoring tables, and draft preventive action limits (PALs) and alternative concentration limits (ACLs) dated December 19, 2019, December 20, 2019, December 26, 2019, and January 7, 2020, respectively .

f. An e-mail from Foth on behalf of BCPRRD, dated January 13, 2020, concurring with draft PALs and ACLs for the proposed BCSLF provided in an e-mail from the department January 20, 2020.

6. Additional documents considered in the review of the plan of operation include the following:

a. The following documents related to ch. NR 140, Wis. Adm. Code, groundwater quality standard exemptions at the proposed landfill:

i. A memo dated December 18, 2019 sent in an email dated December 20, 2019 to Bill Phelps, Drinking and Groundwater Program Hydrogeologist, providing an evaluation of exemptions requested in the plan of operation.

ii. A memo dated January 7, 2020 from the department's Drinking and Groundwater Program providing concurrence on ch. NR 140, Wis. Adm. Code, groundwater quality standard exemptions granted in this approval.

b. A memo to the BCSLF file dated January 14, 2020 summarizing the department's evaluation of the PALs and ACLs proposed in the plan of operation and Addendum No. 1 to the plan of operation.

c. The department's October 15, 2019 feasibility determination for the proposed Outagamie County Northwest Landfill (OCNWLF), which requires an amended intergovernmental solid waste disposal agreement between Brown, Outagamie and Winnebago Counties (BOW) to be submitted with the plan of operation for the proposed OCNWLF.

d. A letter dated October 14, 2019 from the BOW directors providing the regional solid waste disposal plan for the BOW and the anticipated site life for the Outagamie County landfills (OCNELF and proposed OCNWLF) and the BCSLF.

e. The department's November 13, 2017 plan modification conditional approval for multiple items for Outagamie County Northeast Area 6 Landfill (License No. 3235).

f. The department's guidance document titled "Alternate Daily Cover for Municipal Solid Waste Landfills" (PUB-WA-1699 2014).

g. The department's October 1, 2013 conditional plan of operation modification approval for alternate daily cover and beneficial use for Outagamie County Northeast Area 6 Landfill (License No. 3235).

h. The department's draft May 2007 (updates July 2009) guidance document titled Wisconsin Landfill Air Emissions (guidance document WA1303.09 or MT-3103). Questions and answers for Wisconsin Landfill Air Emissions (draft guidance document WA1358.09) dated July 2009.

i. The department's April 7, 1999 plan of operation approval for BCSLF.

j. The department's October 23, 1996 feasibility determination for BCSLF.

k. The department files for the BCSLF (Monitoring No. 3565).

7. Additional facts relevant to the review of the plan of operation include:

a. Air pollution control operation permits, no. 19-RSG-132 (construction permit) and 405251550-P01 (operation permit) includes requirements for a dust control plan (Part II) and surface emissions monitoring (Part I).

b. Chapter 40 Code of Federal Regulations (CFR) § 761.62(b)(1) allows PCB bulk product waste to be disposed of in a licensed nonhazardous solid waste landfill. The special waste acceptance plan included within the plan of operation includes the acceptance of shredder fluff that is a PCB bulk product waste.

c. A public informational meeting in accordance with s. 289.54(2), Wis. Stats has not been held for BCSLF; therefore, BCSLF may not accept dredge materials that contain PCBs or heavy metals in a concentration of less than 50 parts per million for disposal unless BCSLF receives written approval from the department after a public meeting is held.

d. BCPRRD is part of an intergovernmental solid waste disposal agreement (Agreement) between BOW, that establishes a single regional landfill within one of the three counties that services all three counties at one time. The Agreement currently stipulates disposal will transition to BCSLF when the Outagamie County OCNELF reaches capacity. The plan of operation for the BCSLF is based on the current BOW Agreement and assumes all the waste disposed in the BOW service area will be disposed in the BCSLF. Based on the October 14, 2019 letter, the BOW solid waste directors intend to modify the Cooperative Landfill Plan (CLP) within the Agreement to include the proposed OCNWLF and intend to operate both the BCSLF and OCNWLF at the same time. The intended plan would increase the projected site life of the BCSLF from 10.5 years to approximately 20 years; therefore, the phasing plan proposed in the plan of operation may need to be revised to accommodate the decrease in waste volumes once the revised Agreement has been finalized with a plan of operation modification request.

e. BCPRRD modified the original (1999) approved design by moving the Phase 2 and 3 leachate collection sumps from the east side of the landfill to the west side. The proposed sumps are located on the downgradient side of the landfill. Based on groundwater elevation contour maps included in the plan of operation report, the proposed monitoring network does not include groundwater monitoring wells downgradient of the Phase 2 sump screened at an elevation to monitor for groundwater impacts from the sump area.

8. The department considered the following information while reviewing the need for exemptions from s. NR 504.04(3)(f), Wis. Adm. Code, for water supply wells located within 1,200 feet of the proposed landfill:

a. The proposed BCSLF would be located within 1,200 feet of four existing private water supply wells (Section 2.7.1 of plan of operation).

i. Exemptions from s. NR 504.04(3)(f), Wis. Adm. Code, were granted for 3 of these private water supply wells in the October 23, 1996 feasibility determination for the BCSLF. These wells included:

(1) Well located at 1216 Lamers Clancy Road, Greenleaf, Wisconsin (WUWN: 8KH365);

(2) Well located at 1239 Lamers Clancy Road, Greenleaf, Wisconsin (WUWN: PY402);

(3) Well located at 1252 Lamers Clancy Road, Greenleaf, Wisconsin (WUWN: 8KH366);

ii. BCPRRD requested an exemption from s. NR 504.04(3)(f), Wis. Adm. Code for a well located at 1139 Lamers Clancy Road, Greenleaf, Wisconsin (WUWN: YG310). The department finds the requested exemption for this well to be warranted for the following reasons:

(1) The well is located up- or side-gradient from the proposed landfill footprint with respect to groundwater flow.

(2) The well is cased into bedrock to approximately 216 feet below ground surface. The top of bedrock at the well is approximately 100 feet below ground surface and is overlain by glacial lake and till units that consist predominantly of clay with low hydraulic conductivities (e.g., on the order of 10^{-5} to 10^{-8} centimeters per second).

(3) The well will be included in the environmental monitoring program for the BCSLF and will be monitored on a semi-annual basis.

b. On August 19, 2019 BCPRRD submitted requests for variances from s. NR 812.08(4)(g)1, Wis. Adm. Code, under the provisions of s. NR 812.43, Wis. Adm. Code, for 8KH365, PY402, 8KH366 (Attachment B of Addendum No. 1 to the plan of operation report).

c. A variance from s. NR 812.08(4)(g)1, Wis. Adm. Code, under the provisions of s. NR 812.43, Wis. Adm. Code, was granted for YG310 on September 20, 2011 shortly after the well was installed (Appendix D of the plan of operation report).

9. The department considered the following information while reviewing the need for ch. NR 140, Wis. Adm. Code, groundwater standard exemptions:

a. Baseline groundwater monitoring data provided in Appendix V and W of the plan of operation report and groundwater data in the Groundwater Environmental Monitoring System (GEMS) for the BCSLF.

b. BCPRRD collected samples between December 2017 and February 2019 to re-evaluate baseline groundwater quality. The new baseline data collected were used to evaluate if additional groundwater quality exemptions were needed or if previous exemptions granted were no longer needed.

c. Well construction details and boring logs, well location plan sheets and water table maps, and the landfill design specifications as conditioned herein.

d. Ch. NR 140, Wis. Adm. Code, groundwater quality exemptions were granted in the October 23, 1996 feasibility determination for some of the well and parameter locations for which exemptions were requested in the April 2019 plan of operation report. Exemptions for those wells and parameters do not need to be granted again.

e. Based on an examination of site conditions and baseline groundwater monitoring data for the BCSLF, the department finds the following:

i. Groundwater concentrations of arsenic, boron, manganese, vanadium, nitrate plus nitrite (as N), sulfate, and chloride found at concentrations exceeding the ch. NR 140, Wis. Adm. Code, groundwater quality standards in the site area are due to background groundwater quality associated with natural hydrogeologic conditions or human activities.

ii. Manganese can be elevated during the early stages of a monitoring well due to drilling and installation activities and tends to stabilize after several rounds of samples have been collected. Manganese concentrations can be re-evaluated after additional rounds of groundwater samples have been collected from site monitoring wells to determine if elevated concentrations are representative of background groundwater quality.

iii. Concentrations that are elevated compared to other concentrations within a baseline dataset may not be representative of background groundwater quality. Apparent outliers and trends were considered in determining groundwater quality exemptions that are warranted.

f. The department finds the following related to the design of the landfill and substances associated with the proposed BCSLF that exceed ch. NR 140, Wis. Adm. Code, groundwater quality standards for arsenic, cadmium, boron, manganese, vanadium, nitrate plus nitrite (as N), sulfate, and chloride:

i. To minimize any incremental increase in contamination from the BCSLF, the facility will be designed to contain and collect leachate. The approved design will include, a 4-foot thick compacted clay liner overlain by a 60-mil geomembrane, a leachate collection system, an active gas extraction system, and a composite final cover system. These design features will limit increases of contaminants in the groundwater.

ii. In accordance with s. NR 504.05(1), Wis. Adm. Code, the department considers landfills designed in substantial conformance with these design criteria to be designed to achieve the lowest possible concentration of these substances in the groundwater which is technically and economically feasible.

iii. The proposed facility will not cause the concentrations of the substances with baseline concentrations between the PAL and the enforcement standard (ES) to attain or exceed the ES for these substances at a point of standards application because of the facility design.

iv. The anticipated increase in the concentrations of these substances does not present a threat to public health or welfare because of the landfill design.

v. The anticipated incremental increase in the concentrations of the substances with baseline concentrations above the ES will not attain or exceed the PAL because of the landfill design.

g. Based on an examination of the groundwater quality data for the proposed landfill and the information in findings of fact 9a through 9f above, the department finds requested groundwater quality exemptions to be warranted for the following wells and substances:

i. **PAL** exemptions for substances of **public welfare concern and nitrate plus nitrite (as N)** in accordance with s. NR 140.28(3)(a), Wis. Adm. Code:

Substance:	**Monitoring Wells:**
Chloride	MW-30
Manganese	MW-58B
Nitrate + Nitrite (as N)	MW-6, MW-71
Sulfate	MW-12, MW-71
Notes: - Baseline concentrations attain or exceed the **PAL** but are below the ES in **two or more** sample rounds at the monitoring wells. - PALs for substances of public welfare concern are established in s. NR 140.12, Wis. Adm. Code, and for Nitrate + Nitrite (as N) in NR 140.10, Wis. Adm. Code.	

ii. **PAL** exemptions for substances of **public health concern (other than nitrate plus nitrite (as N))** in accordance with s. NR 140.28(3)(b), Wis. Adm. Code:

Substance:	**Monitoring Wells:**
Arsenic	MW-12A, MW-49A[1], MW-58A[1]
Boron	MW-2A, MW-2B, MW-6A, MW-6B, MW-10AR, MW-12A, MW-12B, MW-49A, MW-49B, MW-58A, MW-75
Manganese	MW-2, MW-10, MW-12A, MW-12B, MW-49B, MW-58A
Vanadium	MW-6A, MW-12, MW-49, MW-49A, MW-58A
Notes: - Baseline concentrations attain or exceed the **PAL** but are below the ES in **two or more** sample rounds at the monitoring wells. - PALs for substances of public health concern are established in s. NR 140.10, Wis. Adm. Code. [1] Exemption granted in the October 23, 1996 feasibility determination	

iii. **ES** exemptions for substances of **public welfare concern and nitrate plus nitrite (as N)** in accordance with s. NR 140.28(4)(a), Wis. Adm. Code:

Substance:	**Monitoring Wells:**
Nitrate + Nitrite (as N)	MW-7[1]
Sulfate	MW-2A[1], MW-2B[1], MW-6[1], MW-6A[1], MW-6B, MW-10[1], MW-10AR, MW-12A, MW-12B[1], MW-12C[1], MW-30[1], MW-41, MW-42X[1], MW-49, MW-49A[1], MW-49B[1], MW-58, MW-58B[1], MW-75[1]
Notes: - Baseline concentrations attain or exceed the **ES** in at least **one or more** sample rounds at the monitoring wells. - ESs for substances of public welfare concern are established in s. NR 140.12, Wis. Adm. Code, and for nitrate + nitrite (as N) in s. NR 140.10, Wis. Adm. Code. [1] Exemption granted in the October 23, 1996 feasibility determination	

iv. **ES** exemptions for substances of **public health concern (other than nitrate plus nitrite (as N))** in accordance with s. NR 140.28(4)(b), Wis. Adm. Code:

Substance:	**Monitoring Wells:**
Arsenic	MW-2A, MW-2B, MW-6A, MW-6B, MW-58B
Boron	MW-12C
Notes: - Baseline concentrations attain or exceed the **ES** in at least **one or more** sample rounds at the monitoring wells. - ESs for substances of public health concern are established in s. NR 140.10, Wis. Adm. Code.	

h. Based on an examination of the groundwater quality data for the proposed landfill and the information in findings of fact 9a through 9f above, the department finds that the ch. NR 140, Wis. Adm. Code, groundwater quality standards previously granted for the following substances and wells are **no longer warranted** because the new baseline data collected indicates the concentrations of these substances are no longer at or above the respective groundwater quality standard for which the exemption was granted:

i. **PAL** exemptions for substances of **public welfare concern and nitrate plus nitrite (as N)** in accordance with s. NR 140.28(3)(a), Wis. Adm. Code:

Substance:	Monitoring Wells:
Manganese	MW-6A, MW-12C
Sulfate	MW-6B, MW-7, MW-58

ii. **PAL** exemptions for substances of **public health concern (other than nitrate plus nitrite (as N))** in accordance with s. NR 140.28(3)(b), Wis. Adm. Code:

Substance:	Monitoring Wells:
Arsenic	MW-2A, MW-2B, MW-6A, MW-6B, MW-58B
Cadmium	MW-6, MW-30, MW-42X

iii. **ES** exemptions for substances of **public welfare concern and nitrate plus nitrite (as N)** in accordance with s. NR 140.28(4)(a), Wis. Adm. Code:

Substance:	Monitoring Wells:
Manganese	MW-12B, MW-42X, MW-58A, MW-75
Sulfate	MW-12

i. Chapter NR 140, Wis. Adm. Code, groundwater quality standard exemptions requested in the plan of operation were modified from the original request in accordance with the e-mail concurrence dated January 9, 2020.

j. Granting the exemptions that are set forth below will not inhibit compliance with Wisconsin solid waste management standards in chs. NR 500 through 538, Wis. Adm. Code.

10. The department considered the following information while reviewing the proposed calculated PALs and ACLs:

a. The PALs for indicator parameters and the ACLs established in this approval are based on at least 8 sample results representative of background groundwater quality for each substance at each monitoring well.

b. The PALs for indicator parameters established in this approval are equal to the mean background water quality plus 3 standard deviations or the mean background water quality plus the minimum increase specified in Table 3, ch. NR 140, Wis. Adm. Code, whichever is greater.

c. The ACLs established in this approval are equal to the mean background water quality plus 2 standard deviations.

d. The calculated PALs and ACLs were rounded up to 2 significant figures.

e. PALs and ACLs requested in the plan of operation were modified from the original request in accordance with the e-mail concurrence dated January 13, 2020.

f. The indicator parameter PALs, ACLs and special conditions set forth below are needed to assure that an increase in the concentration of alkalinity, sodium, specific conductance, hardness, specific conductance, arsenic, boron, manganese, vanadium, nitrate plus nitrite (as N), sulfate, and chloride do not cause an

increased threat to public health or welfare or inhibit compliance with ch. NR 500 through 538, Wis. Adm. Code.

11. Pursuant to s. 289.34, Wis. Stats., neither the applicant, nor any person owning a 10% or greater legal or equitable interest in the applicant, or the assets of the applicant:

    a. Is in noncompliance with a plan approval or order issued by the department for a solid or hazardous waste facility in Wisconsin;

    b. Owns or previously owned a 10% or greater legal or equitable interest in a person, or in the assets of a person, who is not in compliance with a plan approval or order issued by the department for a solid or hazardous waste facility in Wisconsin.

12. If the special conditions set forth below are complied with, the proposal will meet the requirements of chs. NR 500 through 538, Wis. Adm. Code.

CONCLUSIONS OF LAW

1. The department has authority under s. 289.30, Wis. Stats. to approve a plan of operation with special conditions if the conditions are needed to ensure compliance with chs. NR 500 to 538, Wis. Adm. Code.

2. The department has authority under s. NR 140.28, Wis. Adm. Code, and ss. 160.19(8) to (10), Wis. Stats., to grant exemptions to groundwater quality standards and to establish corresponding alternative concentration limits.

3. The department has authority under s. NR 140.20, Wis. Adm. Code, and s. 160.15(3), Wis. Stats., to establish PALs for groundwater indicator parameters at waste disposal facilities.

4. The department has authority under s. NR 500.08(4), Wis. Adm. Code, to grant exemptions from specific rule requirements of chs. NR 500 to 538, Wis. Adm. Code, if provided with appropriate documentation that the proposal will not cause environmental pollution as defined in s. 299.01(4), Wis. Stats.

5. The conditions of approval set forth below are needed to ensure compliance with chs. NR 500 to 538, Wis. Adm. Code.

6. In accordance with the foregoing, the department has the authority under ch. 289, Wis. Stats., to issue the following conditional approval.

GRANT OF EXEMPTIONS

1. Exemptions are granted from the groundwater quality standards in ch. NR 140, Wis. Adm. Code, as provided in s. NR 140.28, Wis. Adm. Code, for the wells and substances listed below. These exemptions apply only to the BCSLF and do not apply to any other present or past facility or activity:

a. **PAL** exemptions for substances of **public welfare concern and nitrate plus nitrite (as N)** in accordance with NR 140.28(3)(a):

Substance:	**Monitoring Wells:**
Chloride	MW-30
Manganese	MW-58B
Nitrate + Nitrite (as N)	MW-6, MW-71
Sulfate	MW-12, MW-71
Notes: - Baseline concentrations attain or exceed the **PAL** but are below the ES in **two or more** sample rounds at the monitoring wells. - PALs for substances of public welfare concern are established in s. NR 140.12, Wis. Adm. Code, and for Nitrate + Nitrite (as N) in NR 140.10, Wis. Adm. Code.	

b. **PAL** exemptions for substances of **public health concern (other than nitrate plus nitrite (as N))** in accordance with NR 140.28(3)(b):

Substance:	**Monitoring Wells:**
Arsenic	MW-12A
Boron	MW-2A, MW-2B, , MW-6A, MW-6B, MW-10AR, MW-12A, MW-12B, MW-49A, MW-49B, MW-58A, MW-75
Manganese	MW-2, MW-10, MW-12A, MW-12B, MW-49B, MW-58A
Vanadium	MW-6A, MW-12, MW-49, MW-49A, MW-58A
Notes: - Baseline concentrations attain or exceed the **PAL** but are below the ES in **two or more** sample rounds at the monitoring wells. - PALs for substances of public health concern are established in s. NR 140.10, Wis. Adm. Code.	

c. **ES** exemptions for substances of **public welfare concern and nitrate plus nitrite (as N)** in accordance with NR 140.28(4)(a):

Substance:	**Monitoring Wells:**
Sulfate	MW-6B, MW-10AR, MW-12A, MW-41, MW-49, MW-58
Notes: - Baseline concentrations attain or exceed the **ES** in at least **one or more** sample rounds at the monitoring wells. - ESs for substances of public welfare concern are established in s. NR 140.12, Wis. Adm. Code, and for nitrate + nitrite (as N) in s. NR 140.10, Wis. Adm. Code.	

d. **ES** exemptions for substances of **public health concern (other than nitrate plus nitrite (as N))** in accordance with NR 140.28(4)(b):

Substance:	**Monitoring Wells:**
Arsenic	MW-2A, MW-2B, MW-6A, MW-6B, MW-58B
Boron	MW-12C
Notes: - Baseline concentrations attain or exceed the **ES** in at least **one or more** sample rounds at the monitoring wells. - ESs for substances of public health concern are established in s. NR 140.10, Wis. Adm. Code.	

2. An exemption is granted from s. NR 504.04 (3) (f), Wis. Adm. Code, to allow construction of a municipal solid waste landfill limits of waste within 1,200 ft from the following water supply well:

   a. Well located at 1139 Lamers Clancy Road, Greenleaf, Wisconsin (WUWN: YG310);

RESCISSION OF EXEMPTIONS

1. The department hereby rescinds the ch. NR 140, Wis. Adm. Code, groundwater exemptions which were previously granted in the October 23, 1996 feasibility determination for the following wells and parameters where new background groundwater quality data indicates they are no longer needed:

   i. **PAL** exemptions for substances of **public welfare concern and nitrate plus nitrite (as N)** in accordance with s. NR 140.28(3)(a), Wis. Adm. Code:

Substance:	Monitoring Wells:
Manganese	MW-6A, MW-12C
Sulfate	MW-6B, MW-7, MW-58

   ii. **PAL** exemptions for substances of **public health concern (other than nitrate plus nitrite (as N))** in accordance with s. NR 140.28(3)(b), Wis. Adm. Code:

Substance:	Monitoring Wells:
Arsenic	MW-2A, MW-2B, MW-6A, MW-6B, MW-58B
Cadmium	MW-6, MW-30, MW-42X

   iii. **ES** exemptions for substances of **public welfare concern and nitrate plus nitrite (as N)** in accordance with s. NR 140.28(4)(a), Wis. Adm. Code:

Substance:	Monitoring Wells:
Manganese	MW-12B, MW-42X, MW-58A, MW-75
Sulfate	MW-12

2. The department herby rescinds the exemptions to s. NR 504.04.03(f) for the following private water supply wells that are no longer within 1,200 feet of the proposed BCSLF:

   a. Well located at 7226 Old 57 Rd, Greenleaf, Wisconsin (WUWN: WK611);

   b. Well located at 7310 Old 57 Rd, Greenleaf, Wisconsin (WUWN: OD258);

   c. Well located at 7380 Old 57 Rd, Greenleaf, Wisconsin (WUWN: OI129);

CONDITIONS OF PLAN OF OPERATION

The department hereby approves the plan of operation for the BCSLF subject to compliance with chs. NR 500 through 538, Wis. Adm. Code, and the following conditions:

General

1. The following conditions supersede conditions 1 through 24 of the department's April 7, 1999 conditional plan of operation approval.

2. The design capacity of the landfill (combined refuse, daily cover and intermediate cover) shall not exceed 9,303,000 cubic yards.

3. BCPRRD shall perform all aspects of construction and operation of the landfill in accordance with the plan of operation, the requirements of chs. NR 500 to 538, Wis. Adm. Code, and the conditions of approval. In the case of any discrepancies between the approval conditions and the plan of operation, the approval conditions shall take precedence.

4. Any proposed changes to the plan of operation or this approval shall be presented to the department. If the changes are compatible with the desired performance of this landfill, as determined by the department, an addendum will be added to this approval indicating acceptance of those changes. Written department approval is necessary prior to implementing any changes with the exception of minor field modifications that are documented in accordance with s. NR 516.04(3)(d), Wis. Adm. Code, with the exception of minor field modifications that are documented as deviations in accordance with s. NR 516.04(3)(d), Wis. Adm. Code. All field modifications shall be discussed with the department prior to implementation. Other changes may be handled as expedited plan modifications under s. NR 514.09, Wis. Adm. Code, as appropriate.

Design and Construction

5. BCPRRD shall submit revised storm water management plan sheets in accordance with s. NR 514.05(6), Wis. Adm. Code, to include the East stockpile and the associated features to be constructed for storm water management. The revised plan sheets shall be submitted in the form of a plan of operation modification request and shall include a narrative discussion, calculations and other documentation as applicable to demonstrate compliance with s. NR 504.09, Wis. Adm. Code. Written department approval shall be received prior to use of the East stockpile area.

6. Within 12-months after Phase 2 construction, BCPRRD shall submit an evaluation of groundwater flow directions across the site and evaluate the need for the installation of an additional monitoring well downgradient of the Phase 2 leachate collection sump. BCPRRD shall install an additional groundwater monitoring well downgradient if the evaluation does not demonstrate that sufficient monitoring wells are located downgradient of the sump area. The location and design for the proposed monitoring well shall be presented to the department in the form of a plan of operation modification request, if applicable.

7. BCPRRD shall include documentation of well abandonment for wells located within the landfill footprint in the liner construction documentation report for the phases in which those wells are located. BCPRRD shall have a separate appendix for well abandonment forms and highlight the location in the report index.

8. BCPRRD shall notify the department's waste management engineer assigned to this site a minimum of one week prior to beginning each of the construction events listed below for the purpose of allowing the department to inspect the work. BCPRRD shall pay a fee to the department for each required inspection in accordance with s. NR 520.04(5), Wis. Adm. Code, at the time the construction documentation report is submitted to the department.

Liner Construction Events

a. Sub-base grade excavation and storm water controls
b. Drainage layer placement and collection piping installation for the gradient control system
c. Clay placement
d. Geomembrane deployment and seaming
e. Sump construction/side slope riser placement

f. Drainage blanket placement/leachate line installation
g. Leak location survey and/or repairs
h. Leachate storage tanks and secondary containment structures

Final Cover Construction Events

i. Barrier soil or clay layer placement and storm water controls
j. Geomembrane cap installation/seaming
k. Drainage layer installation (geocomposite)
l. Placement of piping within the drainage layer
m. Rooting zone and topsoil placement

Gas System Construction Events

n. Gas extraction well placement
o. Gas header pipe installation

Operations and Maintenance

9. For any active vertical gas extraction well experiencing leachate head levels covering 50 percent or more of the screened interval, BCPRRD shall re-measure within 90 days of the initial measurement. BCPRRD shall install leachate extraction equipment within 180 days after confirmation of the liquid level in any vertical gas extraction well that exhibits leachate head levels covering 50 percent or more of the screened interval during two consecutive monitoring periods. The department may require installation of leachate extraction equipment in wells that exhibit leachate head levels covering less than 50 percent of the open screened interval if, in the department's opinion, dewatering is necessary to maintain an effective gas extraction system or if it is determined that the head levels are a result of actual leachate head levels in that location of the landfill.

10. BCPRRD may delay final cover placement up to 2-years after attaining maximum waste filling grades in each phase of closure provided that the requirements of s. NR 514.07(3), Wis. Adm. Code, are met. At no time shall the waste grades exceed the approved maximum waste filling grades for this facility as shown on plan sheet 17 of the plan of operation.

11. BCPRRD shall notify the department within 24 hours of any of the following: subsurface oxidation events or elevated temperatures, fires with the potential to damage landfill systems (e.g., leachate, gas, liner), or fires that require the assistance from a fire department to contain.

Alternate Daily Cover

12. BCPRRD shall not use alternate daily cover (ADC) materials as daily cover in areas of the landfill where storm water contacting this material has the potential to run off beyond the limits of waste, such as exterior side slopes or final grades. BCPRRD shall take measures to prevent tracking of alternate daily cover materials to outside the limits of waste placement.

13. BCPRRD shall pay environmental fees on the disposal of any solid waste that was approved for use as an ADC material or construction of internal roads, dikes or berms, but was not used for those purposes.

14. Waste used as screening berm material shall be covered with a minimum 1-foot thickness of clean soil to prevent direct run-off from the material outside of the lined area of the landfills.

15. Shredder fluff shall not be used as screening berm material.

16. If spray-on ADC is used, the landfill shall keep a log on a per batch basis that identifies the amount of product used, the amount and type of liquid used to make up the batch, the area covered.

Organic Stability and Waste Degradation

17. BCPRRD shall collect waste samples at 20-foot intervals from borings for vertical gas extraction wells and analyze the samples for moisture content and organic matter content. BCPRRD shall document the elevations of any standing leachate levels in the borings for all vertical gas well borings. The sample results shall be reported in the construction documentation report for gas extraction wells and summarized in the applicable organic stability reports.

Environmental Monitoring

18. BCPRRD shall implement environmental monitoring at the BCSLF in accordance with the schedules provided in Attachment 1 (Tables 1-1 through 1-4).

19. The ch. NR 140, Wis. Adm. Code, PALs and ACLs for the groundwater monitoring points shall be those listed in Attachment 2.

20. BCPPRD shall submit a plan modification proposal to request exemptions to the appropriate ch. NR 140, Wis. Code, standards (if applicable) and establish PALs and ACLs after a dataset with a minimum of 8 rounds of sample results representative of background groundwater conditions is obtained for the following wells/parameters:

    a. MW-10AR – manganese and alkalinity

    b. MW-49B – arsenic

    c. MW-58B - hardness

Inspection and Reporting

21. BCPRRD shall submit the industrial Storm Water Pollution Prevention Plan (SWPPP) to the department prior to operation of the landfill.

22. BCPRRD shall submit an annual report to the department no later than March 31st of each year that summarizes the following activities from the previous calendar year:

    General

    a. A general description highlighting the landfill design, operation, and construction/installation events. Please include a summary of the plan of operation modifications approved and exemptions granted.

    b. Provide one or more plan view drawings clearly annotating the following:

        i. The landfill development and filling status information specified in s. NR 506.19(2)(a), Wis. Adm. Code, on a topographic site map depicting all landfill phases. Include a lighter layer illustrating the approved waste grades and a darker layer with most recently surveyed waste grades.

ii. Existing environmental monitoring points and systems (e.g. leachate, landfill gas) on a color-coded site map depicting all landfill phases.

c. The compliance certification required by s. NR 506.19(1), Wis. Adm. Code.

d. A copy of the most recent proof mechanism adjustment submitted to the department as required by s. NR 520.10(1), Wis. Adm. Code.

Operations

e. The dates and times of unscheduled landfill closures, reasons for the closure, and alternate waste handling procedures.

f. A summary of the landfill complaints, such as odors, noise, litter, birds, etc. and corrective action taken.

Special Waste and ADC

g. Daily mixing ratios of each sludge waste to municipal solid waste as required by s. NR 506.14(2)(e), Wis. Adm. Code, unless the small quantity exemption requirements of s. NR 506.14(1), Wis. Adm. Code, are met.

h. Total tonnage of special wastes, and tabulation by waste category for each of the waste types in the special waste plan which were accepted for disposal the previous calendar year.

i. Computation of the total volume of all wastes disposed at this facility, and the proportions of special wastes compared to the total volume of landfill filled.

j. Tonnage for each waste used as ADC or other approved fee exempt use (specify use), the ratio of waste to ADC by volume or weight, and a discussion of any changes and or problems encountered with the use of the wastes within the landfill.

k. Test results in table format for specific ADC materials that require additional or periodic analysis, such as shredder fluff.

l. A summary of the source of all contaminated soils used as ADC or beneficial use, including a summary of the levels of contaminants of concern relative to the ch. NR 720, Wis. Adm. Code, industrial direct contact residual contaminant levels (RCLs).

m. A summary of the use of spray-on ADC, including frequency of use, rate of application and its performance.

Gas Extraction System

n. Records of gas extraction system or well shutdown periods, that include the dates, length of time of shutdown, any odor complaints received on the dates and corrective action taken for the system or individual extraction wells.

o. Any maintenance, cleaning, repair, or replacement of extraction wells, header or lateral lines, blower or gas combustion equipment components, or valve assemblies.

p. An assessment of the performance of the gas extraction system, including liquid levels in the gas extraction wells, the condition of each gas well and identification of any wells which need to be replaced or that have been replaced, the quality and quantity of gas and quantity of gas condensate produced from the facility, and the removal of volatile organic compounds and other substances in the gas and gas condensate. Also, include a summary of gas wells experiencing high leachate head levels and any corrective actions taken.

q. A summary of the surface emission monitoring results and corrective actions taken, if applicable.

Groundwater and Gradient Control

r. A summary of ground water exceedances and preliminary analysis of the cause and significance of each concentration submitted to the department as required by s. NR 507.30, Wis. Adm. Code.

s. An assessment of the groundwater quality trends. Please include graphic depiction that best illustrates environmental impacts of importance.

t. An assessment of the condition and operation of the gradient control system.

Leachate Collection and Recirculation

u. An annual report for leachate recirculation in accordance with s. NR 506.135(5), Wis. Adm. Code, including a summary and tabulation of monitoring required within ss. NR 507.215(1) – (4), Wis. Adm. Code.

v. The summary report of each pipe cleaning and each video camera inspection event as required by s. NR 506.07(5)(g), Wis. Adm. Code.

w. The summary report of the removal of any dams or barriers used to separate noncontact water in a prepared cell from solid waste and leachate as required by s. NR 506.07(5)(h), Wis. Adm. Code.

x. An assessment of the leachate head levels on the landfill liner. Please include a graphic depiction that illustrates the head level trends.

y. Provide a table containing information about which gas wells had leachate levels that require installation of leachate extraction pumps.

Organic Stability

z. The evaluation of the performance and report of the implemented landfill organic stability plan as required by s. NR 514.07(9)(d), Wis. Adm. Code. The evaluation should include an evaluation of moisture and organic content based on samples collected from gas extraction wells. Please provide a site map depicting the boring locations and a corresponding table with tabulated information for standing leachate levels, waste moisture content and organic matter content.

aa. Every 5 years, a report describing the evaluation of the plan and likelihood that the plan will enable the landfill to reach the organic stability goals as required by s. NR 514.07(9)(e), Wis. Adm. Code.

Surface Water Controls and Final Cover Maintenance

bb. A copy of the annual compliance inspection/evaluation required by the storm water permit and a summary of any maintenance of storm water controls.

cc. A summary of surface water monitoring results, including visual inspections.

dd. An evaluation of settlement which the landfill has undergone, and any evidence of surface water ponding, poor drainage, differential settlement, erosion or other disruption of the final cover structure.

ee. An evaluation of the integrity of the vegetation on the final covered or interim covered areas, integrity of the final cover, summary of erosion control efforts, surface stabilization efforts and any evidence of animal intrusion.

Financial Responsibility for Closure and Long-Term Care

23. BCPRRD shall establish a revised proof of financial responsibility for closure and long-term care in accordance with Ch. NR 520, Wis. Adm. Code, prior to licensure and waste disposal. BCPRRD shall establish the proof of financial responsibility based on the approved closure and long-term care cost estimates included in Attachment 3 (Tables 3-1 and 3-2).

This approval is based on the information available to the department as of the date of approval. If additional information, project changes or other circumstances indicate a possible need to modify this approval, the department may ask you to provide further information relating to this activity. Likewise, the department accepts proposals to modify approvals, as provided for in state statutes and administrative codes.

NOTICE OF APPEAL RIGHTS

If you believe you have a right to challenge this decision made by the department, you should know that Wisconsin statutes and administrative codes establish time periods and requirements for reviewing department decisions.

To seek judicial review of the department's decision, sections 227.52 and 227.53, Wis. Stats., establish criteria for filing a petition for judicial review. You have 30 days after the decision is mailed or otherwise served by the department to file your petition with the appropriate circuit court and serve the petition on the department. The petition shall name the Department of Natural Resources as the respondent.

Dated: January 16, 2020

DEPARTMENT OF NATURAL RESOURCES
For the Secretary

Kristin DuFresne
Waste and Materials Management Program Supervisor
Northeast Region

Sally Hronek
Waste & Materials Management Engineer
Northeast Region

Jackie Marciulionis, P.G.
Hydrogeologist
Northeast Region

TABLE 1-1A: GROUNDWATER MONITORING
DETECTION MONITORING

Monitoring Location	WUWN	DNR Point ID	Sampling and Reporting Frequency[2]	Parameters
Group A Wells:				
MW-2	IM357	108		
MW-2A	IM431	110	Semiannually	00010 Temperature, Water (°C)
MW-2B	IM432	112	(April and October)	00094 Specific Conductance, Field (umho/cm @ 25°C)
MW-6	IM365	120		00400 pH, Field (Standard Units)
MW-6A	IM366	122		00941 Chloride, Dissolved (mg/L)
MW-6B	IM434	124		04189 Elevation, Groundwater (ft MSL)
MW-7	IM367	126		22413 Hardness, Total Filtered (mg/L)
MW-10	IM372	128		39036 Alkalinity, Total Filtered (mg/L)
MW-10AR	VS939	131		
MW-12	IM375	132		
MW-12A	IM376	134		Note sample odor (00001), color (00002), and turbidity (00003), if present
MW-12B	IM435	136		
MW-12C	BW178	137		
MW-33[1]	IM410	178		
MW-49	IM444	184		
MW-49B	IM446	188	Annually (October)	VOCs (ch. NR 507, Appendix III, including acetone, carbon disulfide, methyl ethyl ketone and tetrahydrofuran)
MW-52[1]	IM447	190		
MW-58	IM451	198		
MW-58A	IM452	200		
MW-58B	IM453	202		
MW-71	IM455	220		
RCRA Subtitle D Wells:				
MW-42X	IM466	182	Semiannually	00010 Temperature, Water (°C)
MW-49A	IM445	186	(April and October)	00094 Specific Conductance, Field (umho/cm @ 25°C)
MW-73R[3]	TBD	224		00400 pH, Field (Standard Units)
MW-75	IM457	227		00941 Chloride, Dissolved (mg/L)
MW-100[3]	TBD	365		04189 Elevation, Groundwater (ft MSL)
				22413 Hardness, Total Filtered (mg/L)
				39036 Alkalinity, Total Filtered (mg/L)
				Note sample odor (00001), color (00002), and turbidity (00003), if present
				VOCs (ch. NR 507, Appendix III, including acetone, carbon disulfide, methyl ethyl ketone and tetrahydrofuran)

TABLE 1-1A: GROUNDWATER MONITORING
DETECTION MONITORING

Monitoring Location	WUWN	DNR Point ID	Sampling and Reporting Frequency[2]	Parameters
Groundwater Elevation Wells:				
MW-1	IM356	102	Semiannually (October)	04189 Elevation, Groundwater (ft MSL)
MW-1A	IM429	104		
MW-1B	IM430	106		
MW-3	IM358	113		
MW-4	IM359	266		
MW-4A	IM360	268		
MW-9	IM370	270		
MW-9A	IM371	272		
MW-13	IM377	274		
MW-13A	IM378	276		
MW-14	IM379	278		
MW-14A	IM380	280		
MW-15	IM381	282		
MW-16	IM382	284		
MW-16A	IM383	286		
MW-17AR	IM387	140		
MW-17B	IM436	142		
MW-17R	IM385	138		
MW-18A	IM437	260		
MW-18B	IM438	144		
MW-18R	IM389	258		
MW-20	IM391	288		
MW-20A	IM392	290		
MW-21	IM393	146		
MW-22A	IM395	150		
MW-22B	IM439	152		
MW-22C	BW179	153		
MW-24	IM397	156		
MW-25	IM398	158		
MW-25A	IM399	160		
MW-25B	IM440	162		
MW-26	IM400	164		
MW-28	IM403	169		
MW-41	IM442	180		
MW-78	IM458	230		
MW-79	IM459	233		
MW-83	IM460	240		
MW-84	IM461	244		
MW-98	IM462	250		
MW-98A	IM463	251		
MW-98B	IM464	252		
MW-99	IM465	255		

TABLE 1-1A: GROUNDWATER MONITORING
DETECTION MONITORING

Monitoring Location	WUWN	DNR Point ID	Sampling and Reporting Frequency[2]	Parameters

Notes:

[1] Groundwater monitoring well is located within the footprint of a future phase of the landfill and will be monitored until the monitoring well is abandoned for construction of the future phase.

[2] Data shall be submitted within 60 days after the end of the sampling period, in accordance with s. NR 507.26(3), Wis. Adm. Code, unless otherwise specified.

[3] Well will be installed when the waste berm for Phase I has been constructed. Baseline groundwater quality sampling shall be conducted in accordance with s. NR 507.18, Wis. Adm. Code, once the well has been installed.

Trip Blank (999) and/or Field Blank (997) Data must also be submitted electronically

TABLE 1-1B: GROUNDWATER MONITORING
PRIVATE WATER SUPPLY WELLS

Monitoring Location	WUWN	DNR Point ID	Well Address	Owner	Sampling and Report Frequency[2]	Parameters
Private Wells:						
PY402	PY402	18	1239 Lamers Clancy Road	Matthew Krepline	Semiannually (April and October)	00010 Temperature, Water (°C) 00094 Specific Conductance, Field (umho/cm @ 25°C) 00400 pH, Field (Standard Units) 00410 Alkalinity, Total (mg/L) 00900 Hardness, Total (mg/L) 00940 Chloride, Total (mg/L) Note sample odor (00001), color (00002), and turbidity (00003), if present
8KH365	8KH365	16	1216 Lamers Clancy Road	David Duquaine		
8KH366	8KH366	20	1252 Lamers Clancy Road	Daniel Pleshek		
YG310	YG310	22	1139 Lamers Clancy Road	Paul Kalscheur		
P-1	NA[1]	24	Landfill Property	BCPRRD		
					Annually (October)	VOCs (ch. NR 507, Appendix III, including acetone, carbon disulfide, methyl ethyl ketone and tetrahydrofuran)

Notes:
[1] The Wisconsin Unique Well Number was not available at the time of this approval.
[2] Data shall be submitted within 10 days following the receipt of sampling results, in accordance with s. NR 507.26(2), Wis. Adm. Code, unless otherwise specified.
Trip Blank (999) and/or Field Blank (997) Data must also be submitted electronically
BCPRRD - Brown County Port and Resource Recovery Department

TABLE 1C: GROUNDWATER MONITORING
GROUNDWATER GRADIENT CONTROL

Monitoring Location	DNR Point ID	Sampling and Reporting Frequency[1]	Parameters
Head Wells:			
GHW-1	501	Semiannually (April and October)	04189 Elevation, Groundwater (ft MSL)
GHW-2	502		
GHW-3	503		
GHW-4	504		
GHW-5	505		
GHW-6	505		
Pump Discharge:			
GW-1	511	Semiannually (April and October)	00010 Temperature, Water (°C) 00094 Specific Conductance, Field (umho/cm @ 25°C) 00400 pH, Field (Standard Units) 00941 Chloride, Dissolved (mg/L) 22413 Hardness, Total Filtered (mg/L) 39036 Alkalinity, Filtered (mg/L) Note sample odor (00001), color (00002), and turbidity (00003), if present
GW-2	512		
GW-3	513		
		Annually (October)	VOCs (ch. NR 507, Appendix III, including acetone, carbon disulfide, methyl ethyl ketone and tetrahydrofuran)
		Monthly *Report semiannually with data for April and October Sampling Period*	50052 Groundwater Volume Pumped (1000 Gals)

[1] Data shall be submitted within 60 days after the end of the sampling period, in accordance with s. NR 507.26(3), Wis. Adm. Code, unless otherwise specified.

Trip Blank (999) and/or Field Blank (997) Data must also be submitted electronically

TABLE 1-2: LEACHATE QUANTITY, QUALITY AND HEAD MONITORING

Monitoring Location	DNR Point ID	Sampling and Reporting Frequency[1]	Parameters
Leachate Pump Discharge (Junction manhole		Monthly *Report semiannually with data for April and October Sampling Period*	00032 Leachate, Volume Pumped (1000 Gallons)
JMH-1	401		
JMH-2	402		
JMH-3	403		
		Semiannually[2] (April and October)	00094 Specific Conductance, Field (umho/cm @ 25°C) 00310 Biochemical Oxygen Demand (mg/L, 5 Day @ 20°C) 00340 Chemical Oxygen Demand, Unfiltered (mg/L) 00400 pH, Field (Standard Units) 00410 Alkalinity, Total (mg/L) 00610 Nitrogen, Ammonia Total (mg/L) 00900 Hardness, Total (mg/L) Note sample odor (00001), color (00002), and turbidity (00003), if present
		Semiannually (April and October)	00010 Temperature, Water (°C) 00150 Total Suspended Solids (mg/L) 00625 Nitrogen, Kjeldahl, Total (mg/L) 00929 Sodium, Total (mg/L) 00940 Chloride, Total (mg/L) 00945 Sulfate, Total (mg/L) 01027 Cadmium, Total (ug/L) 01051 Lead, Total (ug/L) 01055 Manganese, Total (ug/L) 71900 Mercury, Total (ug/L) 74010 Iron, Total (mg/L) VOCs (ch. NR 507, Appendix III, including acetone, carbon disulfide, methyl ethyl ketone and tetrahydrofuran)
		Annually (October)	SVOCs (ch. NR 507 Appendix IV substances)
Leachate Storage Tank:		Monitoring will be conducted in accordance with the wastewater treatment plant discharge permit	
LST-1	410		

TABLE 1-2: LEACHATE QUANTITY, QUALITY AND HEAD MONITORING

Monitoring Location	DNR Point ID	Sampling and Reporting Frequency[1]	Parameters
Leachate Headwells:			
LHW-1	420	Quarterly[3]	
LHW-2	422	(January, April,	99423 Elevation, Leachate (ft MSL)
LHW-3	424	July, and October),	00031 Leachate, Depth (from top to bottom in ft)
LHW-4	426		
LHW-5	428	*Report semiannually*	
LHW-6	430	*with data for April and October Sampling Period*	

Notes:

[1] Data shall be submitted within 60 days after the end of the sampling period, in accordance with s. NR 507.26(3), Wis. Adm. Code, unless otherwise specified.

[2] Quarterly sampling is required (January, April, July, and October) if operating under an RD&D approval or leachate recirculation is being perform.

[3] Monthly measurements are required (January, April, July, and October) if operating under an RD&D approval or leachate recirculation is being perform.

TABLE 1-3A: LANDFILL GAS MONITORING
GAS PROBES

Name	DNR Point ID	Sampling and Reporting Frequency[1]	Parameters
Gas Probes:			
GP-1	701	Quarterly (January, April, July, and October)	00021 Temperature, Air (°F) 00025 Barometric Pressure (mm Of Hg) 46381 Trend in Barometric Pressure 85547 Percent Methane, by volume 85550 Percent Oxygen, by volume
GP-2	702		
GP-3	703		
GP-4	704		
GP-5	705	*Report semiannually with data for April and October Sampling Period*	Note ground condition and initial methane reading if stabilized reading drops to zero.

Notes:

[1] Data shall be submitted within 60 days after the end of the sampling period, in accordance with s. NR 507.26(3), Wis. Adm. Code, unless otherwise specified.

TABLE 1-3B: LANDFILL GAS MONITORING
GAS EXTRACTION SYSTEM

Name	DNR Point ID	Name	DNR Point ID	Sampling and Reporting Frequency[1]	Parameters
Horizontal Gas Extraction Wells:					
H-1E	601	H-1W	631		
H-2E	602	H-2W	632	Monthly	46385 Well Head Pressure (in. of water column)
H-3E	603	H-3W	633		46387 Valve Opening (% open)
H-4E	604	H-4W	634		46388 Temperature, Gas (°F)
H-5E	605	H-5W	635	*Report semiannually*	85544 Percent Carbon Dioxide, by volume
H-6E	606	H-6W	636	*with data for April and*	85547 Percent Methane, by volume
H-7E	607	H-7W	637	*October Sampling*	85550 Percent Oxygen, by volume
H-8E	608	H-8W	638	*Period*	99098 Gas Flow Rate (cfm)
H-9E	609	H-9W	639		99848 Percent Balance Gas, by volume
H-10E	610	H-10W	640		
H-11E	611	H-11W	641		
H-12E	612	H-12W	642		
H-13E	613	H-13W	643		
H-14E	614	H-14W	644		
H-15E	615	H-15W	645		
H-16E	616	H-16W	646		
H-17E	617	H-17W	647		
H-18E	618	H-18W	648		
H-19E	619	H-19W	649		
H-20E	620	H-20W	650		
H-21E	621	H-21W	651		
H-22E	622	H-22W	652		
H-23E	623	H-23W	653		
H-24E	624	H-24W	654		
H-25E	625	H-25W	655		
H-26E	626	H-26W	656		
H-27E	627	H-27W	657		
H-28E	628	H-28W	658		
H-29E	629	H-29W	659		
H-30E	630	H-30W	660		

TABLE 1-3B: LANDFILL GAS MONITORING
GAS EXTRACTION SYSTEM

Name	DNR Point ID	Name	DNR Point ID	Sampling and Reporting Frequency[1]	Parameters
Vertical Gas Extraction Wells:					
VW-1	756	VW-38	830		
VW-2	758	VW-39	832	Monthly	46385 Well Head Pressure (in. of water column)
VW-3	760	VW-40	834		46387 Valve Opening (% open)
VW-4	762	VW-41	836		46388 Temperature, Gas (°F)
VW-5	764	VW-42	838	*Report semiannually*	85544 Percent Carbon Dioxide, by volume
VW-6	766	VW-43	840	*with data for April and*	85547 Percent Methane, by volume
VW-7	768	VW-44	842	*October Sampling*	85550 Percent Oxygen, by volume
VW-8	770	VW-45	844	*Period*	99098 Gas Flow Rate (cfm)
VW-9	772	VW-46	846		99848 Percent Balance Gas, by volume
VW-10	774	VW-47	848		
VW-11	776	VW-48	850		
VW-12	778	VW-49	852		
VW-13	780	VW-50	854		
VW-14	782	VW-51	856	Semiannually	00031 Leachate, Depth (from top to bottom in ft)
VW-15	784	VW-52	858	(April and October)	
VW-16	786	VW-53	860		
VW-17	788	VW-54	862		
VW-18	790	VW-55	864		
VW-19	792	VW-56	866		
VW-20	794	VW-57	868		
VW-21	796	VW-58	870		
VW-22	798	VW-59	872		
VW-23	800	VW-60	874		
VW-24	802	VW-61	876		
VW-25	804	VW-62	878		
VW-26	806	VW-63	880		
VW-27	808	VW-64	882		
VW-28	810	VW-65	884		
VW-29	812	VW-66	886		
VW-30	814	VW-67	888		
VW-31	816	VW-68	890		
VW-32	818	VW-69	892		
VW-33	820	VW-70	894		
VW-34	822	VW-71	896		
VW-35	824				
VW-36	826				
VW-37	828				
Flare:					
F-1	754			Monthly	85547 Percent Methane, by volume
				Report semiannually with data for April and October Sampling Period	

TABLE 1-3B: LANDFILL GAS MONITORING
GAS EXTRACTION SYSTEM

Name	DNR Point ID	Name	DNR Point ID	Sampling and Reporting Frequency[1]	Parameters
Blower:					
Blower	753			Monthly *Report semiannually with data for April and October Sampling Period*	46382 Header Pressure (in. of water column) 46388 Temperature, Gas (°F) 85544 Percent Carbon Dioxide, by volume 85547 Percent Methane, by volume 85550 Percent Oxygen, by volume 98927 Gas Extracted, Total Monthly Volume (1000 cu. Ft. /month) 99098 Gas Flow Rate (cfm) 99848 Percent Balance Gas, by volume
				Annually (October)	VOCs using USEPA Method TO-15 or TO-14A[2]

Notes:

[1] Data shall be submitted within 60 days after the end of the sampling period, in accordance with s. NR 507.26(3), Wis. Adm. Code, unless otherwise specified.

[2] Refer to department guidance Volatile Organic Compound Parameters for Landfill Gas Monitoring at Municipal Solid Waste Landfills (PUB-WA 1701), dated August 1, 2014.

TABLE 1-4: SURFACE WATER MONITORING

Monitoring Location	DNR Point ID	Sampling and Reporting Frequency[1]	Parameters
Surface Water:			
SW-1	525	Semiannually	00010 Temperature, Water (°C)
SW-2	526	(April and October during Active Discharge[2])	00094 Specific Conductance, Field (umho/cm @ 25°C) 00150 Total Suspended Solids (mg/L) 00400 pH, Field (Standard Units) 00410 Alkalinity, Total (mg/L) 00900 Hardness, Total (mg/L) 00940 Chloride, Total (mg/L) Note sample odor (00001), color (00002), and turbidity (00003), if present
		Annually (October)	Visual Inspection
SW-3	527	Quarterly (January, April July, and October)	Visual Inspection
SW-4	528		
SW-5	529		
SW-6	530		
SW-7	531		

Note:

[1] Data shall be submitted within 60 days after the end of the sampling period, in accordance with s. NR 507.26(3), Wis. Adm. Code, unless otherwise specified.

[2] The sampling months may vary based on when there is active discharge

TABLE 2-1: APPROVED PREVENTIVE ACTION LIMITS (PALs) AND ALTERNATIVE CONCENTRATION LIMITS (ACLs)

			Indicator Parameters					Public Health and Welfare Substances							
			Alkalinity, Total Filtered (mg/L)	Hardness, Total Filtered (mg/L)	Field Specific Conductivity @25°C (mhos/cm)	Sodium, Diss. (mg/L)	COD, Filtered (mg/L)[1]	Arsenic, Diss. (ug/L)	Boron, Diss. (mg/L)	Chloride, Dissolved (mg/L)	Fluoride, Diss. (mg/L)	Manganese, Diss. (ug/L)	Nitrate + Nitrite (mg/L)	Sulfate, Diss. (mg/L)	Vanadium, Diss. (ug/L)
Parameter Code			39036	22413	00094	00930	00341	01000	01020	00941	00950	01056	00631	00946	01085
Point Name	WUWN	DNR Point ID	PALs					ACLs							
MW-2	IM357	108	600	900	1700	40	29	--	--	--	--	120	--	--	--
MW-2A	IM431	110	160	270	1100	99	33	19	0.31	--	--	--	--	310	--
MW-2B	IM432	112	150	240	920	120	63	13	0.23	--	--	--	--	350	--
MW-6	IM365	120	670	900	1800	42	30	--	--	--	--	--	3.1	290	--
MW-6A	IM366	122	160	310	1200	120	41	12	0.29	--	--	--	--	410	11
MW-6B	IM434	124	150	230	890	110	47	12	0.25	--	--	--	--	310	--
MW-7	IM367	126	780	880	1800	48	31	--	--	--	--	--	20	--	--
MW-10	IM372	128	600	1300	2600	140	31	--	--	--	--	250	--	600	--
MW-10AR	VS939	131	--*	980	2100	210	--	--	0.28	--	--	--*	--	980	--
MW-12	IM375	132	770	1100	2200	63	35	--	--	--	--	--	--	240	7.1
MW-12A	IM376	134	130	870	3200	300	32	6.9	0.24	--	--	150	--	2100	--
MW-12B	IM435	136	690	800	2700	310	33	--	1.0	--	--	88	--	850	--
MW-12C	BW178	137	370	1200	4400	550	61	--	3.9	--	--	--	--	2800	--
MW-30	IM405	172	980	1500	2800	67	--	--	--	150	--	--	--	790	--
MW-41	IM442	180	730	790	2100	190	--	--	--	--	--	--	--	600	--
MW-42X	IM466	182	690	790	1600	89	41	--	--	--	--	--	--	450	--
MW-49	IM444	184	650	2200	3700	180	35	--	--	--	--	--	--	1300	14
MW-49A	IM445	186	160	560	2100	240	40	8.8	0.24	--	--	--	--	1300	23
MW-49B	IM446	188	270	2600	4100	450	63	--*	0.39	--	--	240	--	2300	--
MW-58	IM451	198	780	1700	2300	120	33	--	--	--	--	--	--	340	--
MW-58A	IM452	200	150	--*	1600	140	36	7.4	0.32	--	--	96	--	760	15
MW-58B	IM453	202	230	310	1000	110	47	17	--	--	--	56	--	310	--
MW-71	IM455	220	910	760	1600	46	30	--	--	--	--	--	3.4	190	--
MW-75	IM457	227	1100	2300	4600	250	34	--	0.24	--	--	--	--	3100	--
MW-73R	TBD	224	--**	--**	--**	--**	--**	--**	--**	--**	--**	--**	--**	--**	--**
MW-100	TBD	365	--**	--**	--**	--**	--**	--**	--**	--**	--**	--**	--**	--**	--**

Notes:
-- PAL or ACL has not been established.
* Additional data is needed to calculate PAL or ACL.
** Monitoring well has not yet been installed. PALs and ACLs will be established after baseline groundwater quality data has been collected.
[1] PALs for COD were established in the April 7, 1999 conditional plan of operation approval for the Brown County South Landfill.
COD = Chemical Oxygen Demand

TABLE 3-1: WORST CASE CLOSURE COST ESTIMATE (61.9 ACRES)

Item	Units	No. of of Units (in-place)	Cost/Unit	Extension
1. Final Cover Construction (61.9 acres)				
a. Install 6" grading layer	cy	50,000	$2.00	$100,000
b. Install 2' recompacted clay cover	cy	200,000	$4.50	$900,000
c. Install 40 mil textured LLDPE	sf	2,696,000	$0.45	$1,213,200
d. Install geocomposite drainage layer	sf	2,696,000	$0.50	$1,348,000
e. Install 30" rooting zone layer (on-site source)	cy	250,000	$2.00	$500,000
f. Install 6" topsoil layer (on-site source)	cy	50,000	$2.00	$100,000
g. Construct surface water diversion berms	lf	12,215	$15.00	$183,225
h. Construct downslope drainage piping	lf	975	$25.00	$24,375
i. Install riprap outlets	each	34	$100	$3,400
j. Install perimeter toe drain	lf	6,680	$10.00	$66,800
k. Seed, fertilizer & mulch	acre	62	$2,000	$123,800
			subtotal =	**$4,562,800**
2. Gas System Installation (35 vertical wells)				
a. Vertical gas wells (ave. 100 vf each)	lf	3,500	$100.00	$350,000
b. Gas well heads	each	35	$2,500	$87,500
c. Gas lateral piping (6")	lf	7,500	$20.00	$150,000
			subtotal =	**$587,500**
3. Misc. Engineering and Documentation (10%)	ls	1	10%	$515,030
4. WDNR Fees				
a. Inspections	each	4	$550	$2,200
b. As-built review fee	each	1	$1,100	$1,100
			subtotal =	**$3,300**
			Subtotal =	**$5,669,000**
			10% Contingency =	**$567,000**
			Total Estimated Final Cover Construction Cost =	**$6,236,000**

Notes:
1. Assumes one layer of horizontal wells will be installed. Gas Header piping will be installed during cell construction.
2. Assumes existing flare will be used, therefore costs for installation of a flare are not included.

cy = cubic yard
lf = linear feet
sf = square feet
ls = lump sum

TABLE 3-2: ESTIMATED ANNUAL LONG-TERM COSTS (2019 DOLLARS)

Item	Description	Quantity	Units	Unit Cost	Total Annual Cost
Land Surface Care	Semiannual site inspection (2 inspections at 4 hrs each)	8	hours	$55	$440
	Repair cover & replace topsoil (assume 1-acre annually)	281	cy	$5.00	$1,405
	Seed, fertilize & mulch	0.70	acres	$2,000	$1,400
	Drainage system repairs (including equipment)	16	hours	$100	$1,600
	Settlement monitoring (annually for 1st 3 years, every 5 years thereafter, $500 per event)	1	total ls	$5,000	$125
	Annual mowing	13.60	acres	$150	$2,040
	Snow plowing	5	each	$250	$1,250
Groundwater Gradient Control System	Operation & Maintenance				
	Quarterly inspection and maintenance of pumps (8 hrs each event)	32	hours	$55	$1,760
	Replace pumps every 5 years (21 total @ $2,000 ea. over 40 years)	1	total ls	$42,000	$1,050
	Parts	1	ls	$400	$400
	Electricity (3-0.5 hp submersible pumps, total of ~800 hrs/year)	300	kW*hr	$0.12	$36
	Jet clean collection system and observation	13,000	feet	$1.00	$13,000
	Televise collection piping every 5 years ($5,000 per event)	1	total ls	$40,000	$1,000
Leachate Management System	Operation & Maintenance				
	Quarterly inspection of pump buildings (4 hrs per event)	16	hours	$55	$880
	Pump maintenance (4 annually, 4 hrs/pump)	16	hours	$55	$880
	Replace pumps every 5 years (32 total @ $2,500 ea. over 40 years)	1	total ls	$80,000	$2,000
	Parts	1	ls	$400	$400
	Electricity (3-1 hp submersible pumps, total of ~800 hrs/year)	1,790	kW*hr	$0.12	$215
	Electricity (1-25 hp centrifugal pump, total of ~90 hrs/year)	1,680	kW*hr	$0.12	$202
	Jet clean leachate collection system and observation	13,000	feet	$1.00	$13,000
	Televise leachate collection piping every 5 years ($5,000 per event)	1	total ls	$40,000	$1,000
	Leachate hauling (1" over 69.6 acres)	1,890,000	gallons	$0.0100	$18,900
	Leachate treatment (1" over 69.6 acres)	1,890,000	gallons	$0.0200	$37,800
	Replace storage tank	1	total ls	$250,000	$6,250

TABLE 3-2: ESTIMATED ANNUAL LONG-TERM COSTS (2019 DOLLARS)

Item	Description	Quantity	Units	Unit Cost	Total Annual Cost
Surface Water Monitoring Program	Quarterly Visual Inspections (5 locations, 3 on-site/2 off-site)	15	hours	$45	$675
	Semiannual SW Sample Collection (2 locations)	4	hours	$45	$180
	Semiannual SW Analytical List F ($43/location per event)	4	each	$43	$172
Groundwater Monitoring Programs	Groundwater Monitoring (17 monitoring wells, 5 subtitle D wells, 4 private wells, 3 groundwater pump locations, 6 head monitoring wells)				
	Water sampling (1 hr/location per event)	70	hours	$45.00	$3,150
	Annual Well Inspections and Water Level (43 wells)				
	Annual Inspections and Water Levels (0.25 hours/ location per event)	11	hours	$45.00	$484
	Groundwater Analysis (17 monitoring wells, semiannual)				
	Laboratory analysis, List A ($152/well per event)	17	each	$152.00	$2,584
	Laboratory analysis, List A & B ($217/well per event)	17	each	$217.00	$3,689
	Groundwater Analysis (5 subtitle D wells, semiannual)				
	Laboratory analysis, ($217/well per event)	10	each	$217.00	$2,170
	Groundwater Analysis (5 private wells, semiannual)				
	Laboratory analysis, List A ($152/well per event)	5	each	$152.00	$760
	Laboratory analysis, List A & B ($217/well per event)	5	each	$217.00	$1,085
	Groundwater Analysis (3 pump locations, semiannual)				
	Laboratory analysis, List A ($152/well per event)	3	each	$152.00	$456
	Laboratory analysis, List A & B ($217/well per event)	3	each	$217.00	$651
	Groundwater gradient control system head monitoring (6 locations quarterly, 0.25 hr/location per event)	6	hours	$45.00	$270
Leachate Monitoring Programs	Leachate Monitoring (3 pump locations, 6 head monitoring wells)				
	Leachate sampling (0.5 hr/location per event, semiannually)	3	hours	$45.00	$135
	Leachate Analysis (3 locations, semiannual)				
	Laboratory analysis, List C & D ($307/well per event)	3	each	$307.00	$921
	Laboratory analysis, List C, D & E ($482/well per event)	3	each	$482.00	$1,446
	Leachate head level measurements (6 locations quarterly, 0.25 hr/well per event)	6	hours	$45.00	$270

TABLE 3-2: ESTIMATED ANNUAL LONG-TERM COSTS (2019 DOLLARS)

Item	Description	Quantity	Units	Unit Cost	Total Annual Cost
Gas Monitoring Program	Monthly monitoring of wells & probes (8/hrs per event)	96	hours	$55.00	$5,280
	Quarterly surface emission monitoring ($2,500 per event)	4	quarterly	$2,500.00	$10,000
Gas Recovery System	Operation & Maintenance				
	Maintenance/inspection (4 hours per week)	260	hours	$55	$14,300
	Parts	1	ls	$2,000	$2,000
	Replace flare (once during long term care period, $500,000)	1	total ls	$500,000	$12,500
	Electricity to run flare	1	ls	$15,000	$15,000
	Replace gas wells (average of 2 per year)	2	each	$15,000	$30,000
	Replace leachate extraction pumps (average of 2 per year)	2	each	$1,500	$3,000
Administration and Annual Report to WDNR		1	ls	$10,000	$10,000
				Subtotal =	**$228,210**
				10% Contingency =	**$22,821**
				TOTAL =	**$251,000**

Notes:
cy = cubic yard
ls = lump sum