BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

BFI WASTE SYSTEMS OF NORTH AMERICA, LLC,	)	
Petitioner,	)	
v.	)	PCB No. 24-29
	)	(Permit Appeal - RCRA)
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	
Respondent.	)	

NOTICE OF FILING

Please take notice that on May 22, 2024, Respondent, Illinois Environmental Protection Agency, filed with the Clerk of the Illinois Pollution Control. Board its Supplemental Record on Appeal in accordance with the Hearing Officer's May 16, 2024, order. Index of Record and Record R001627 to 001818 are attached hereto and hereby served upon you.

Respectfully Submitted,

BY: /s/ CHRISTOPHER GRANT

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Certificate of Service

I, CHRISTOPHER GRANT, an attorney, do hereby certify that, this 22nd day of May, 2024, I caused to be served on the individuals listed below, by electronic mail, the Notie of Filing of Supplemental Record on Appeal Index and Record R001627 to 001818.

/s/ CHRISTOPHER GRANT

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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

BFI WASTE SYSTEMS OF NORTH AMERICA, LLC	)	
Petitioner,	)	
v.	)	PCB 2024-029
	)	(Permit Appeal - RCRA)
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	
Respondent.	)	

SUPPLEMENTAL RECORD ON APPEAL

RESPONDENT, ILLINOIS ENVIRONMENTAL PROTECTION AGENCY, hereby supplements the Record of Final Decision pursuant to Hearing Officer Order of May 15, 2024, approving with certain conditions modifications to RCRA Hazardous Waste Permit No. 1994-160-LF, issued to BFI Waste System of North America, LLC, Davis Junction Landfill Phase I on September 25, 2023, consisting of the following documents:

Date	**Description**	**Record No.**
12/15/2016	Memo: B. Johnson (ORCR) to RCRA Regional Managers re Guidelines for Evaluating Post Closure Hazardous Waste Disposal Facilities	R001627-001645
7/1/2022	IEPA Letter to North Chicago re RCRA Closure Plan of Former Levin Site	R001646-001653
7/20/2022	ATSWMO Position Paper on Post Closure of Beyond Thirty Years Subtitle C Facilities	R 001654-001655
8/19/2022	IEPA Notice to City of North Chicago re Extension of RCRA Closure of former Levin Facility	R 001656
11/15/2022	IEPA Letter to RCH Newco II re Post Closure Plan	R 001657-001660
1/19/2023	IEPA Letter to Waste Management of Illinois enclosing Renewal of RCRA Post Closure Permit	R 001661-001818

Respectfully submitted,

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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DEC 15 2016

OFFICE OF
SOLID WASTE AND
EMERGENCY RESPONSE

NOW THE
OFFICE OF LAND AND
EMERGENCY MANAGEMENT

MEMORANDUM

SUBJECT: Guidelines for Evaluating the Post-Closure Care Period for Hazardous Waste Disposal Facilities under Subtitle C of RCRA

FROM: Barnes Johnson, Director
Office of Resource Conservation and Recovery

TO: RCRA Division Directors, Regions 1-10
RCRA Enforcement Managers, Regions 1-10
Regional Counsels, Regions 1-10

Purpose

The purpose of this memorandum is to provide guidance to assist regulators in evaluating conditions at hazardous waste disposal facilities subject to Subtitle C of the Resource Conservation and Recovery Act (RCRA) that are approaching the end of the original 30-year post-closure care period, and in determining whether the post-closure care period should be adjusted or allowed to end. Any such determinations must ensure ongoing protection of human health and the environment. This guidance also provides information to assist facility owners and operators in preparing documentation to inform the regulators' evaluations.

This guidance has the additional benefit of helping regulated entities understand what may be necessary to ensure protection of human health and the environment at units subject to post-closure care requirements. This enables waste generators and handlers to have a better understanding of the costs associated with land disposal so they can better evaluate long-term waste management strategies, including waste minimization.

Introduction and Need for Guidance

The RCRA Subtitle C hazardous waste management regulations establish a post-closure care[1] period for certain hazardous waste treatment, storage and disposal facilities, and specify post-closure care activities. The post-closure care requirements apply to land disposal units (landfills, land treatment units,

[1] Post-closure care can be generally described as the period of time after closure during which owners and operators conduct specified monitoring and maintenance activities to preserve the integrity of the containment system and to continue to prevent or control releases of contaminants.

and surface impoundments) that leave hazardous waste in place after closure. Post-closure care also applies to some non-land-based units (*e.g.,* certain tanks or containment buildings) that cannot fully decontaminate or "clean close" [1] all equipment, structures, and soils. Post-closure care activities consist of two primary responsibilities: monitoring and reporting, and maintaining the integrity of the waste containment systems (see 40 CFR 264/265.117). Post-closure care for each hazardous waste management unit must begin after completion of closure of the unit and normally continue for 30 years after that date; the regulations also provide discretion to the permitting authority to adjust the length of the post-closure care period.

Many facilities around the country are approaching the end of the initial post-closure care period established in their RCRA permits or post-closure plans. Accordingly, questions have arisen about how to evaluate conditions at these facilities to determine whether the post-closure care period needs to be adjusted – that is, extended, or whether a 30-year post-closure care period is protective for a specific unit. In response, the Office of Resource Conservation and Recovery has developed this guidance recommending criteria to consider when evaluating facilities nearing the end of the post-closure care period [2] and thus ensure that human health and the environment will continue to be protected by the resulting determination. It also sets forth a recommended process for evaluating the post-closure care period in a timely fashion. Finally, this guidance discusses additional considerations that may be important for decision-makers when evaluating the adequacy of the post-closure care period.

This guidance supplements existing guidance on the post-closure care period, including the Technical Evaluation Criteria and Site-Specific Factors to Consider in Determining the Length of the Post-Closure Care Period, presented in the Appendix B of the *RCRA Guidance Manual for Subpart G Closure and Post-Closure Care Standards and Subpart H Cost Estimating Requirements* of January 1987.[3]

Regulatory Overview of the Post-Closure Care Period

[1] The RCRA Subtitle C regulations generally provide for two types of closure: closure by removal or decontamination (referred to as "clean closure") and closure with waste in place. The premise of clean closure is that all hazardous wastes have been removed from a given RCRA unit and any releases at or from the unit have been remediated. More information on clean closure is available in *Memorandum: Risk-Based Clean Closure* from Elizabeth Cotsworth, Acting Director Office of Solid Waste, March 16, 1998.

[2] This document is solely intended to provide guidance to federal and state regulators on implementing the RCRA Subtitle C regulations and to provide policy advice and recommendations. As such, this document does not impose any legally binding requirements, and the use of such phrases as "guidance," "recommend," "may," "should," and "can," are not intended to impose or connote any legal obligations. Accordingly, this document does not change or substitute for any law, regulation, or any other legally binding requirement and is not legally enforceable. The policies described in this document may not apply to a particular situation based upon the circumstances, and EPA may deviate from or revise any of the policies described in this document without prior notice to the public. While EPA has made every effort to ensure the accuracy of the discussion in this document, the obligations of the regulated community are determined by statutes, regulations or other legally binding requirements. In the event of a conflict between the discussion in this document and any statute or regulation, this document would not be controlling.

[3] OSWER Policy Directive #9476.00-5, EPA/530-SW-87-10.

EPA regulations[4] require that the post-closure care period for each hazardous waste management unit subject to the requirements of 40 CFR 264/265.117 through 264/265.120 must begin after completion of closure of the unit and continue for 30 years after that date. Still, the regulations' identification of a default 30-year post-closure care period does **not** reflect a determination by EPA that 30 years of post-closure care is necessarily sufficient to eliminate potential threats to human health and the environment in all cases. Nor is the full 30-year period always necessary. In fact, the regulations provide for a permit authority to conduct a case-by-case review of the post-closure care period and establish arrangements to adjust the length of the post-closure care period on a facility or unit-specific basis, where the record supports a determination that the revised post-closure care period will remain protective of human health and the environment.[5]

The regulations provide that the decision to alter the length of the post-closure care period can be made at any time preceding *partial closure*[6] of a hazardous waste management unit subject to post-closure care; at any time preceding *final closure*[7] of a facility; or at any time during the post-closure care period for a particular unit. For permitted facilities, such a decision must be made through the permit renewal or modification procedures in parts 124 and 270 of the regulations. For interim status facilities, adjustment to the post-closure care period must be made in accordance with § 265.118(g).

According to § 264.117 the post-closure care period may be modified under certain circumstances provided the modifications are protective of human health and the environment:

- The post-closure care period may be shortened where "the reduced period is sufficient to protect human health and the environment (*e.g.*, leachate or ground-water monitoring results, characteristics of the hazardous wastes, application of advanced technology, or alternative disposal, treatment, or re-use techniques indicate that the hazardous waste management unit or facility is secure)."

- The post-closure care period may be extended where "the extended period is necessary to protect human health and the environment (*e.g.*, leachate or ground-water monitoring results indicate a potential for migration of hazardous wastes at levels which may be harmful to human health or the environment)."

The provisions for interim status facilities are similar [§§ 265.117 and 265.118(g)].

For more details on particularly relevant portions of the federal RCRA hazardous waste regulations, see Appendix A.

Criteria to Consider for Evaluating the Post-Closure Care Period

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[4] 40 CFR 264.117 (for permitted facilities) and 265.117 (for interim status facilities)

[5] EPA explained this approach early in the RCRA program. *See* 45 Fed. Reg. 33197 (May 19, 1980); *see also* 47 Fed. Reg. 32287-88 (July 26, 1982); 46 Fed. Reg. 2819 (Jan. 12, 1981).

[6] *Partial closure* is defined in 40 CFR 260.10 as "the closure of a hazardous waste management unit in accordance with the applicable closure requirements of parts 264 and 265 of this chapter at a facility that contains other active hazardous waste management units. For example, partial closure may include the closure of a tank (including its associated piping and underlying containment systems), landfill cell, surface impoundment, waste pile or other hazardous waste management unit, while other units of the same facility continue to operate."

[7] *Final closure* is defined in 40 CFR 260.10 as "the closure of all hazardous waste management units at the facility in accordance with all applicable closure requirements so that hazardous waste management activities under parts 264 and 265 of this chapter are no longer conducted at the facility unless subject to the provisions in § 262.34."

An overarching consideration in determining whether to extend the post-closure care period, or allow it to end, is the inherent uncertainty associated with the long-term presence of hazardous waste in the unit. Because many hazardous wastes degrade slowly or do not degrade under containment in these units, the continued presence of hazardous waste in the unit (*i.e.*, any case other than clean closure) indicates the potential for unacceptable impacts on human health and the environment in the future if post-closure care is not maintained. For instance, there are often uncertainties in whether controls will continue to function as planned and whether future activities will lead to unplanned exposures to human and environmental receptors. Even if there is no current evidence of actual releases from the facility, significant factors can change over time. For example, groundwater flow can change direction due to the sequencing of dry and wet years, pumping at municipal water supply or other well fields, or shifting gradients resulting from seasonal variations or tidal influences. Landfill components, such as caps and liners (which have a finite design life), can degrade over time, especially if maintenance is discontinued. Exposure pathways that have been eliminated by means of an engineered control may be reopened (*e.g.*, if animals burrow through the cap). Thus, continued monitoring and maintenance activities may be appropriate unless or until it can be demonstrated that site-specific conditions adequately minimize the risk that contaminants will migrate from the unit (*e.g.*, site geology/hydrogeology) or that, in the event the engineering controls fail, a release would not pose an unacceptable risk to human health and the environment. This section provides recommended criteria that can be used to evaluate site-specific conditions and associated risks or remaining uncertainties in determining whether to adjust the post-closure care period.

These criteria can also be periodically used to evaluate whether activities in the post-closure plan should be amended. For instance, if the regulator determines it is necessary to extend the post-closure care period, these criteria can be used to determine if the frequency of one or more post-closure care monitoring requirements could be reduced during that extended timeframe. Each criterion is not necessarily applicable for every unit in post-closure care, for example, the "Gas Collection System Integrity" criterion would not apply to units without a gas collection system. The questions provided under each criterion are intended to help identify potential threats to human health and the environment. However, they do not all need to be answered in order to make a decision concerning the appropriate post-closure care period and the monitoring/maintenance activities.

Waste Treatment: Knowing whether the hazardous waste was disposed prior to the effective date of the Land Disposal Restrictions (LDR) program is an important piece of information when evaluating site-specific conditions. Hazardous waste treatment that destroys harmful contaminants or reduces toxicity of the waste before placement in a land disposal unit provides a more lasting form of groundwater protection than waste containment alone. Similarly, through a process called stabilization or immobilization, metal contaminants – that cannot be treated – can be chemically and physically solidified or bound into the wastes that contain them (*e.g.,* through chemical fixation). Thus, reducing the mobility or leachability of hazardous constituents in a waste is another means of achieving LDR's groundwater protection goal. Relevant questions for this criterion include:

- Were all the wastes pre-treated in accordance with the treatment standards of the LDR program or does the unit contain wastes that were placed on the land prior to the effective dates of the LDR rules?

EPA recommends reviewing the waste analysis data for treated wastes in the land disposal unit.

Nature of Hazardous Wastes Remaining in the Unit: The current properties of the hazardous waste (*e.g.,* degradation, solubility, liquid-to-solid ratio) provide an important indication of the waste's ability to migrate or disperse in the environment.

- What is the degree of risk (*e.g.*, exposure pathways, probability of exposure) presently associated with the wastes in the unit?
    - Are the wastes highly toxic?
    - Do they degrade into substances that are more or less toxic, or non-toxic?
    - Are there indications that the waste might become incompatible with the liner?
- What is the potential for adverse impacts from releases based on the current understanding of contaminant fate and transport considerations (*e.g.,* presence of persistent, bioaccumulative contaminants, as compared to biodegradable contaminants; constituent speciation(s); and leaching profiles)?
- Is the waste in a stable state? Are there indications that the waste may become unstable?

EPA recommends that current data from regulatory standards be used for comparison to facility-specific performance goals articulated in the post-closure plan, and that, as necessary, the plan be updated to account for any new information on toxicity and carcinogenicity. EPA also recommends reviewing and possibly updating the list of constituents to analyze, since scientific understanding of constituents of concern may change over time. In addition, the data gathered should include an analysis of potential degradation products as well as of the types of wastes known to have been placed in the unit(s).

Unit Type/Design: The main objective of the disposal units is the containment of the hazardous waste. Thus, emphasis should be placed on the unit's ability to contain hazardous wastes over the long term.

- Is the unit, for example, a landfill, a surface impoundment, or a closed tank with residual contamination?
- Does the unit meet the minimum technology requirements (*e.g.,* double liners, leachate collection system)? Or was the unit already in existence at the time these requirements were promulgated and closed before retrofitting?
- To what extent does the overall design and construction of the unit minimize the need for long-term maintenance, resist the generation of leachate and emissions, and contain any remaining waste in perpetuity?

It is recommended that the permitting authority consider any unit-specific design, in concert with applicable closure and post-closure care requirements, when evaluating whether adjustment of the post-closure care period is warranted to protect against any potential impact on human health and the environment. There can be circumstances in which continuing to maintain unit-specific controls may be necessary to protect human health and the environment, particularly if the unit pre-dated the minimum technology requirements; this could support a decision to extend the post-closure care period. Conversely, there might be circumstances where the overall design and construction of the unit minimize the need for long-term maintenance and could support a decision to shorten or end the post-closure care period.

Leachate: The leachate collection and removal system controls leachate build-up on the liner, working in conjunction with the liner's barrier system to minimize the potential for groundwater contamination.

Monitoring for leachate generation serves as the most effective way of examining the integrity of the waste management unit (*e.g.,* it can suggest a cover or liner failure when leachate is detected late in the post-closure care period). [8]

- Will the integrity and functionality of the leachate collection system, leachate generation rate, and leachate quality remain adequate to prevent harm to human health or the environment in the absence of post-closure care?
- Can the facility owner or operator show through monitoring/modeling and/or statistical analysis that the leachate would not pose a threat to human health and the environment because it would not exceed applicable standards at compliance or exposure points?
- Is it likely those standards will be exceeded in the future, for example, through formation and release of degradation products? Do the data demonstrate that there are no increasing trends in the concentration of leachate constituents?
- Can the facility owner or operator demonstrate that maintenance and operation of the leachate collection system can be ceased without posing a threat to human health and the environment?

EPA recommends that potential impacts from changes in leachate characteristics and generation rate that could result from discontinued maintenance be considered.

Groundwater: Groundwater monitoring serves as the primary means of detecting leachate releases and groundwater contamination. It is important that groundwater analytical results, adequacy and reliability of the groundwater-monitoring network, and groundwater-monitoring well integrity be evaluated before the post-closure care period nears its end.

Groundwater should not exceed risk-based concentrations for a reasonable exposure scenario (or point of exposure) using currently acceptable risk assessment methods and up-to-date risk-based levels and scenarios. If the evaluation determines that unacceptable risk exists, these risks should be addressed. The risk evaluation should consider reasonable current or future groundwater use in the general area of the site (*e.g.*, if a drinking water source is located nearby).

Review of the groundwater monitoring system should have been done as part of operation and maintenance inspections over time. Evaluation of the groundwater monitoring network should refer to the most recent operation and maintenance inspection. The well network evaluation should look at groundwater flow direction, well construction, and placement relative to groundwater flow direction.

[8] "If leachate is generated late in the post-closure care period, this could suggest a cover or liner failure warranting an extension of the post-closure care period." See page B-13 of the RCRA Guidance Manual for Subpart G Closure & Post-Closure Care Standards and Subpart H Cost Estimating Requirements, EPA/530-SW-87-010 (January, 1987).

- Is groundwater quality in compliance with current standards?
- Have there been changes or are changes anticipated in land use/groundwater use that could change the applicable standards (*e.g.,* introduction of agricultural irrigation to an area) or the directional flow (*e.g.,* sequencing of dry and wet years, pumping at municipal water supply or other well fields, or shifting gradients resulting from seasonal variations or tidal influences)?
- Do the data indicate any trend in the concentration of analytes in groundwater?
- Has an expanded list of analytes (*e.g.,* selected from Appendix VIII of 40 CFR part 261) been considered for analysis within a reasonable time frame?
- Have the monitoring wells been maintained to provide valid data, for example, no well screen occlusion?

Siting and Site Geology/Hydrogeology: Relevant facility location characteristics (which might have changed since the post-closure plan was approved) may include proximity to vulnerable areas such as residential areas and surface and drinking water sources. The current and reasonably anticipated future land use of the facility and surrounding properties may also be relevant. Location in potentially vulnerable areas increases the likelihood and potential severity of releases. For example, if units are located in areas prone to flooding or with a high water table, it may be appropriate for reviewers to consider the potential for continuing risks to surface water in evaluating whether to modify the post-closure care period. Conversely, units located in areas not prone to flooding, or at great distance from the water table, might have less need for long-term maintenance. Additional hydrologic and geologic conditions such as wetlands and earthquake zones, unstable soils, and areas at risk for subsurface movement could have changed since a unit first entered post-closure care and might also need to be taken into account. Proximity to residential areas can also present unique considerations. It is also appropriate to consider whether facility conditions minimize the potential for adverse impacts on local populations if there is a release from the unit. [9]

[9] If a unit managing vapor-forming chemicals has releases to the environment, it creates the potential for vapor intrusion issues to neighboring communities due to migrating plumes of contaminated groundwater or migrating soil gases, even when the community is some distance away. Consider evaluating risks from subsurface intrusion of toxic constituents (*e.g.,* vinyl chloride from aerobic degradation of perchloroethylene/trichloroethylene), or landfill gases such as methane and hydrogen sulfide, into buildings or structures located near the unit in post-closure care. See the *Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air*, June 2015.

- Does the site geology include subsurface strata that might contain or retard migration?
- What is the distance to the groundwater table, bearing in mind seasonal fluctuations, and the proximity of any useable aquifers?
- Is the unit located in a dry climate that provides minimal precipitation?
- Is the pattern of land use changing or likely to change in the future in a way that would bring people closer to or farther away from the facility?
- Have zoning laws changed?
- Is there a sizable buffer zone around the facility that could limit human activity near the site into the future?
- What is the distance to sensitive receptors for groundwater flow and emissions?
- Could the distance to sensitive receptors change under reasonably foreseeable future conditions, as reflected, for example, in land use development plans for the area?
- Is there the potential for impact on surface water quality?
- Have new potential exposure pathways been identified and evaluated? For example, vapor intrusion had not been identified as a potential exposure pathway at the time many permits were issued.[11]

In addition, EPA recommends that the potential effects of climate change be taken into account in making these assessments.[10] For example, flooding from more intense and frequent storms and sea-level rise may lead to contaminant releases from units subject to post-closure care requirements by transport of contaminants through surface soils, groundwater, surface waters and/or coastal waters. Saltwater intrusion and increased groundwater salinity in coastal aquifers may increase the permeability of clay liners installed at waste sites, such as landfills. Changes in precipitation patterns and temperature may also adversely affect the performance and efficacy of engineering controls.

Facility History: All waste management units (during active life or in post-closure care) must be adequately managed to prevent releases of contaminants to the environment. A well-managed facility is more likely to maintain its structural integrity. Good compliance records, routine maintenance and inspections, emergency procedures to handle natural disasters, and prompt and efficient response to spills and other incidents, are some of the management practices that help demonstrate whether the unit has been adequately managed.

[10] For more information on climate change adaptation consult the "Climate Change Adaptation Technical Fact Sheet: Landfills and Containment as an Element of Site Remediation," EPA 542-F-14-001 (May 2014).

- From the facility records (including frequency of all maintenance activities), to what extent did the unit closure design and activities described in the closure plan and closure certification minimize the need for ongoing monitoring and maintenance?
- Has past noncompliance with regulatory requirements contributed to present environmental conditions that warrant an extension of the post-closure care period (*e.g.*, non-compliance with current LDR standards)?
- Is there a history of any releases and what are current contaminant levels?
- If a release did occur, have corrective measures been successfully implemented and has subsequent monitoring shown no evidence of a recurrence?
- Are analyses being conducted for the correct parameters?
- How complete and accurate is the facility operating record?
- Is there confidence that the record accurately reflects spills, releases, lapses in maintenance or other events that may have a bearing on potential facility impacts?
- To what extent have closure activities minimized or eliminated escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, surface waters or the atmosphere during the post-closure care period?

In order to fully understand the facility history, EPA recommends that the permit authority also review the closure plan and certification of closure. [11]

Gas Collection System Integrity: For units that have a landfill gas collection system, it is important to analyze the extent to which it is capable of being modified or shut down at the end of the post-closure care period without exceeding emission levels that are consistent with applicable regulatory standards and with public safety at the facility. In addition, because gas emissions can increase or decrease over time, it is recommended that statistical or graphical analysis of the data be used to identify any significant changes in gas emissions.

- To what extent is the gas collection system capable of being modified or shut down at the end of the post-closure care period without exceeding emission levels that are consistent with applicable regulatory standards and with public safety at the facility?

Integrity of Cover System: A viable cover is the most important mechanism in preventing leachate generation and, ultimately, releases of contaminants. Cracks, burrows from animals, and other problems are likely to occur after termination of post-closure care. If testing and inspection end, problems can go undetected and releases could occur. Thus, it is vital to evaluate the performance of the cover system during the post-closure care period.

[11] For further information on closure performance standards, see 40 CFR 264.111 and 265.111.

- Has the cover system been designed and maintained to minimize migration of water into the management unit and to prevent contaminants from escaping into the environment?
- Has periodic testing or inspection been conducted to identify and assure any necessary repairs? Potential concerns include differential settlement, problems with cover integrity (cracks, burrows, etc.), cover drainage, and the adequacy of the diversion or drainage system. Even where such problems have not occurred, are they likely to arise without long-term care, *e.g.*, will the cover system remain intact without mowing to prevent growth of trees?
- Is the remaining waste likely to be so benign that even with a compromised cover system release of hazardous constituents is unlikely?
- To what extent will the integrity of the cover system be preserved in the absence of long-term care or with reduced maintenance requirements?

For alternative covers, it is recommended that the potential effects of climate change (*e.g.,* increasing frequency and intensity of weather events) be taken into account to the extent practical. For example, will the vegetation remain viable under altered precipitation patterns?

Long-Term Care: The concept of long-term care (also known as long-term stewardship) generally includes the establishment and maintenance of physical and legal controls that are necessary to prevent unacceptable exposure to hazardous waste or contaminated environmental media left in place at a site or closed facility. As a general matter, the RCRA post-closure care requirements (for example, monitoring and cap maintenance) fall under the umbrella of long-term care. When considering whether to adjust the post-closure care period, permitting authorities should evaluate any continuing need to maintain engineering controls (ECs),[12] particularly those specified in the RCRA post-closure care regulations.

- How will the potential for human exposure to contamination be minimized in the absence of RCRA post-closure care?
- How is the integrity of the entire containment system going to be preserved over time?
- Can maintenance and monitoring activities cease or be reduced without causing an adverse impact to human health and the environment?

A further need to maintain ECs could justify an extension of the post-closure care period. This may be the case even if the frequency of some activities could be adjusted (*e.g.,* some activities may be needed more frequently in the early years of the post-closure care period and less frequently later).

The RCRA post-closure care regulations provide for the imposition of institutional controls (ICs)[13] as well. For example, §§ 264/265.117(c) provides that post-closure uses of a property where hazardous wastes remain after final or partial closure must never be allowed to disturb the integrity of the containment system or the functioning of the monitoring system, with limited exceptions. In addition, §§ 264/265.119(b)(1)(ii) provide that the owner or operator must record a notation, in accordance with state law, on the deed to the facility property – or on some other instrument which is normally examined during title search – that will in perpetuity notify any potential purchaser of the property that, among other things, the property's use is restricted under the RCRA closure/post-closure regulations. States can

[12] Engineering controls are the engineered physical barriers or structures (*e.g.*, caps, impermeable liners, mitigation barriers, or fencing) designed to monitor and prevent exposure to the contamination.
[13] Institutional controls are administrative or legal instruments (*e.g.*, deed restrictions/notices, easements, restrictive covenants, zoning) intended to minimize the potential for human exposure to contamination by limiting land or resource use.

choose to supplement or support such deed restrictions under state law, *e.g.*, by setting up a deed restriction tracking system, ensuring that deed restrictions remain in place, or ensuring that information on existing ICs is available to interested parties.

Even in cases where the post-closure care period need not be extended to protect human health and the environment, the permitting authority may want to ensure that some long-term ICs, such as an easement that provides access to the property, are continued. EPA recommends that any ICs (under state or local authority) needed beyond the post-closure care period be in place before the post-closure care period ends. EPA expects that the permit authority would typically need to assess the availability and adequacy of other potential mechanisms for overseeing ICs as part of evaluating whether any modification to the post-closure care period was warranted.

EPA also recommends that consideration be given as to whether a funding source is available to support any necessary ECs and ICs in the future (see Appendix B for a list of ICs resources.) This could be done, for example, as part of an anticipated future use (or end-use strategy) that generates revenue, so that protective controls at the unit can be continued while supporting beneficial reuse of the land into the future.

Recommended Approach for Reviewing Hazardous Waste Management Units Approaching the End of the Post-Closure Care Period

EPA believes that, at a minimum, it is important to make a decision about the length of the post-closure care period, and to document such decision, well before that period nears its end. Therefore, EPA recommends that regulators assess the overall status of all the units under post-closure care, and plan to evaluate the adequacy of their post-closure care periods well in advance of their anticipated conclusions. EPA also recommends that the results from the evaluation of the post-closure care period be included in the regulator's administrative record for the facility.

As stated before, the federal RCRA hazardous waste regulations provide discretionary authority to the permitting authority to extend or shorten the length of the post-closure care period. However, the facility owner or operator is responsible for providing the information necessary to support this decision (see, for example, 40 CFR 270.30(h), Duty to provide information). A lack of relevant and complete information may justify a conclusion by the regulatory authority that extension of the post-closure care period is necessary to protect human health and the environment until such information is provided.

EPA's recommendations for evaluating units approaching the end of the post-closure care period are discussed in more detail below.

Timing: Regulators should track permit terms and dates of all post-closure permits and have a strategy for when they will begin looking at whether to adjust the post-closure care period, allowing enough time for the necessary steps to take place prior to the 30-year expiration:

- Identify and gather necessary information
- Evaluate information
- Decide whether to adjust the post-closure care period
- Incorporate tentative decision into permit renewal (or modification) process.

For units with operating permits, EPA recommends starting the process at least 18 months before the expiration of the post-closure permit or post-closure care period, whichever comes first. It is important to keep in mind that in accordance with § 270.1(c) units subject to post-closure care must have post-closure permits or an enforceable document in lieu of a post-closure permit and, under § 270.50, permits can be issued for no longer than ten years. Consequently, over the course of a 30-year post-closure care period, the permit would normally need to be renewed at least twice (unless the post-closure care period has been modified). In addition, for a permitted land disposal facility, the length of the post-closure care period is an important component of the five-year review required under § 270.50(d). The facility owner or operator may also initiate the post-closure care evaluation and/or modification process by submitting a permit modification. Similarly, regulators should evaluate petitions to end or shorten the post-closure care period in a timely manner.

For facilities conducting post-closure care under interim status, regulators might want to adopt time frames for review similar to those of permits (*e.g.*, every ten years) to initiate the process of identifying and gathering relevant information. At a minimum, they should evaluate the adequacy of the post-closure care period well in advance of its end date. The facility owner or operator may also initiate the process by submitting a revision to their post-closure plan, including a petition in accordance with § 265.118(g)(1).

Post-Closure Plan: When considering adjusting or ending the post-closure care period, regulators should request a copy of the most current version of the approved post-closure plan, along with any proposed revisions provided by the owner or operator. Under §§ 264.118(b) and 265.118(c), the post-closure plan identifies certain activities (and their frequency) that must be conducted during the post-closure care period (*e.g.*, monitoring and maintenance). The post-closure plan may also identify performance standards or performance goals, which should be updated to account for any new information on toxicity and carcinogenicity. The post-closure plan thus provides an important starting point for the review. The project file should have a history of permit modifications including those made to the post-closure plan. It is also important that the results of the post-closure period assessment be incorporated into a revised post-closure plan (and the permit), as appropriate.

Relevant Information: As part of the review of the post-closure plan and any relevant historical information, regulators should determine whether they possess the information necessary to adequately evaluate the conditions at the unit so that a decision about the post-closure care period can be made. Relevant information may include monitoring reports, results from testing or inspections of the cover system, information concerning land use and institutional controls, and any other information that would be helpful in determining whether post-closure care continues to be needed for the unit. The absence of adequate information (*e.g.*, to address unresolved risk issues), including failure of the permittee to provide necessary information, will make it difficult for the permitting authority to conclude that allowing the post-closure period to end or shortening the post-closure care period meets the regulatory standard. The permitting authority can conclude that an extension of the post-closure care period is necessary to protect human health and the environment until the information necessary to make a final determination is available. Any proposal to adjust the post-closure care period should be supported by adequate data and analysis to demonstrate the anticipated long-term performance of the unit. To account for cyclical fluctuations in weather and hydrology, EPA recommends that multiple-year performance data be considered (*e.g.,* ten years).

The recommended criteria outlined in the previous section are also relevant to inform deliberations on whether and what additional information about the facility is necessary.

If information becomes available indicating changing circumstances that might necessitate the need to revisit the post-closure care (*e.g.,* monitoring results show leaching) it is recommended that the regulator immediately request any additional information needed from the facility owner or operator to inform a decision about adjusting the post-closure care period. This can be accomplished through various means, including under the facility's permit terms (*e.g.,* under § 270.30(h), the permit holder has a duty to provide relevant information and records; under § 270.30(k)(4), monitoring results must be reported at intervals specified in the permit); through enforcement of the relevant interim status regulations; or through inspections or studies required pursuant to RCRA sections 3007 or 3013.

Expiration/Renewal of Post-Closure Permits: Permits are issued for a fixed term not to exceed ten years, which means post-closure permits will need to be renewed periodically throughout the post-closure care period (*e.g.,* a 30 year period could span three permit terms). Renewal applications must be submitted 180 days before the expiration date of an effective permit (see § 270.10(h)). Frequently, facility owners or operators do not submit a renewal application as they approach the permit's expiration date because they believe they will submit an acceptable certification that they have completed post-closure care for the unit(s). If, towards the end of the permit term, the permitting authority has not received a permit renewal application from the facility or if the permitting authority anticipates that there may be any issues regarding the acceptability of the certification of completion of post-closure care, EPA recommends that the regulatory authority remind the owner or operator that the regulations require the facility to provide the required certification or reapply for a permit, and request submission of the permit renewal application (see §§ 270.10(h) and 270.30(b)). Timely submission of an application for permit renewal will ensure that a valid permit is in effect (pursuant to § 270.51) pending a resolution. If a facility owner or operator does not submit a timely renewal application, and the permit is not administratively continued, the regulator may consider initiating an enforcement action or issuing a new permit (see § 270.51(c)).

Public Participation: Any potential adjustments to the length of the post-closure care period are subject to requirements for involving the public. For permitted facilities, extensions to the post-closure care period would be processed as a Class 2 modification, and reductions would be Class 3. In both cases, the regulator must provide public notice, hold a public meeting, and allow an opportunity for written comments to be submitted. Similarly, for adjustments in the length of the post-closure care period at interim status facilities, the regulator must provide public notice and an opportunity for written comments. Although there is no specific provision in the regulations to notify the public when a post-closure care period ends, we recommend that the regulatory authority consider providing notice to the local community when they release a facility owner or operatory from their post-closure care obligation.

Financial Assurance Requirements: Finally, permitting authorities should keep in mind that an adjusted post-closure care period may also necessitate revisions to the associated post-closure cost estimate and financial assurance.

Additional Considerations

Benefits of Post-Closure Permits: Permits are site-specific legal documents that establish the technical and administrative conditions to which a facility must adhere, in order to ensure that monitoring and maintenance activities are performed to prevent and address releases that could potentially threaten

public health and the environment and lead to cleanup obligations.[14] Thus, it is critical that any modifications to the permit are made, as necessary, to ensure they are complete and current. Permits are issued in, at most, ten-year increments to ensure they are periodically reviewed and requirements are updated as necessary. Additionally, facility owners and operators may request modifications to a permit. Although there are resources associated with permit maintenance, permits provide numerous benefits and protections such as:

- Basic Permitting Requirements – Permits are subject to the regulations governing facility permitting as set forth in 40 CFR part 270, which covers basic EPA permitting requirements, such as application requirements, standard permit conditions (*e.g.,* duty to comply, duty to reapply, duty to provide information), and monitoring and reporting requirements (*e.g.,* annual monitoring reports, compliance schedules).

- Unit-Specific Informational Requirements – Where applicable, owners or operators of a permit must submit information including detailed plans and engineering reports under § 270.14(b)(13).

- Financial Assurance – The owner or operator of a permitted unit must establish and maintain financial assurance. At facilities with units in post-closure, requirements include financial assurance for post-closure care in accordance with the approved post-closure plan for the facility, for as long as the unit remains subject to RCRA post-closure care requirements, including the post-closure permit requirement (§ 264.145).

- Corrective Action – Section 264.101 requires that all permits include requirements for facility-wide corrective action as necessary to protect human health and the environment.

- Enforceability – The permitting authority can enforce RCRA permit requirements including through facility inspections, record reviews, and other means. Section 270.28 provides that the permittee shall allow the regulatory authority to perform inspections at the facility.

- Public Participation – The permitting process of 40 CFR parts 270 and 124, and the permit modifications procedures in § 270.42 provide for public involvement. The public has the opportunity to comment on a facility's closure and post-closure plans as part of the initial permitting process and any amendments made to the plans as part of the permit modification procedures.

- Additional Conditions – Section 3005(c)(3) of RCRA (codified at 40 CFR 270.32(b)(2) and commonly referred to as the "omnibus authority"), allows for additional site-specific permit conditions to be incorporated into RCRA permits, should such conditions be necessary to protect human health and the environment.

- When permits incorporate the technical requirements contained in parts 264, 266, and 267 of the regulations, those permit conditions are not subject to challenge (*i.e.,* a number of permit conditions are required by the regulations themselves).

- Permit requirements cannot be terminated merely by sale of the property or bankruptcy of the owner or operator.

Relationship of Subpart F Corrective Action and Post-Closure Care: Corrective action and post-closure care requirements for a regulated unit may be linked, for example, in the case of groundwater

[14] Owners and operators of units subject to post-closure care, must have post-closure permits, "unless they demonstrate closure by removal or decontamination as provided under § 270.1(c)(5) and (6), or obtain an enforceable document in lieu of a post-closure permit, as provided under paragraph (c)(7) of this section" (see §270.1(c)).

monitoring and/or corrective action for releases from closed regulated units being handled pursuant to 40 CFR 264.90–264.100. In many cases, it may be desirable (either by the facility owner/operator, the regulatory agency, or both) to coordinate the post-closure care and monitoring/corrective action requirements. EPA recommends that the regulatory agency consider extending the post-closure care period (and associated permits or other enforceable documents) when corrective action continues beyond the original post-closure care period (see §§ 264.90(c)(3) and 264.96(c)).

Post-Closure Rule:[15] This rule amended the regulations applicable to facilities with land disposal units in two areas. First, it modified the requirement for a post-closure permit to provide EPA and the authorized states discretion to use a variety of authorities to address the post-closure period at non-permitted facilities. In addition, it amended the regulations governing closure of land-based units to allow EPA and the authorized states to address those units through the corrective action program in certain situations where regulated units and other solid waste management units have contributed to a release.

Scope of Guidance and Relationship to Existing Guidance: This document is not intended to provide guidance on decisions to extend or shorten the post-closure care period for *non-hazardous* waste units (*i.e.,* units regulated under RCRA Subtitle D), nor is it intended to replace existing guidance concerning establishment and attainment of remedial goals at contaminated facilities addressed under RCRA Subtitle C authority. This guidance is meant to supplement any existing guidance on the post-closure care period, and should be used in concert with the Technical Evaluation Criteria and Site-Specific Factors to Consider in Determining the Length of the Post-Closure Care Period, presented in the Appendix B of the *RCRA Guidance Manual for Subpart G Closure and Post-Closure Care Standards and Subpart H Cost Estimating Requirements* of January 1987.[16] This document provides additional considerations and factors that are not included in the 1987 guidance, such as vapor intrusion, updated toxicity values, and climate change considerations – although the updates presented in this guidance are not intended to be comprehensive.

Relationship to State Authorities: Under RCRA, states may apply to, and receive from EPA, authorization of a state program to operate in lieu of the federal RCRA hazardous waste program. *These state programs may be broader in scope or more stringent than EPA's RCRA hazardous waste regulations, and requirements can vary from state to state*. Members of the regulated community are encouraged to contact their state agencies for the particular post-closure care requirements that apply to them in any particular state.

For additional information, feel free to contact me, or your staff may contact Lilybeth Colon (colon.lilybeth@epa.gov, 703-308-2392) or Tricia Buzzell (buzzell.tricia@epa.gov, 703-308-8622).

[15] See *Standards Applicable to Owners and Operators of Closed and Closing Hazardous Waste Management Facilities: Post-Closure Permit Requirement and Closure Process*; Final Rule, October 22, 1998 (63 FR 56710).
[16] OSWER Policy Directive #9476.00-5, EPA/530-SW-87-10. Appendix B of this guidance presents technical factors to consider in determining the length of the post-closure care period as well as a number of hypothetical scenarios illustrating how site-specific information might be used to support an extension or reduction in the length of the period.

Appendix A: Overview of Federal Regulatory Provisions

Regulations governing RCRA post-closure care are set forth in 40 CFR part 264 subpart G for permitted facilities and part 265 subpart G for interim status facilities. Additional requirements for post-closure care of specific types of units are included in the regulations for those units. See §§ 264/265.197 (Tank Systems); §§ 264/265.228 (Surface Impoundments); §§ 264/265.258 (Waste Piles); §§ 264/265.280 (Land Treatment Units); §§ 264/265.310 (Landfills); § 264.603 (Miscellaneous Units); §§ 264/265.1102 (Containment Buildings); and §§ 264/265.1202 (Hazardous Waste Munitions and Explosives Storage).

Regulations governing financial assurance for post-closure care are set forth in 40 CFR part 264 subpart H for permitted facilities and part 265 subpart H for interim status facilities.

Regulations governing facility permitting are set forth in 40 CFR part 270.

> *Post-Closure Care* – Sections 264.117(a) and 265.117(a) establish general requirements for post-closure care and a 30-year post-closure care period. However, the regulations also allow the permitting authority to shorten the 30-year post-closure care period if the reduced period is sufficient to protect human health and the environment, or to extend it, if necessary (see the *Post-Closure Plan Amendment* section for more details). Sections 264.117(a)(2)(i) and 265.117(a)(2)(i) provide the following examples for shortening the post-closure care period: "...(*e.g.*, leachate or groundwater monitoring results, characteristics of the hazardous wastes, application of advanced technology, or alternative disposal, treatment, or re-use techniques indicate that the hazardous waste management unit or facility is secure)."
>
> Sections 264.117(a)(2)(ii) and 265.117(a)(2)(ii) provide the following example for extending the post-closure care period: "...(*e.g.,* leachate or groundwater monitoring results indicate a potential for migration of hazardous wastes at levels which may be harmful to human health and the environment)."
>
> *Post-Closure Plan* – Under §§ 264.118 and 265.118, the owner or operator of specified units must have a written post-closure plan. The plan must identify monitoring and maintenance activities that will be carried out after closure, and their frequency, to assure compliance with the requirements of specific subparts, including subparts F, K, L, M, N and X, where applicable. For permitted facilities (§ 264.118(a)), the post-closure plan must be submitted with the permit application and approved by the permitting authority as part of permit issuance procedures. The approved post-closure plan becomes a condition of any RCRA permit issued (see the *Post-Closure Plan Amendment* section for more details). For interim status facilities (§ 265.118), the owner or operator must submit the post-closure plan to the permitting authority within specified time frames, and the regulations provide for making the post-closure plan available to the regulatory authority.
>
> *Procedures for Post-Closure Plan Amendment* – For permitted facilities*,* the process for making changes to the post-closure plan is through permit modification (permit modification procedures are set forth in § 270.42). Under § 264.118(d)(1), the owner or operator may submit a written notification or request for a permit modification to amend the post-closure plan. Under § 264.118(d)(2), the owner or operator must submit a written notification of the permit modification or request for a permit modification to authorize a change in the approved post-closure plan under certain circumstances. Specific reasons set forth in the regulations include changes in operating plans or facility design that affect the approved post-closure plan, and

events occurring during the active life of the facility that affect the approved post-closure plan. For interim status facilities, § 265.118(d) prescribes procedures for amending the post-closure plan. The permitting authority may also request modifications to the post-closure plan under §§ 264.118(d)(4) and 265.118(d)(4).

Procedures for Post-Closure Care Period Adjustment – Adjustments to the post-closure care period may be initiated at any time preceding partial or final closure or at any time during the post-closure care period of a particular unit. For interim status facilities, § 265.118(g) prescribes a process for extending or shortening the post-closure care period that includes provisions for public involvement. For permitted facilities, § 264.117(a)(2) provides for shortening or extending the post-closure care period in accordance with the permit modification provisions in parts 124 and 270.

Section 270.41 provides for Agency-initiated permit modifications. EPA may modify a permit for the following reasons: if there have been material and substantial alterations or additions to the facility; there is new information that was not available at the time of permit issuance; new statutory or regulatory requirements were promulgated; EPA has cause to initiate a compliance schedule under § 270.33; or as necessary to assure that the facility continues to comply with the currently applicable requirements in parts 124, 260 through 266, and 270, when a permit for a land disposal facility is reviewed by the Director under § 270.50(d).

Section 270.42 contains the regulations that apply to the modification of a permit at the request of the permittee. For all modifications, the permittee submits information to EPA that describes the exact change to be made to the permit conditions, identifies whether the modification is Class 1, 2, or 3, and provides the applicable permit application information.

The process for extending the post-closure care period is a Class 2 modification, while the process for shortening the post-closure care period is a Class 3 modification (§ 270.42, Appendix I, E2 and E3). These procedures include provisions for public involvement. The post-closure care period can also be modified through permit renewal under § 270.32(d).

Financial Assurance for Post-Closure Care – EPA's regulations under parts 264/265 subpart H establish requirements for financial assurance, including financial assurance requirements for post-closure care (see §§ 264.140 and 265.140). Under §§ 264.144 and 265.144, the owner or operator is required to have detailed written cost estimates for post-closure monitoring and maintenance in accordance with the applicable post-closure care requirements. Under §§ 264.145 and 265.145 generally, the owner or operator is required to establish financial assurance for post-closure care in an amount equal to the current post-closure cost estimate.

Certification of Completion of Post-Closure Care and Release of Owner and Operator from Financial Assurance Requirements – Under §§ 264.120 and 265.120, the owner or operator must submit certification that the post-closure care for the unit(s) was performed in accordance with the approved post-closure plan; the certification must be sent by registered mail to the permitting authority. This certification must be submitted no later than 60 days after the completion of the post-closure care period for each hazardous waste disposal unit. The certification must be signed by the owner or operator and a qualified professional engineer. Documentation supporting the professional engineer's certification must be furnished to the permitting authority upon request until the permitting authority releases the owner or operator from the financial assurance requirements for post-closure care under §§ 264.145(i) and 265.145(h).

Under §§ 264.145(i) and 265.145(h), within 60 days of receipt of certification from the owner or operator and a qualified professional engineer that the post-closure care has been completed for a hazardous waste disposal unit in accordance with the approved plan, the permitting authority will notify the owner or operator that it is no longer required to maintain financial assurance for post-closure care for that unit. If the permitting authority has reason to believe that post-closure care has not been in accordance with the approved post-closure plan, the permitting authority must provide the owner or operator a detailed written statement of any such reason.

Scope of the Post-Closure Permit Requirements – Under § 270.1(c), owners and operators of surface impoundments, landfills, land treatment units, and waste pile units that received waste after July 26, 1982, or that certified closure (according to § 265.115) must have post-closure permits, unless they demonstrate closure by removal or decontamination, or obtain an enforceable document in lieu of a post-closure permit as provided under § 270.1(c)(7). Under § 270.10(h), if a permittee has an effective permit and they want to renew it, they must submit a new application at least 180 days before the expiration date of the effective permit.

Monitoring and Records – Under § 270.30(j)(2), the permittee must retain records of all monitoring information for a period of at least three years from the date of sample, measurement, report, or certification, unless extended by request of the permitting authority at any time. Records from all groundwater monitoring wells and associated groundwater surface elevations must be maintained for the active life of the facility, and for disposal facilities for the entire post-closure care period.

Compliance with an Expiring Permit – Under § 270.51(c), if the permittee is not in compliance with the conditions of the expiring or expired permit, the permitting authority may issue a new permit under part 124, initiate enforcement action, or take other actions authorized by the RCRA regulations.

Appendix B: Institutional Controls (ICs) Resources

The following resources may be helpful in implementing and maintaining ICs throughout the post-closure care period and beyond.

- EPA guidance on *Ensuring Effective and Reliable Institutional Controls at RCRA Facilities* (Matt Hale, Director, Office of Solid Waste, and Susan Bromm, Director Office of Site Remediation and Enforcement, June 14, 2007) sets forth guiding principles and recommendations that can help EPA and state decision makers on the use of ICs at RCRA facilities, and EPA resources for additional information and assistance.

- *Institutional Controls: A Site Manager's Guide to Identifying, Evaluating, and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups* guidance provides some discussion about how ICs can be used at post-closure care facilities. (p.3 text box) EPA 540-F-00-005, OSWER 9355.0-74FS-P, September 2000, https://www.epa.gov/fedfac/institutional-controls-site-managers-guide-identifying-evaluating-and-selecting-institutional

- *Institutional Controls: A Guide to Preparing Institutional Control Implementation and Assurance Plans at Contaminated Sites* provides information and recommendations that should be useful for planning, implementing, maintaining and enforcing ICs, and offers an overview of EPA's policy regarding the roles and responsibilities of the parties involved in the various life-cycle stages of ICs. Final, December 2012. OSWER 9200.0-77, EPA-540-R-09-002, https://www.epa.gov/fedfac/institutional-controls-guide-preparing-institutional-control-implementation-and-assurance

- *Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites* guidance also discusses how ICs could be used at RCRA post-closure care facilities. (Section 2.3) Final, December 2012. OSWER 9355.0-89, EPA-540-R-09-001, https://www.epa.gov/fedfac/institutional-controls-guide-planning-implementing-maintaining-and-enforcing-institutional

- *Long-Term Stewardship: Ensuring Environmental Site Cleanups Remain Protective over Time* report identifies long-term stewardship challenges and opportunities for improvement, and makes recommendations for how EPA and its state, tribal, and local partners should proceed in addressing them. This report also includes a definition of long-term stewardship, why long-term stewardship is important, and what EPA and others are currently doing to address long-term stewardship issues. Final, September 2005, EPA 500-R-05-001, https://nepis.epa.gov/Exe/ZyNET.exe/P100119V.TXT?ZyActionD=ZyDocument&Client=EPA&Index=2000+Thru+2005&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C00thru05%5CTxt%5C00000015%5CP100119V.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL

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217/524-3300

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JUL 01 2022

Honorable Leon Rockingham, Jr.
Mayor, City of North Chicago
1850 Lewis Avenue
North Chicago, Illinois 60064

Re: 0971250007 -- Lake County
North Chicago/North Chicago, City of
ILD097271563
Log No.: C-656-M-25
Received on: May 9, 2022
RCRA Closure

Dear Mayor Rockingham, Jr.:

This in response to your May 5, 2022 letter, received by Illinois EPA on May 9, 2022, associated with the former R. Lavin & Sons/North Chicago Refiners & Smelters site (Former Lavin Site), located at 2028 Sheridan Road, North Chicago in Lake County, Illinois, which is now owned by the City of North Chicago (the City). This letter included a request to terminate the required RCRA Post-Closure Care for the entire 17.6-acre of the Former Lavin Site which was closed as a hazardous waste landfill.

The initial RCRA Closure/Post-closure Plan (C-656) was first approved on November 4, 1992 for the subject former smelter site. The closure certification of the entire 17.6- acre site as a RCRA hazardous landfill was approved on July 29, 1999, and the post-closure care was required to be conducted until at least March 31, 2022. The closure/post-closure plan was last modified on September 1, 2015.

Your May 5, 2022 letter contained a one-page cover letter requesting Illinois EPA to terminate the post-closure care at the subject site, a signed LPC-PA18 Form, and information (referred to as Attachment 1) containing recent post closure groundwater monitoring data at the subject site.

Illinois EPA reviewed your request to terminate the post-closure care for the entire 17.6-acre site and determined that your request cannot be approved as the City has not met the conditions of the approved closure/post-closure plan and the requirements of 35 Ill. Adm. Code Sections 725.217, 725.218, 725.220, and 725.410(b) for the post-closure care of the subject Former Lavin Site for the reasons described in the conditions below:

1. Exceedances of the 35 Ill. Adm. Code Part 620, Class I, Groundwater Quality Standards (GQS) for Lead have been detected within the last three years of groundwater monitoring. During the 4th quarter 2020 sampling event, exceedances of Lead were

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1101 Eastport Plaza Dr., Suite 100, Collinsville, IL 62234 (618) 346-5120
9511 Harrison Street, Des Plaines, IL 60016 (847) 294-4000
595 S. State Street, Elgin, IL 60123 (847) 608-3131
2309 W. Main Street, Suite 116, Marion, IL 62959 (618) 993-7200
412 SW Washington Street, Suite D, Peoria, IL 61602 (309) 671-3022
4302 N. Main Street, Rockford, IL 61103 (815) 987-7760

detected in monitoring wells MW2D and MW3D at 0.009 mg/L and 0.064 mg/L, respectively. Lead was again detected in the 2nd quarter 2021 sampling event in monitoring well MW9D and also in the duplicate sample from this well at 0.02 mg/L and 0.016 mg/L, respectively. The 35 Ill. Adm. Code Part 620 Class I, GQS for Lead is 0.0075 mg/L.

2. As required by Attachment A, Condition 3 of the Illinois EPA's June 10, 2014 letter (Log No. C-656-M-20 and 22), total (unfiltered) values shall be compared to 35 Ill. Adm. Code Part 620, Class I, GQS in order to identify unacceptable exceedances of hazardous waste constituents present in fill material at the facility. The City compared dissolved (filtered) to 35 Ill. Adm. Code Part 620, Class I, GQS, which is not appropriate and did not meet this requirement.

3. The City did not submit the 4th quarter 2021 Groundwater Monitoring Report, required by Attachment A of the Illinois EPA's June 10, 2014 letter (Log No. C-656-M-20 and 22). A review of the Illinois EPA files indicates that this Report has yet to be submitted. The facility must submit the 4th quarter 2021 Groundwater Monitoring Report.

4. Water in MW6S demonstrated that leachate is present in the landfill. Water present in the fill layer is considered leachate. This leachate has the potential to release hazardous constituents to the uppermost aquifer and to off-site areas because the landfill is not lined. Terminating post-closure care would not meet the closure requirements at 35 Ill. Adm. Code Sections 725.211 or 725.410(a) because the facility has not demonstrated the long-term minimization of migration of liquids through the closed landfill.

   The presence of liquids in a landfill is a significant concern for a landfill's long-term management. Liquids in a landfill are a primary means by which hazardous constituents in the waste can become mobilized and leave the landfill. For example, with the settlement, surface depressions, and water accumulation observed by the Illinois EPA during its March 30, 2022 field inspection, it is likely that surface water is seeping into the hazardous fill materials beneath the cover. Furthermore, any water in contact with the hazardous fill materials is potentially migrating along the existing sewer lines with the potential to migrate to off-site areas.

5. Monitoring from one shallow well (MW6S) is not sufficient to be representative of the current conditions within and beneath the hazardous waste landfill. All on-site shallow wells must be measured for water elevation and samples must be collected and analyzed for the parameters in 35 Ill. Adm. Code Part 724, Appendix I, to determine the potential for hazardous constituents migrating towards the uppermost aquifer or through the sides of the landfill.

6. In accordance with Condition 10 of the Illinois EPA's July 3, 2012 letter (Log No. C-656-M-17&18), the City was required to submit a plan to establish a Final Protective Layer over the Final Cover (i.e., three-foot compacted silty-clay) approved in the closure plan letter if the previously proposed redevelopment did not begin by April 1, 2014. The

development did not occur, and no such plan for the Final Protective Layer has been submitted to Illinois EPA. Therefore, the landfill has not been closed in accordance with the approved closure plan because the construction of the cover system has not been completed.

7. During the Illinois EPA's March 30, 2022 RCRA Site inspection, Illinois EPA observed: (1) at least one depression with standing water surrounding 2 monitoring wells; (2) signs of settling in several areas of the final cover; and (3) signs of erosion of the final cover. Illinois EPA's observations of these areas indicate that appropriate action has not been taken to correct these ongoing problems. Therefore, the landfill has not been maintained and cared for in accordance with the approved closure/post-closure plan.

8. The City is required to carry out the post-closure activities identified in the April 12, 1999 submittal made by Mr. Ronald E. Hutches as modified in the July 3, 2012 Illinois approval letter. In addition to the Conditions above, the City has not met the following post-closure care requirements:

   a. A Professional Engineer (PE) must conduct a yearly annual inspection of the site in addition to monthly inspections as addressed in Condition 8(c) below. This annual inspection is to check for surface cracks, depressions, settlings, erosion problems, and any other anomaly. The results of the yearly inspection must be documented in a report and submitted to the Illinois EPA by February 1 of the following year for its review. This information has not been submitted for this facility since 2001

   b. Any stormwater collected and managed to be discharged off-site (i.e. out of the boundary of the site) through Pond 1 and the existing sewer system at the site must be managed in accordance with a NPDES permit as required in the post-closure plan for the site. Pond 2 was previously approved to be filled during the final cover improvement activities in approximately 2010 while Pond 1 is still in operation as the stormwater run-off collection system. The City has not demonstrated the compliance with this requirement since the City acquired the facility in 2006. As an alternative, the City may demonstrate that this requirement is no longer applicable.

   c. Monthly inspection logs and any inspection after 1-inch of rain over a 24-hour period must be conducted at the site. Any repair to correct the issues discovered during these frequent inspections and the yearly inspection in Condition 8 (a) above must be documented and recorded. In accordance with 35 Ill. Adm. Code 725.173(b)(6), the facility is required to maintain and keep the documentation of the inspection for at least 3 years. Compliance with this requirement was not discussed or demonstrated in the subject submittal.

9. As indicated in Condition 8(b) above, any storm water and subsurface water leaving the site must be managed in accordance with the facility's NPDES permit at the site. It is unknown if the City has a permit for the site to discharge the specific runoff and leachate to the City's sewer system at this time, especially after the final cover improvement was approved on September 10, 2010 (Log No. C-656-M-15). Information and documentation that the City is in compliance with this condition has not been provided to Illinois EPA.

10. The LPC-PA18 form for the subject submittal was incomplete as "Unit Undergoing Closure" is blank and was not identified. As the entire 17.6-acre was closed as a hazardous waste landfill, the unit closed must be identified as a landfill.

11. In accordance with 35 Ill. Adm. Code Section 725.220, a certification of completion of Post-Closure care signed by the owner/operator and a qualified PE must be submitted to the Illinois EPA. Such certification must clearly indicate that the entire post-closure care for the site was performed in accordance with the specifications in the approved post-closure plan. The qualified PE must be able to provide all necessary documentation and certify that, during the entire period of the post-closure care, all required post-closure care activities were conducted in accordance with the approved post-closure plan at the subject hazardous waste landfill. The only certification provided was the LPC-PA18 Form, which does not satisfy the requirements of 35 Ill. Adm. Code Section 725.220.

12. As required in the approved closure/post-closure plan, the City must provide financial assurance to meet the requirements of 35 Ill. Adm. Code Part 725, Subpart H for the post-closure care of the subject site. The Illinois EPA's record indicates that financial assurance has not been provided to the Illinois EPA to mee this requirement in the recent years. The most current approved amount of financial assurance for the post-closure care is for at least $347,618.78.

In addition to the non-compliance with the above requirements, Illinois EPA has determined that the post-closure care at the site should not be terminated for the following additional reasons:

13. Illinois EPA observed several apparent violations at the site during its March 30, 2022 site inspection. These apparent violations are documented and sent to the City in a letter dated June 27, 2022.

14. Water collected from monitoring well MW6S and other shallow wells must be further investigated. The source of water within the fill must be evaluated to determine if the water observed and collected from shallow wells is from lateral migration or from infiltration through the landfill cover.

15. USEPA's "Guidelines for Evaluating the Post-Closure Care Period for Hazardous Waste Disposal Facilities under Subtitle C of RCRA", dated December 15, 2016 (2016 USEPA Guidance) provides a number of criteria that should be considered when determining if post-closure care should be extended. Application of this guidance to the conditions at

the site provides additional basis for a determination that post-closure care should be extended at the facility. The following are some of the minimum criteria to be considered in accordance with the 2016 USEPA guidance and how they relate to the conditions at the site:

a. Nature of waste in the unit. The waste at the site includes characteristically hazardous lead as well as high levels of cadmium and polychlorinated biphenyls (PCBs). The waste was not pre-treated to meet the Land Disposal Restrictions (LDRs) for hazardous waste prior to the closure as a landfill.

b. Design of the Unit: There is no engineered bottom liner or side liner to the landfill to prevent waste or contaminated leachate from migrating off-site. In addition, there are a number of storm drains on the surface of the landfill that drain to an underground stormwater sewer system. Mr. Deigan (consultant for the City) stated that the sewer system has been there since the smelter was in operation. The design of the sewer system is not described in the closure post-closure plan, but it is clear that it is located within and possibly below the waste. The location of sewer lines within a hazardous waste landfill provides a pathway for water to enter into the waste, and for contaminated leachate to migrate out of the waste and ultimately off-site. The post-closure monitoring of the landfill currently does not consider the potential migration of wastes and hazardous constituents through the side walls or along the storm sewer system.

c. Leachate: The 2016 USEPA Guidance suggests that monitoring for leachate generation serves as the most effective way of examining the integrity of the waste management unit. As mentioned in Condition 4, water in the fill layer is considered leachate and the presence of water in the shallow monitoring wells must be evaluated. Also, whether the stormwater pond located at the east end of the landfill may be hydrogeologically connected to the shallow groundwater (i.e., leachate) should be evaluated to determine if the stormwater pond is collecting the shallow groundwater/leachate from the fill or the stormwater maybe entering the fill materials from this area.

d. Groundwater: As indicated in Conditions 1 through 5 and 13, additional evaluation must be conducted for groundwater. As the 2016 USEPA Guidance points out, it is important that groundwater analytical results, the adequacy and reliability of the groundwater-monitoring network, groundwater-monitoring well integrity, and reasonable current or future exposure be evaluated before the post-closure care period ends.

e. Siting & Site Hydrogeology: The City of North Chicago site's location characteristics, proximity to vulnerable areas such as residential/Environmental Justice (EJ) areas and surface water sources nearby must be evaluated for this site. The reasonably anticipated future land use of the facility and surrounding properties are also relevant. Location in potentially vulnerable areas increases the likelihood and potential severity of contaminant release.

f. Facility History: This criterion is to evaluate if the waste management unit during post-closure care has been adequately managed to prevent releases of contaminants to the environment. Conditions in this letter list several concerns regarding the management of this site.

g. Integrity of Cover System: A viable cover is one of the most important mechanisms in preventing leachate generation and, ultimately, releases of contaminants. Given the results of the recent Illinois EPA Field Operation Section (FOS) inspection, this criterion has not been met at the site.

h. Long Term Care: Establishment and maintenance of physical and legal controls are necessary to prevent unacceptable exposure to hazardous waste or contaminated environmental media left in place. No long-term restrictions of future land use nor maintenance requirements to minimize future exposure to hazardous fill material beneath the cover are proposed for the site.

Due to the reasons listed in Conditions 1 through 15 above, Illinois EPA has determined that the request to terminate post-closure care cannot be granted and that the post-closure care period at the Former Lavin site must be extended to address current and future environmental concerns identified in this letter in accordance with 35 Ill. Adm. Code 725.218(g)(2). Therefore, the following actions need to be taken:

A. In accordance with 35 Ill. Adm. Code 725.218(g)(2)(A), the Illinois EPA's decision to extend the post-closure care period for the subject site will be publicly noticed through a newspaper and made available for public comment within thirty (30) days after the date of this letter by Illinois EPA. Illinois EPA will issue a final determination after the comment period ends and, if necessary, a public hearing is held.

B. In accordance with 35 Ill. Adm. Code 725.245 (h), this letter shall constitute a notification to the City that Illinois EPA has determined that extending the post-closure care period at the Former Lavin site is required. Thus, within 35-days of the date of this letter, the City must provide the Illinois EPA with an acceptable financial assurance in the amount of $347,618.78 for the post-closure care of the site to meet the requirements of 35 Ill. Adm. Code Part 725, Subpart H.

C. Within sixty (60) days of the date of the Illinois EPA's final determination to extend the post-closure care period as described in Condition A above, the City must submit a Closure/Post closure modification request to provide the following information and a plan to:

(1) Extend the post-closure care for the site;

(2) Address and meet the requirements of the approved post-closure plan;

(3) Describe how each Condition in this letter is or will be addressed;

(4) Provide an updated survey the facility to determine the current vertical and horizontal dimensions. Such survey data must then be compared to the previous survey data completed after the completion of the final cover upgrade, which was approved in 2012, to determine if any settlement and erosion of the final cover has occurred and if the current final cover is 3-foot thick as required in accordance with the approved closure/post-closure plan.

(5) Provide a schedule for all action items included in such plan;

(6) Provide a revised cost estimate for the post-closure care for the 17.6-acre site; and

(7) Address and correct the apparent violations from the Illinois EPA's March 30, 2022 Site Inspection in the aforementioned Illinois EPA FOS letter.

D. In accordance with 35 Ill. Adm. Code 703.121 (b) and the 2016 USEPA Guidance, the City shall address the future post-closure care and long-term stewardship for the subject site under a RCRA Post-Closure Care Permit to comply with the applicable RCRA regulations and avoid future non-compliance issues. As stated in Condition 16 of Illinois EPA's July 3, 2012, letter, and pursuant to 35 Ill. Adm. Code 703.121, a facility under post-closure care requirements of a hazardous waste landfill must obtain a RCRA permit or an enforceable document. RCRA Closure of this site was initially required though a Consent Order (90-CH-668, signed 10/12/1990, which was revised in 1997). However, the Consent Order was terminated on September 28, 2000, shortly after the post-closure care plan was approved in 1999, and since then the facility has been conducting post-closure of the hazardous waste landfill without a RCRA permit or an enforceable document. Therefore, a RCRA Permit is required. A plan and schedule to submit a RCRA Post-Closure Care Permit Application to Illinois EPA must be included in the required closure/post-closure modification request in Condition C above.

E. In accordance with 35 Ill. Adm. Code 725.218(g)(2)(A), the Illinois EPA's decision to extend the post-closure care period for the subject site must be publicly noticed through a newspaper and made available for public comment within thirty (30) days after the date of this letter.

This action shall constitute Illinois EPA's final action on the subject submittal. The applicant may appeal this final decision to the Illinois Pollution Control Board pursuant to Section 40 of the Act by filing a petition for a hearing within thirty-five (35) days after the date of issuance of the final decision. However, the 35-day period may be extended for a period of time not to exceed ninety (90) days by written notice from the applicant and the Illinois EPA within the initial 35-day appeal period. If the owner or operator wishes to receive a 90-day extension, a written request that includes a statement of the date the final decision was received, along with a copy of this decision, must be sent to the Illinois EPA as soon as possible.

For information regarding the request for an extension, please contact:

Illinois Environmental Protection Agency
Division of Legal Counsel
1021 North Grand Avenue East
Post Office Box 19276
Springfield, IL 62794-9276
217/782 5544

For information regarding the filing of an appeal, please contact:

Illinois Pollution Control Board, Clerk
State of Illinois Center
100 West Randolph Street, Suite 11 500
Chicago, IL 60601
312/814 3620

Work required by this letter, your submittal or the regulations may also be subject to other laws governing professional services, such as the Illinois Professional Land Surveyor Act of 1989, the Professional Engineering Practice Act of 1989, the Professional Geologist Licensing Act, and the Structural Engineering Licensing Act of 1989. This letter does not relieve anyone from compliance with these laws and the regulations adopted pursuant to these laws. All work that falls within the scope and definitions of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation of these laws to the appropriate regulating authority.

If you have any questions regarding the groundwater related aspects of this project, please contact Paula Stine at 217/557-8770. Questions regarding other aspects of this project should be directed to Takako Halteman, P.E. at 217/524-3274.

Sincerely,

W. Robert Watson

W. Robert Watson, P.E.
Manager, RCRA Unit
Division of Land Pollution Control
Bureau of Land

WRW:TNH: 0971250007-RCRA-C656M25-denial.docx

bcc: Bureau File
Des Plaines Region
Rob Watson
Kim Rawe
Paula Stine
Takako Halteman
John McDonough
Nick San Diego
Melanie Jarvis
Michelle Ross
Kyle Ramlinger
Greg Dunn
Brad Frost
Cassandra Metz

CC: Gary Deigan, The Deigan Group (electronic copy only)

ASTSWMO, Providing Pathways to Our Nation's Environmental Stewardship Since 1974

ASTSWMO POSITION PAPER
POST-CLOSURE CARE BEYOND 30 YEARS AT RCRA SUBTITLE C FACILITIES

BACKGROUND

Regulations promulgated under the authority of Subtitle C of the Resource Conservation and Recovery Act (RCRA), include provisions regarding the post-closure care of hazardous waste land disposal units. The Subtitle C regulations establish a 30-year post-closure care period as the default requirement (See 40 CFR § 264.117).

These regulations include provisions allowing the 30-year period to be extended or shortened. The 30-year period may be extended if the Environmental Protection Agency (EPA) Regional Administrator (RA) or Director of an authorized State program "finds that the extended period is necessary to protect human health and the environment" and may be shortened if the RA or State Director finds that a reduced period is sufficient to protect human health and the environment. After completion of the established post-closure care period, the owner or operator is required to certify that the post-closure period was performed in accordance with the approved post-closure plan. Similar provisions are found in regulations for nonhazardous waste disposal units promulgated under the authority of Subtitle D of RCRA.

Facilities around the country are approaching or have already arrived at the end of the initial 30-year post-closure period, and many States are grappling with the issue of how to address this situation. ASTSWMO raised several questions and asked EPA to address a number of issues regarding this topic in its October 17, 2012 Position Paper.

While EPA's December 15, 2016 Memorandum addressed several of ASTSWMO's requests, and provides guidance on this issue, it does not fully address all of ASTSWMO's concerns and the situations faced by the States with disposal units at the end of the 30-year post closure period cited in the regulations. Failure to address these concerns may lead to hazardous waste disposal units exiting post-closure care without sufficient controls (including land use restrictions) in place. If this occurs, ASTSWMO is concerned that unregulated development, or even simple neglect of these units will result in the release of hazardous wastes and hazardous constituents. This will ultimately lead to those units/facilities being regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

ASTSWMO members agree that controls need to remain in place in perpetuity if wastes are present in the disposal units. These controls must be required even if the unit has met all the requirements of its post-closure permit and there is currently no groundwater contamination associated with the unit.

1015 18th Street NW, Suite 803, Washington, DC 20036
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www.astswmo.org

ASTSWMO POSITION PAPER
POST-CLOSURE CARE BEYOND 30 YEARS AT RCRA SUBTITLE C FACILITIES

ISSUES

The Hazardous Waste Subcommittee's Corrective Action and Permitting (CAP) Task Force has highlighted the following as key issues:

- A clear statement is needed from the EPA that there is a presumption that a Subtitle C post-closure care obligation remains as long as hazardous waste remains in a closed land disposal unit, even if there is no evidence of a release after 30 years of post-closure care (although a facility may be able to rebut this presumption on a case-by-case basis),

- The need for a clear statement identifying facility financial assurance obligations during an extended post-closure period, that ensures cost estimates are periodically updated and that financial assurance instruments are maintained to ensure adequate coverage,

- If an alternate enforceable document (such as an order or environmental covenant under the Unified Environmental Covenant Act) can be used in place of a post-closure permit, identification of the minimum controls and restrictions that need to be included in this document or order, and

- Guidance addressing the addition of an emerging or newly listed contaminant to monitoring requirements.

POSITION

The ASTSWMO Board of Directors recommends that EPA either revise the RCRA regulations for post-closure or issue supplemental guidance on the implementation of the post-closure regulations under Subtitle C of RCRA. Such guidance should be congruent with the key issues highlighted in the issues section of this position paper. ASTSWMO remains ready to work with EPA to achieve a mutually satisfactory outcome on this very important issue.

Approved by the ASTSWMO Board of Directors on July 20, 2022 in Park City, UT.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397
JB PRITZKER, GOVERNOR
JOHN J. KIM, DIRECTOR

217/524-3300

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

7011 1150 0001 0857 7202

AUG 19 2022

Honorable Leon Rockingham, Jr.
Mayor, City of North Chicago
1850 Lewis Avenue
North Chicago, Illinois 60064

Re: 0971250007 -- Lake County
North Chicago/North Chicago, City of
ILD097271563
Log No.. C-656-M-25 (Notification)
RCRA Closure

Dear Mayor Rockingham, Jr.:

This letter is to notify the City of North Chicago (the City) that Illinois EPA's final determination has been made to extend the RCRA Post-Closure Care period at the above-referenced facility in accordance with 35 Ill. Adm. Code 725.218(g)(2)(A) and Action Item A of the Illinois EPA's July 1, 2022 letter (Log No. C-656-M-25).

The Illinois EPA's July 1, 2022 letter contained its decision to extend the post-closure care period for the above-referenced site. This decision was publicly noticed through Chicago Sun Times on July 8, 2022 and made available for public comment. During the 30-day public comment period, the Illinois EPA's Community Relations did not receive any comments. Thus, as required by 35 Ill. Adm. Code 725.218(g)(2)(A), this notification is provided to the City.

If you have any questions regarding this notice, please contact Takako Halteman, P.E. at 217/524-3274.

Sincerely,

Kenneth E. Smith

Kenneth E. Smith, P.E., Manager
Permit Section
Division of Land Pollution Control
Bureau of Land

KES:TNH: 0971250007-RCRA-C656M25-notification.docx

TNH WRLO

CC: Gary Deigan, The Deigan Group (electronic copy only)

2125 S. First Street, Champaign, IL 61820 (217) 278-5800
1101 Eastport Plaza Dr., Suite 100, Collinsville, IL 62234 (618) 346-5120
9511 Harrison Street, Des Plaines, IL 60016 (847) 294-4000
595 S. State Street, Elgin, IL 60123 (847) 608-3131
2309 W. Main Street, Suite 116, Marion, IL 62959 (618) 993-7200
412 SW Washington Street, Suite D, Peoria, IL 61602 (309) 671-3022
4302 N. Main Street, Rockford, IL 61103 (815) 987-7760

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397
JB PRITZKER, GOVERNOR JOHN J. KIM, DIRECTOR

217/524-3300

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

NOV 16 2022

7011 1150 0001 0857 8322

Mr. William J. Sawitz
RCH Newco II, LLC
27501 Bella Vista Parkway
Warrenville, IL. 60555

Re: 1978030005 -- Will County
RCH Newco II, LLC – New Ave. & Ceco Rd.
ILD990785453
Log No. C-68
RCRA Closure
Permit Correspondence

Dear Mr. Sawitz

As you are aware, RCH Newco II, LLC (RCH Newco) located at New Avenue and Ceco Road has been required to provide post-closure care for the two-acre hazardous waste landfill under the facility's Interim Status Post-Closure Plan since January 1, 1993. The approved Interim Status post-closure plan (Log No. C-68) required post-closure care be maintained for a minimum of thirty (30) years or until at least January 1, 2023.

The purpose of this letter is to inform the facility that the Illinois EPA has conducted a review of the post-closure status of the subject hazardous waste management unit and has determined that the post-closure care period for the two-acre landfill must be extended to address current and future environmental concerns identified in this letter in accordance with 35 Ill. Adm. Code 725.218.(g)(2) and the USEPA's "Guidelines for Evaluating the Post-Closure Care Period for Hazardous Waste Disposal Facilities under Subtitle C of RCRA", dated December 15, 2016 (2016 USEPA Guidance).

The following comments and conditions apply to this determination:

1. In accordance with 35 Ill. Adm. Code 725.245(h), this letter shall constitute notification to RCH Newco that Illinois EPA has determined that extending the post-closure care period for the two-acre hazardous waste landfill at the RCH Newco site is required.

2. In accordance with 35 Ill. Adm. Code 725.218(g)(2)(A), the Illinois EPA's decision to extend the post-closure care period for the subject site will be publicly noticed through a newspaper and made available for public comment within thirty (30) days after the date of this letter by Illinois EPA. Illinois EPA will issue a final determination after the comment period ends and, if necessary, a public hearing is held.

3. In accordance with 35 Ill. Adm. Code 703.121(b), RCH Newco shall address the future post-closure care and long-term stewardship for the subject site under a RCRA Post-Closure Care Permit. Modification of the existing Interim Status Post-Closure Plan may be necessary to meet the requirements of 35 Ill. Adm. Code 724.211, 724.217, 724.218, and 724.131, and adequately protect human health and the environment.

4. The facility shall provide an application for a RCRA Post-Closure permit to the Illinois EPA Bureau of Land Permit Section within 180 days of Illinois EPA's final determination to extend the post-closure period as described in Condition 2 above. The Illinois EPA will provide the facility with the instructions for an application for a RCRA Post-Closure Permit when it issues its final determination.

5. The facility must continue to provide post-closure care for the unit in accordance with its existing approved post-closure plan, Illinois EPA letters with conditions and modifications to the approved post-closure plan, and the requirements of 35 Ill. Adm. Code Part 725 until a RCRA Post-Closure Permit is issued to the facility.

6. The facility must also continue to provide the Illinois EPA with an acceptable financial assurance for the post-closure care of the site to meet the requirements of 35 Ill. Adm. Code Part 725, Subpart H.

7. Pursuant to Section 39(g) of the Illinois Environmental Protection Act (the Act), necessary restrictions upon the future use of the site and long-term stewardship requirements to protect public health and the environment must be addressed, including permanent prohibition of the use of the site for purposes which may create an unreasonable risk of injury to human health or the environment.

The following criteria are the basis of the determination to extend the post-closure care period for the two-acre landfill at the above referenced facility:

a. Nature of waste in the landfill: The waste in the landfill includes a listed hazardous waste, electric arc furnace dust (EAF) (K061). This waste is also characteristically hazardous for hexavalent chromium (D007), lead (D008) and cadmium (D006). The waste was not pre-treated to meet the Land Disposal Restrictions (LDRs) for hazardous waste prior to disposal in the landfill.

b. Unit Type/Design: The landfill contains an admix of EAF (K061) and non-hazardous slag material. The bottom liner consists of compacted clay. The final cover consists of 2-feet of compacted clay, 18 inches of select fill and 6 inches of topsoil with vegetation.

A viable cover is one of the most important mechanisms in preventing leachate generation and, ultimately, release of contaminants. The integrity and effectiveness of the landfill's final cover must be adequately monitored and maintained. Vegetation with well-established tap roots is growing on the landfill cover. This is not allowed under

RCRA post-closure care requirements.

c. Leachate: The 2016 USEPA Guidance suggests that monitoring for leachate generation serves as the most effective way of examining the integrity of the waste management unit (e.g., it can suggest a cover or liner failure when leachate is detected late in the post-closure care period). The hazardous waste landfill does not have a leachate collection or monitoring system so it cannot be determined if leachate is present within the landfill. More specifically, it cannot be determined if the integrity and effectiveness of the cover system has been maintained during the post-closure period as required by 35 Ill. Adm. Code 725.410(a)(1) & (5). 725.410(b) and 725.217(a)(1).

d. Long Term Care: Establishment and maintenance of physical and legal controls are necessary to prevent unacceptable exposure to hazardous waste left in place. Long-term restrictions of future land use must be placed on the site to minimize future exposure.

This action shall constitute Illinois EPA's final action on the subject identified in this letter. The applicant may appeal this final decision to the Illinois Pollution Control Board pursuant to Section 40 of the Act by filing a petition for a hearing within thirty-five (35) days after the date of issuance of the final decision. However, the 35-day period may be extended for a period of time not to exceed ninety (90) days by written notice from the applicant and the Illinois EPA within the initial 35-day appeal period. If the owner or operator wishes to receive a 90-day extension, a written request that includes a statement of the date the final decision was received, along with a copy of this decision, must be sent to the Illinois EPA as soon as possible.

For information regarding the request for an extension, please contact:

Illinois Environmental Protection Agency
Division of Legal Counsel
1021 North Grand Avenue East
Post Office Box 19276
Springfield, IL 62794-9276
217/782 5544

For information regarding the filing of an appeal, please contact:

Illinois Pollution Control Board, Clerk
State of Illinois Center
100 West Randolph Street, Suite 11 500
Chicago, IL 60601
312/814 3620

Work required by this letter, your submittal or the regulations may also be subject to other laws governing professional services, such as the Illinois Professional Land Surveyor Act of 1989, the Professional Engineering Practice Act of 1989, the Professional Geologist Licensing Act, and the Structural Engineering Licensing Act of 1989. This letter does not relieve anyone from

compliance with these laws and the regulations adopted pursuant to these laws. All work that falls within the scope and definitions of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation of these laws to the appropriate regulating authority.

If you have any questions regarding the groundwater related aspects of this project, please contact Adam Shade at 217/785-9633. Questions regarding other aspects of this project should be directed to Kelly Huser at 217/524-3867.

Sincerely,

W. Robert Watson, P.E., Manager
Manager, RCRA Unit
Division of Land Pollution Control
Bureau of Land

WRW: KDH:1978030005-RCRA-C68-Corr.docx
KDH

CC: Bruce Shabino, P.G., Carlson Environmental, Inc.
Norberto Gonzalez, USEPA Region V
Charlene Thigpen, FOS Des Plaines

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 · (217) 782-3397
JB PRITZKER, GOVERNOR JOHN J. KIM, DIRECTOR

217/524-3300

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
7011 1150 0001 0857 9374

JAN 19 2023

Waste Management of Illinois, Inc.
Attn: James A. Wilson
720 E. Butterfield Road
Suite 400
Lombard, IL 60148

RE: 0310390001 – Cook County
CID Recycling and Disposal Facility
ILD010284248
Log No. B-27R2
RCRA Administrative Record
Permit Approval

Dear Mr. Wilson:

Enclosed is a final renewed Resource Conservation and Recovery Act (RCRA) Post-Closure permit. The final permit decision is based on the administrative record contained in the Illinois EPA's files. The contents of the administrative record are described in 35 Ill. Adm. Code 705.211.

Please read the permit carefully. Failure to meet any portion of the permit could result in civil and/or criminal penalties. The only comments received on the Draft RCRA Post-Closure Renewal Permit were from Waste Management. Illinois EPA's response to Waste Management's comments are attached to this letter.

This action shall constitute Illinois EPA's final action on the subject submittal. The applicant may appeal this final decision to the Illinois Pollution Control Board pursuant to Section 40 of the Act by filing a petition for a hearing within 35 days after the date of issuance of the final decision. However, the 35-day period may be extended for a period of time not to exceed 90 days by written notice from the applicant and the Illinois EPA within the initial 35-day appeal period. If the owner or operator wishes to receive a 90-day extension, a written request that includes a statement of the date the final decision was received, along with a copy of this decision, must be sent to the Illinois EPA as soon as possible.

For information regarding the request for an extension, please contact:

Illinois Environmental Protection Agency
Division of Legal Counsel
1021 North Grand Avenue East
Post Office Box 19276

Springfield, IL 62794-9276
217/782 5544

For information regarding the filing of an appeal, please contact:

Illinois Pollution Control Board, Clerk
State of Illinois Center
100 West Randolph, Suite 11 500
Chicago, IL 60601
312/814 3620

If you have any questions concerning the groundwater aspects of this renewal permit, please contact Adam Shade at 217/785-9633. For all other questions, please contact Kelly Huser at 217/524-3867.

Sincerely,

Jacqueline M. Cooperider, P.E.

Jacqueline M. Cooperider, P.E.
Permit Section Manager
Bureau of Land

JMC: KDH:0310390001-RCRA-B27R2-Approval.docx
KDH AMS LOR JR
Attachment: Illinois EPA's Response to Comments on the Draft Permit
Renewed RCRA Post-Closure Permit

cc: Norberto Gonzalez, U.S. EPA – Region V
Emily Keener, U.S. EPA – Region V
Steven Chillson, Waste Management

ILLINOIS EPA'S RESPONSE TO COMMENTS
Waste Management of Illinois, Inc.
CID Recycling and Disposal Facility
Draft RCRA Renewal Post-Closure Permit
Dated 10/11/22

The responses below address comments received from Waste Management of Illinois, Inc. dated November 22, 2022 and received by Illinois EPA on November 28, 2022 pertaining to the draft renewal permit for CID RDF issued October 11, 2022.

COMMENT 1

Fact Sheet

III.B.1 Typographical error: Revise sentence to indicate that noted depths are total well depths and not depth to groundwater. It is suggested the sentence read:
"Nine groundwater monitoring wells are screened in the weathered Dolomite with an average depth below ground surface (bgs) of 76.1 feet; ten groundwater monitoring wells are screened in the Dolton Sand with an average depth bgs of 14.4 feet."

Illinois EPA RESPONSE

Fact Sheet, III.B.1: the fact sheet is not part of the final RCRA Post-Closure permit.

COMMENT 2

General Facility Description

B. Location Revise phone number to that of Steve Chillson, the new district manager, and indicate it is a mobile phone number. "Mobile: (224) 523-1736"

Illinois EPA RESPONSE

General Facility Description, B. Location: the phone number for the District Manager has been updated.

COMMENT 3

I.B.12 Topographic Survey. Request to change deadline from within 90 days of effective permit date to 180 days, to ensure that aerial photography can be performed when vegetation is dormant and ground is not snow covered.

Illinois EPA RESPONSE

Condition I.B.12: the deadline in this condition has been changed to 180 days.

COMMENT 4

I.B.12 Requirement to repair cover system if more than 2 feet of elevation difference exists based on the 10-year site topo surveys does not appear to account for the general settlement of the units that will continue to occur due to waste decomposition and consolidation. 35 IAC 724.410(a)(4) requires that the final cover of a landfill be able to "accommodate settling and subsidence so that the cover's integrity is maintained". It does not require repairs unless settlement impacts the integrity or effectiveness of the final cover. Revised language is proposed that encompasses more situations that may impact final cover integrity and therefore provides more flexibility for IEPA to require repairs.

Request the following text replace the final paragraph of I.B.12.: ... "If differential settlement is observed to have occurred on a unit that adversely impacts the integrity or effectiveness of the cover system, the Permittee shall notify the Illinois EPA Bureau of Land Permit Section within 30 days of this finding. The notification must include a drawing showing the location of this settlement on the unit and a plan that includes a schedule for repairing the cover system. Repairs to the cover system, and/or its components, may be considered a permit modification."

Illinois EPA RESPONSE

Condition I.B.12: the second paragraph of Condition I.B.12 has been revised as follows: "If differential settlement is observed to have occurred on a unit that adversely impacts the integrity or effectiveness of the barrier layers of the cover and requires repairs to those layers, the Permittee shall notify the Illinois EPA Bureau of Land Permit Section within thirty (30) days of this finding. The notification must include a drawing showing the location of this settlement on the unit and a plan that includes a schedule for repairing the cover system. Repairs to the cover system, and/or its components, may be considered a permit modification. Differential settlement will be evaluated, at a minimum, by comparing the 10-year topographic maps required in Condition I.B.12".

COMMENT 5

I.D.3 New inspection requirement without clear regulatory basis:

"The facility shall be inspected within 72 hours of any rain fall event of 3 or more inches in 24 hours to detect evidence of any of deterioration, malfunctions, or improper operation of run-on and run-off systems."

Vegetation on the units and associated surface water management features are well established and there has been no history of severe erosion after heavy rain events. As such, it is not clear what necessitates this requirement. Further, this inspection requirement is redundant with the quarterly site inspections required by the facility's NPDES permit that are performed following

significant rain events to evaluate effectiveness of structural and non-structural stormwater controls. Request this condition be removed.

Illinois EPA RESPONSE

Condition I.D.3: to comply with the post-closure requirements of 35 Ill. Adm. Code 724.410, specifically to prevent erosion to the final cover from run-on and run-off, it is reasonable to ask facilities to inspect their landfill covers within 72 hours (3 days) of a rain event of 3 inches or more within 24 hours.

COMMENT 6

I.E.7.b Typo – revise "as need" to "as needed"

Illinois EPA RESPONSE

Condition I.E.6.b: the typographical error has been corrected. This condition is not the same one referenced by the Permittee, however, Illinois EPA discovered a duplicate permit condition and Condition I.E.5 was deleted as it was identical to Condition I.E.4. This changed the permit condition numbering for Conditions I.E.5-I.E.13.

COMMENT 7

I.E.9 Current BLTC permit log for the BLTC is 2021-249-SP. Suggest removing reference to permit number as this changes frequently.

Illinois EPA RESPONSE

Condition I.E.8: the permit number for the Biological Liquid Treatment Center has been removed.

COMMENT 8

I.E.10.c Condition refers to "Baseline". Suggest "sump invert" instead. This term is less ambiguous

Illinois EPA RESPONSE

Condition I.E.9.c: the term "Baseline" has been changed to "sump invert".

COMMENT 9

I.E.10.e Requirement to submit monthly volumes removed from Area 4, per LCS sump, electronically. Request clarification – what is the frequency and due date for submittal, and the method of electronic submittal?

Illinois EPA RESPONSE

Condition I.E.9.e: the electronic data should be submitted the same way your groundwater data is submitted. More information is provided on Illinois EPA's website, https://www2.illinois.gov/epa/topics/waste-management/groundwater-monitoring/electronic-reporting/Pages/default.aspx

The data must be gathered monthly, and it can be submitted electronically either monthly, quarterly, semi-annually or annually.

COMMENT 10

I.E.12.d Requirement to electronically submit results of "leachate quantity testing data" to IEPA. Request clarification - what is the frequency and due date for electronical submittal? To what email address should the results be submitted to?

Illinois EPA RESPONSE

Condition I.E.11.d: the electronic data should be submitted the same way your groundwater data is submitted. More information is provided on Illinois EPA's website, https://www2.illinois.gov/epa/topics/waste-management/groundwater-monitoring/electronic-reporting/Pages/default.aspx

The data must be gathered monthly, and it can be submitted electronically either monthly, quarterly, semi-annually or annually.

COMMENT 11

I.E.13 Typo – revise "graphically" to "graphical"

Illinois EPA RESPONSE

Condition I.E.12: the typographical error has been corrected.

COMMENT 12

I.F.4 Condition I.F.4 requires "monthly leachate level measurements" for Area 3, but Condition I.F.1 specifies quarterly monitoring for these sumps. Revise to "quarterly leachate level measurements".

Illinois EPA RESPONSE

Condition I.F.4: revised to quarterly leachate level measurements.

COMMENT 13

I.F.8 Clarification needed on when notification is required for leachate quality analysis. Suggest the due date for notification be specified as 30 days from the date the report is received by WMIL.

Illinois EPA RESPONSE

Condition I.F.8: revised to require submittal within 30 days of the leachate quality analysis report received by the Permittee for clarification.

COMMENT 14

I.F.9 Specify Condition I.F.9 applies to Sump 4G-SEC in Area 4.

Illinois EPA RESPONSE

Condition I.F.9: revised to specify sump 4G-SEC.

COMMENT 15

I.G.4.b.ii.5 New requirement to submit "Post-Closure Documentation Report" has a requirement to submit the amount of leachate pumped per sump for the LCS and LDS - however, this information is not available on a per sump basis at Area 3. Request the requirement be revised to specify submittal of the combined amount of leachate pumped for all Area 3 LCS sumps.

Illinois EPA RESPONSE

Condition I.G.4.b.ii.5: revised to include combined amount for Area 3.

COMMENT 16

I.G.4.b.v Photos of "all design features" required in Post-Closure Documentation Report are likely not possible to obtain. It is requested the wording be changed to "representative photos of above-ground design features".

Illinois EPA RESPONSE

Condition I.G.4.b.v: revised to state; "representative photos of above-ground design features".

COMMENT 17

I.H Revise to indicate that GCCS will be "operated in accordance with the approved CAAPP permit issued January 13, 2022, and any subsequent modifications to the permit."

Illinois EPA RESPONSE

Condition I.H: revised to state, "operate in accordance with the approved Clean Air Act Program Permit issued January 13, 2022, and any subsequent modifications to the permit".

COMMENT 18

I.H.1.a Typo – Revise "manager as hazardous waste" to "managed as hazardous waste"

Illinois EPA RESPONSE

Condition I.H.1.a: typographical error has been corrected.

COMMENT 19

I.H.2 We request this requirement be revised to read: "If subsurface gas problems occur, a corrective action plan shall be submitted for approval to Illinois EPA BOL within 30 days of discovering such gas problems.

Illinois EPA RESPONSE

Condition I.H.2: revised to state, "If subsurface gas problems occur, a corrective action plan shall be submitted, for approval, to Illinois EPA BOL within 30 days of discovering such gas problems."

COMMENT 20

II.E.3.c Update date of next biennial update of background groundwater values due July 15, 2023; draft permit lists July 15, 2021.

Illinois EPA RESPONSE

Condition II.E.3.c: revised to July 15, 2023.

COMMENT 21

II.H.2 and III.H.2 This condition indicates the samples will be shipped/handled in accordance with the methods described in the permit application. However, the permit application was not updated to reflect change in sample preservation temperature from 4°C to 6°C.

Illinois EPA RESPONSE

Conditions II.H.2 and III.H.2: these conditions were not revised. After the final permit is effective, the Permittee may submit a Class 1 permit modification request to update the approved permit application.

COMMENT 22

III.F.b.ii Typo – Revise "area" to "are"

Illinois EPA RESPONSE

Condition III.F.1.b.ii: typographical error has been corrected.

COMMENT 23

III.K.14 Remove requirement to submit Annual Area 3 CA report as a "standalone document", as III.14.d allows this report to be combined with 2nd Quarter Groundwater Report.

Illinois EPA RESPONSE

Condition III.K.14: revised and the wording, "as a standalone document" has been removed.

COMMENT 24

IV.A.2 and IV.A.3 Two typos – Change "Arera 2" and "Aera 2" to "Area 2"

Illinois EPA RESPONSE

Conditions IV.A.2 and IV.A.3: typographical errors have been corrected.

COMMENT 25

IV.B.1 New condition describing corrective action at Area 3 added in Section IV: Corrective Action for SWMUs. Not clear why this is included here, when Area 3 corrective action is discussed in Section III and it is not a SWMU.

Illinois EPA RESPONSE

Condition IV.B.1: this condition is a summary of the corrective action activities going on at Area 3 landfill. Area 3 is a Solid Waste Management Unit. It refers anyone that is reviewing the permit to go to Section III for more detailed information on the groundwater contamination.

COMMENT 26

IV.B.5 Fix typo – 'screeded' should be "screened"

Illinois EPA RESPONSE

Condition IV.B.5: typographical error has been corrected.

COMMENT 27

IV.B.6 New condition requires measurement of leachate levels in all Area 1 wells monthly and electronic submittal of data. Request clarification on how to submit electronically.

Illinois EPA RESPONSE

Condition IV.B.6: the electronic data should be submitted the same way your groundwater data is submitted. More information is provided on Illinois EPA's website, https://www2.illinois.gov/epa/topics/waste-management/groundwater-monitoring/electronic-reporting/Pages/default.aspx

The data must be gathered monthly, and submitted quarterly as required in the permit.

COMMENT 28

IV.D.1.e Typo – wrong permit condition cited. Change "5.d" to "1.d"

Illinois EPA RESPONSE

Condition IV.D.1.e: typographical error has been corrected.

COMMENT 29

V.A.1.c Typo – incorrect permit Log No. listed – revise to B-27R2

Illinois EPA RESPONSE

Condition V.A.1.c: typographical error has been corrected.

COMMENT 30

VI.35 Request that the anniversary date of the first post-closure cost estimate be added to the permit to ensure consistency and compliance. CID RDF suggests adding a specific due date of June 1st for consistency with other PCCE due dates.

Illinois EPA RESPONSE

Condition V.35: this condition was not revised. These are standard conditions that are in all RCRA Post-Closure permits and usually follow regulatory language. After the final permit is effective, the Permittee may submit a Class 1* permit modification request to add a specific due date in an appropriate section of the permit.

COMMENT 31

VII – Post Closure, Condition I.F.1 Please revise to clarify that "quarterly leachate levels, monthly volumes across all sumps, and the total volume from Area 3 must be reported for Area 3 by January 31 for the previous calendar year."

Illinois EPA RESPONSE

Condition VII-Post Closure, Condition I.F.1: revised to clarify quarterly leachate levels, monthly volumes across all sumps, and the total volume from Area 3 must be reported for Area 3 by January 31 for the previous calendar year.

COMMENT 32

VII – Post Closure, Condition I.F.2 Please revise to clarify "monthly leachate levels, monthly leachate volumes, and the total volume from Area 4 must be reported for Area 4 by January 31 for the previous calendar year."

Illinois EPA RESPONSE

Condition VII-Post Closure, Condition I.F.2: revised to clarify monthly leachate levels, monthly leachate volumes, and the total volume from Area 4 must be reported for Area 4 by January 31 for the previous calendar year.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794-9276 · (217) 782-3397
JB Pritzker, Governor John J. Kim, Director

HAZARDOUS WASTE MANAGEMENT RCRA POST-CLOSURE PERMIT

0310390001 -- Cook County
ILD 010284248
CID Recycling and Disposal Facility
Permit Log No. B-27R2
RCRA Administrative Record

Issue Date: January 19, 2023
Effective Date: February 23, 2023
Expiration Date: February 23, 2033

PERMITTEE
Waste Management of Illinois, Inc.
Environmental Legacy Management Group
720 E. Butterfield Road, Suite 400
Lombard, Illinois 60148

A RCRA Post-Closure permit is hereby issued to Waste Management of Illinois, Inc. (CID RDF) as Owner, Operator, and Permittee pursuant to Section 39(d) of the Illinois Environmental Protection Act, and Title 35 Illinois Administrative Code Subtitle G (35 Ill. Adm. Code).

PERMITTED HAZARDOUS WASTE ACTIVITY
This permit requires CID RDF to conduct the following hazardous waste activities in accordance with the approved permit application and the conditions of this permit.

Post-Closure Care of two closed landfills (Area 3 and Area 4) (D80)
Groundwater Monitoring: Compliance Monitoring and Corrective Action Program
Corrective Action for two closed landfills (Area 1 and Area 2) (SWMUs)

This permit consists of the conditions contained herein and those in the sections and attachments in this permit. The Permittee must comply with all terms and conditions of this permit and the applicable regulations contained in 35 Ill. Adm. Code Parts 702, 703, 705 and 720 through 729 in effect on the effective date of this permit.

This permit is issued based on the information submitted in the approved permit application identified in Attachment E of this permit and any subsequent amendments. Any inaccuracies found in this information provided in the permit application may be grounds for the termination or modification of this permit (see 35 Ill. Adm. Code 702.187 and 702.186) and potential enforcement action (415 ILCS 5/44(h)).

Jacqueline M. Cooperider, P.E.
Jacqueline M. Cooperider, P.E.
Permit Section Manager
Bureau of Land

JCM: KDH:0310390001-RCRA-B27R2-Approval.docx
KDH AMS CA RLW 2/4

RCRA POST-CLOSURE PERMIT

ISSUED TO

CID RDF

CALUMET CITY, ILLINOIS

STATE ID # 0310390001

ILD010284248

LOG NO. B-27R2

RCRA POST-CLOSURE PERMIT
CID RDF
LOG NO. B-27R2

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LIST OF ATTACHMENTS

GENERAL FACILITY DESCRIPTION

A. OWNER AND OPERATOR

The facility is owned and operated by Waste Management of Illinois, Inc. (WMIL), herein referred to as the "Permittee." (35 Ill. Adm. Code 702.121, 702.123 & 703.181)

Waste Management of Illinois, Inc.
720 East Butterfield Road, Suite 400
Lombard, Illinois 60148

B. LOCATION

1. Location of Facility

The CID Recycling and Disposal Facility (CID RDF) is owned and operated by WMIL and is located upon approximately 400 acres of land in the incorporated limits of Chicago, Calumet City, and Burnham in Cook County, Illinois. The CID RDF facility is located at:

CID Recycling and Disposal Facility
138th Street and Interstate 94
Calumet City, Illinois 60409

The facility contact is the District Manager. They can be reached at 224-523-1736.

2. Facility Map

A general facility map is provided in Attachment J of this permit. The location of the two closed landfills (known as Area 3 and Area 4) (D80) and the two closed Solid Waste Management Units (known as Area 1 and Area 2 landfills) are shown on this map.

C. DESCRIPTION OF HAZARDOUS WASTE MANAGEMENT ACTIVITIES

The CID RDF owned and operated by Waste Management of Illinois, Inc., was a commercial facility involved in the treatment and disposal of hazardous waste. Nearly all the hazardous waste handled at this facility was generated off-site by various industries. In particular, the largest generators of wastes accepted at the facility were the metal finishing industry, the iron and steel industry, and the petroleum refining industry. Only a small portion of the waste disposed at the facility was generated on-site.

A 25.9 acre closed hazardous waste landfill (known as Area 4) exists at the facility. The Illinois EPA approved closure of the Area 4 landfill on April 23, 2010 (Log No. B-27R-M-13).

A 173-acre closed landfill (known as Area 3) also exists at the facility. Approximately 83 acres of this landfill received hazardous waste during operation between 1980 and January 1983, when hazardous waste was co-disposed with municipal waste disposed at Area 3. Since January 1983, Area 3 has only received municipal refuse and other non-hazardous special wastes. However, as this landfill did receive hazardous waste, it was closed in accordance with the closure plan approved by the Illinois EPA on June 6, 1986 (including any adjudicated revisions as a result of the appeal) and receives post-closure care and monitoring in accordance with this RCRA Post Closure permit. The Illinois EPA approved closure of the Area 3 landfill in a letter dated October 10, 2008 (Log No. C-187-CERT).

SECTION I: POST-CLOSURE

A. SUMMARY

Hazardous waste management units where waste is left in-place must receive post-closure care for at least 30 years after they are closed. As Area 3 was used for the disposal of hazardous waste prior to January 26, 1983, and Area 4 was used for the disposal of hazardous waste, post-closure care must be provided for both units. Activities required during post-closure care include, but are not limited to, (1) maintenance of the final cover, (2) management of leachate, and (3) monitoring of the groundwater. Post-closure care for Area 3 began on May 30, 2008. Post-closure care for Area 4 began on February 18, 2010.

B. UNIT IDENTIFICATION

1. The Permittee shall provide post-closure care for the following hazardous waste management unit(s), as described in the approved permit application, subject to the terms and conditions of this permit:

Unit Designation	Capacity (c.y.)	Surface Area Dimensions of Unit (acres)	Description of Waste Hazardous Waste No.
Area 3 Landfill (D80)	27,000,000 (approximate)	173	Mostly municipal waste and some hazardous waste
Area 4 Landfill (D80)	2,500,000 (approximate)	25.9	Industrial hazardous waste that met Land Disposal Restrictions

2. The location and horizontal extent of the Area 3 landfill is identified in Attachment J, Site Layout Map, of this permit. The lowest elevation of the sumps in the base collection system for Area 3 landfill is at or above elevation 555 ft. MSL. The highest elevation of the final cover system is at or below elevation 746 ft. MSL. The slopes of the final cover on the Area 3 landfill shall not be steeper than 3:1. The Area 3 landfill was designed and constructed to achieve a minimum static slope factor of safety greater than or equal to 1.5 and a seismic factor of safety greater than or equal to 1.3.

3. The liner system on the bottom and sides of the Area 3 landfill is constructed of a minimum of 20 feet of natural, low permeability clay.

4. The cover system on the top of the Area 3 landfill is constructed of the following layers, described from the top to bottom:

a. Minimum six-inch vegetative layer with sustained vegetation

b. Minimum of four feet of compacted clayey soil

5. A survey plat indicating the location and dimensions of the Area 3 landfill and any other hazardous waste disposal units with respect to permanently surveyed benchmarks was prepared and certified by a professional land surveyor. The notes on the plat state the owner's and operator's obligation to restrict disturbance of the Area 3 landfill in accordance with the applicable Subpart G regulations. These notes state:

   a. The waste materials contained in the Area 3 landfill are considered RCRA hazardous wastes. They include mostly municipal waste and some hazardous waste.

   b. Any material removed from the Area 3 landfill during future activities must be managed as a hazardous waste in accordance with 35 Ill. Adm. Code Subtitle G: Waste Disposal.

   c. The use of this area is restricted.

6. The Plat of Survey (PIN No. 25-35-200-004-0000, 25-35-201-014-0000, 25-35-202-003-0000, 25-35-203-001-0000, 25-36-100-026-0000, 25-35-203-007-0000, 25-35-203-003-0000, 25-36-100-002-0000, 25-35-203-006-0000) for that Area 3 landfill, Project No. 89-11-2, was filed with the Cook County Recorder's Office in Chicago, IL on March 18, 2010. The record data is Document No. 1007703015.

   The Plat of Survey was attached to the deed to the property and serves as an instrument which is normally examined during title search that will in perpetuity notify any potential purchaser of the property that:

   a. The waste material in the Area 3 landfill is considered a RCRA hazardous waste;

   b. Use of the area is restricted; and

   c. A survey plat and record of the type, location and quantity of waste material in the Area 3 landfill was filed with the IEPA and the County Recorder.

7. The location and horizontal extent of the Area 4 landfill is identified in Attachment J, Site Layout Map, of this permit. The lowest elevation of the sumps in the Area 4 landfill is at or above elevation 549 ft. MSL. The highest elevation of the final cover system is at or below elevation 660 ft. MSL. The slopes of the final cover on the Area 4 landfill shall not be steeper than 3:1.

The Area 4 landfill was designed and constructed to achieve a minimum static slope factor of safety greater than or equal to 1.5 and a seismic factor of safety greater than or equal to 1.3.

8. The liner system on the bottom and sides of the Area 4 landfill is constructed of the following layers, described in the table below.

Area 4 Landfill Liner systems (top to bottom)			
Phase I (West)	**Phase I (East) and Phase II West**	**Phase II (East) and Phase III (North & South)**	**Phase IV (North & South), Phase V and Phase VI**
2 feet compacted clay	150-mil geotextile fabric	1-foot granular drainage layer (primary leachate collection system on the base)	Geotextile (filter on the base)
10 feet natural clay	30-mil HDPE synthetic liner	Geotextile protective filter fabric	1-foot granular drainage layer (primary leachate collection system on the base)
	2 feet compacted clay	Drainage layer (side slopes)	Geotextile (on base and side slopes)
	10 feet natural clay	60-mil HDPE (side slope) & 100-mil HDPE (base)	HDPE geonet (on side slopes)
		Geosynthetic clay liner	Primary liner: 60-mil HDPE (side slope) & 100-mil HDPE (base)
		60-mil HDPE (primary liner)	Geosynthetic clay liner
		HDPE geonet secondary leachate system with collection network	60-mil HDPE (secondary liner)
		60-mil HDPE (secondary liner)	HDPE geonet: secondary leachate detection system (Phase VI only)
		2 feet compacted clay	60-mil HDPE (tertiary liner)
		10 feet natural clay	3 feet compacted clay
			10 feet natural clay

9. The cover system on the top of the Area 4 landfill is constructed of the following layers, described from the top to bottom:

   a. 3-foot protective soil layer, with 6-inches capable of supporting vegetation

Double-sided geocomposite (an HDPE geonet sandwiched between two geotextile fabric filter layers)

b. 40-mil HDPE textured geomembrane

c. Geosynthetic clay liner (GCL)

d. 2-foot layer of compacted bioremediated or other clean soils

10. A survey plat indicating the location and dimensions of the Area 4 landfill and any other hazardous waste disposal units with respect to permanently surveyed benchmarks was prepared and certified by a professional land surveyor. The notes on the plat state the owner's and operator's obligation to restrict disturbance of the Area 4 landfill in accordance with the applicable Subpart G regulations. These notes state:

a. The waste materials contained in the Area 4 landfill are considered RCRA hazardous wastes. They include asbestos-containing waste, industrial hazardous waste and commercial hazardous waste.

b. Any material removed from the Area 4 landfill during future activities must be managed as a hazardous waste in accordance with 35 Ill. Adm. Code Subtitle G: Waste Disposal.

c. The use of this area is restricted.

11. The Plat of Survey (PIN No. 29-01-100-009-0000 and 29-01-200-011-0000) for the Area 4 landfill, Drawing No. S09-01-413, was filed with the Cook County Recorder's Office in Chicago, IL on March 18, 2010. The record data is Document No. 1007703015. The Plat of Survey was attached to the deed to the property and serves as an instrument which is normally examined during title search that will in perpetuity notify any potential purchaser of the property that:

a. The waste material in the Area 4 landfill is considered a RCRA hazardous waste;

b. Use of the area is restricted; and

c. A survey plat and record of the type, location and quantity of waste material in the Area 4 landfill was filed with the Illinois EPA and the County Recorder.

12. The Permittee shall develop a scaled topographic drawing of each unit identified in Condition I.B.1 to determine the vertical and horizontal dimensions of each unit at least once every 10 years. If a topographic drawing of a unit has not been developed in the 10

years prior to the date of this permit, it must be developed within one hundred and eighty (180) days of the date of the effective date of this permit, and every 10 years thereafter. The topographic drawings shall be maintained as part of the operating record.

If differential settlement is observed to have occurred on a unit that adversely impacts the integrity or effectiveness of the barrier layers of the cover and requires repairs to those layers, the Permittee shall notify the Illinois EPA Bureau of Land Permit Section within thirty (30) days of this finding. The notification must include a drawing showing the location of this settlement on the unit and a plan that includes a schedule for repairing the cover system. Repairs to the cover system, and/or its components, may be considered a permit modification. Differential settlement will be evaluated, at a minimum, by comparing the 10-year topographic maps required in Condition I.B.12.

C. POST-CLOSURE CARE PERIOD

1. The post-closure care period for the Area 3 landfill began on May 30, 2008, the date of certification of completion of closure of the unit listed in Condition I.B.1 of this permit and continues for at least thirty (30) years after that date. The post-closure care period for the Area 4 landfill began on February 18, 2010, the date of certification of completion of closure of the unit listed in Condition I.B.1 of this permit and continues for at least thirty (30) years after that date.

2. Prior to the anticipated completion of the post-closure care period, the Board will extend, or the Illinois EPA may propose extension of the post-closure care period if it finds that the extended period is necessary to protect human health and the environment (e.g., waste remains in place, or leachate or groundwater monitoring results indicate a potential for migration of waste at levels which may be harmful to human health and the environment)

3. The Illinois EPA may include restrictions upon the future use of the site if necessary, to protect public health and the environment, including permanent prohibition of the use of the site for purposes which may create an unreasonable risk of injury to human health or the environment. After any administrative and judicial challenges to such restrictions have been exhausted, the Illinois EPA shall file such restrictions of record in the Office of the Recorder of the county in which the hazardous waste disposal site is located.

4. The Permittee shall not allow the property where the units designated in Condition I.B.1 are located to be used in a way that could disturb the integrity of the final cover, liners, any components of the containment system, or function of the facility's monitoring systems, unless the Illinois EPA finds, by way of a permit modification, that such use is necessary for either of the following reasons:

a. It is necessary to the proposed use of the property, and will not increase the potential hazard to public health or the environment, or

b. It is necessary to reduce a threat to human health or the environment.

5. The Illinois EPA will require continuation of the security procedures set forth in the approved permit application during the post-closure period. At a minimum, Area 3 and Area 4 shall be totally fenced and shall have locked gates at each entrance. Any additional requirements beyond this shall be subject to the permit modification procedures set forth in 35 Ill. Adm. Code 705.128.

D. INSPECTIONS

1. The Permittee shall inspect the components, structures, and equipment at the site in accordance with the inspection schedule in the approved permit application and the conditions in this permit (Attachment D). The forms in Appendix D-2 of the Post-Closure Plan in the approved permit application shall be used to document inspections and any repairs done at the facility.

2. The Permittee shall inspect the facility semi-annually for evidence of any of the following:

   a. Deterioration, malfunctions, or improper operation of run-on and run-off systems.

   b. The presence of leachate in, and proper functioning of, the leachate collection and removal systems.

   c. The deterioration of the liner or cover systems.

3. The facility shall be inspected within 72 hours of any rain fall event of 3 or more inches in 24 hours to detect evidence of any of deterioration, malfunctions, or improper operation of run-on and run-off systems.

4. Appropriate corrective action shall be taken if problems, including erosion, blockage of the channels, slope failure, etc. are observed. If corrective action is taken, the site shall be re-visited one month later to ensure that the actions taken have indeed corrected the problem(s) noted.

5. The Permittee shall inspect the benchmark(s) used to identify the location of the hazardous waste management units (HWMUs) and solid waste management units (SWMUs) within 60 days of the effective date of this permit and thereafter in accordance with the Inspection Schedule in the approved permit application. Benchmark(s) shall be repaired and resurveyed whenever an inspection of the benchmarks indicates they have been damaged.

The inspection results, repairs, and surveys of the benchmark(s) shall be maintained as part of the operating record.

6. Results of all inspections and a description of any remedial actions taken shall be documented in the Repair Log in the Operating Record and maintained for the entire post-closure period.

E. MONITORING, MAINTENANCE, AND RECORDKEEPING

1. The Permittee shall keep and maintain a written operating record that includes all the records, reports, notifications, and data required by 35 Ill. Adm. Code 724.173 and the conditions in this permit for the entirety of the post-closure care period. The operating record shall be kept on-site at the facility and available for Illinois EPA review.

2. The Permittee shall maintain and monitor the groundwater monitoring system and comply with the other applicable regulations of 35 Ill. Adm. Code 724 Subpart F (Groundwater Protection) during the post-closure period.

3. The Permittee shall maintain the integrity and effectiveness of the final cover including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, and other events.

4. The Permittee shall prevent run-off from eroding or otherwise damaging the final cover. At a minimum, the run-off management system shall be capable of collecting and controlling the volume of water resulting from a 24 hour, 25-year storm event.

5. The Permittee shall comply with the requirements for landfills described in the approved permit application and the condition of this permit as follows:

   a. Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, cracking or other events.

   b. Corrective action shall be taken if ponding has been observed, if cracks or erosion channels greater than one inch wide have formed for whatever reason, if gas, odor, vegetative or vector problems arise, if leachate pop-outs or seeps are present, or if vegetation with tap roots is found to be growing in areas which are not designed to accommodate such vegetation.

6. The Permittee shall maintain the leachate collection systems (LCS) in Area 3 (Fig. E-5a of approved permit application) and Area 4 (Fig. E-4a of approved permit application), and

leak detection system (LDS) in Phase VI of Area 4 in accordance with the design plans and specifications contained in the approved permit application and the conditions in this permit. Including the following:

a. Initiate troubleshooting of the LCS and LDS if the control system detects abnormal operating conditions or site personnel observe unexpected performance during daily routine system inspections.

b. Troubleshooting will include checks of electrical, mechanical, piping and control system components, as necessary depending on the nature of the operating condition. Routine maintenance, such as cleaning LCS and LDS pumps and pipe jetting, will be performed as needed to achieve compliance with designated liquid levels within the LCS and LDS.

c. Repairs will be documented in the facility operating record.

7. The permittee shall remove leachate from the Area 3 and Area 4 landfills until leachate is no longer detected in the LCS or LDS.

8. Leachate collected in the LCS and LDS shall be managed in the facility's on-site Biological Liquid Treatment Center.

9. The Permittee shall operate, monitor, and maintain the LCS in accordance with the approved permit application and the following conditions:

a. The leachate level in Area 3 shall not exceed the following compliance elevations as measured in the sumps of the following collection systems:

i. 555 ft. MSL for the base collection system. This system consists of a base grade lateral piping system with the eastern half of the system containing a one-foot gravel drainage layer. Leachate levels are monitored quarterly at LW3, MH8, MH9, MH10, MH17, MH18 and W450R.

ii. 566 ft. MSL for the elevated base collection system. This system collects leachate from a small area in the northeast portion of the landfill with lateral piping and a gravel drainage layer. Leachate levels are monitored quarterly at LW19 and MH20.

iii. 580 ft. MSL for the piezometer system. This system consists of a series of leachate collection manholes and wells in the western portion of the landfill. Leachate levels are monitored quarterly at MH5, MH6, MH16, L430, L702.

L704, G705, W434 and W435.

b. Maintenance of the leachate level at or below this elevation is necessary to create and maintain an inward gradient in the soil layer surrounding the landfill.

c. The leachate level in Area 4 shall not exceed the compliance elevations as measured in the sumps listed in the following table:

Monitoring Point	Compliance Elevation (ft) above sump invert	Monitoring Point	Compliance Elevations (ft) above sump invert
4AN Primary	1.5	4F Primary	1.5
4AW Primary	1.6	4B Secondary	1.0
4B Primary	3.0	4D Secondary	1.0
4C Primary	4.2	4E Secondary	1.0
4D Primary	2.5	4F Secondary	1.0
4E Primary	1.6	4G Secondary	4.1

d. All leachate removed from the leachate collection system shall be managed as a hazardous waste.

e. The permittee shall record the amount of liquid removed from each LCS sump (in gallons) at least monthly. The results of the leachate quantity testing data from the LCS shall be maintained in the facility's operating record and submitted electronically to the Illinois EPA.

10. Three representative samples of leachate from Area 3 and one from Area 4 shall be collected annually and analyzed individually for constituents listed in 35 Ill. Adm. Code Part 724, Appendix L These samples shall be collected during the first quarter inspections The four samples will be taken from the withdrawal points listed in Condition I.F.7. The results of these analyses shall be submitted electronically to the Illinois EPA by June 1st of each year.

a. The annual Appendix I analysis required by Condition I.E.10 for a given sampling point may be reduced through submittal of a permit modification request, in accordance with 35 Ill. Adm. Code 703.280, to reduce the annual leachate monitoring list. The Reduced List will be based on a review of the four most recent full Appendix I analyses, and include all parameters detected in any of these four Appendix I analysis, along with their appropriate Storet numbers for electronic data submittal. Starting the next sampling event after Illinois EPA approval, this reduced list will be used in lieu of the Appendix I analysis for three out of four years, with the fourth year reverting to a full Appendix I analysis. Any

parameters not included on the existing Reduced List detected in the fourth-year Appendix I analysis shall be added to the Reduced list, by means of a Class 1* permit modification request in accordance with 35 Ill. Adm. Code 703.280, for all future Reduced List analyses. This cycle of three years of Reduced List, followed by one year of Appendix I analysis, shall repeat for the remainder of the post-closure period. The approved Reduced Lists for calendar years 2019, 2020, and 2021 can be found in Attachment I.

11. The permittee shall operate, monitor, and maintain the LDS in Phase VI of Area 4 in accordance with the approved permit application and the following conditions:

    a. The elevation of leachate in each Leachate Monitoring/Withdrawal Well in the LDS shall be continuously monitored and recorded in feet above MSL.

    b. As far as is practicable, leachate that collects in each leak detection sump shall be removed.

    c. All leachate removed from the LDS shall be managed as a hazardous waste.

    d. The permittee shall record the amount of liquid removed from each LDS sump (in gallons) at least monthly. The results of the leachate quantity testing data from the LDS shall be maintained in the facility's operating record and submitted electronically to the Illinois EPA.

12. The action leakage rate (ALR) was calculated to be 1,532 gallons per day or 214 gallons/acre/day for the Phase VI LDS sump at Area 4 landfill. The pump operating level for the LDS is 551 feet MSL. The Permittee shall inspect, operate, and monitor all components of the LDS in accordance with the requirements in 35 Ill. Adm. Code 724.403(c). The monthly volume of leachate removed from the LDS sump shall be included in the report required in Condition I.F.2. If at any point the action leakage rate is exceeded, this event must be included on the graphical representation of the data.

13. The action leakage rate is the maximum design flow rate that the LDS can remove without the fluid head on the bottom liner exceeding 1 foot. The Permittee shall monitor the quantity of leachate removed from the LDS sump(s) each month to determine if the rate of leachate removed from each LDS sump exceeds the action leakage rate.

    To determine if the action leakage rate has been exceeded, the Permittee shall convert the monthly flow rate from the monitoring data obtained under Section 724.403(c) to an average daily flow rate (gallons per acre per day) for each sump. The average daily flow rate for each sump must be calculated monthly during the post-closure care period and recorded in the operating record.

F. REPORTING AND NOTICES

1. The quarterly leachate levels, monthly leachate extraction volume and the total volume of leachate extracted from Area 3 landfill (not including contaminated ground water) shall be submitted to the Illinois EPA annually by January 31st, for the previous calendar year. A graphical representation of the data shall also be included as follows:

   a. A graphical representation of the volumes of leachate removed from the LCS each month. The scale of the x axis (time) shall be such that no more than one year of data (starting with January each year) is presented on each sheet of paper.

   b. A graphical representation of the elevation of the liquid level in each Leachate Monitoring/Withdrawal Well/Sump for the quarter. For each Well, the graph needs to identify the following: the elevation of leachate over time, elevation of the top of liner, and elevation of the bottom of the cover system all in feet above MSL. Compliance levels should also be marked on the graph.

2. Monthly leachate levels observed in each sump, amount of leachate removed from each sump and total volume removed for the year for Area 4 landfill shall be submitted to the Illinois EPA annually by January 31st, for the previous calendar year. A graphical representation of the data shall also be included as follows:

   a. A graphical representation of the volumes of leachate removed from the LCS and LDS each month. The leachate generation rates (gallons/month) from the LCS and LDS shall be presented on the same graph. The scale of the x axis (time) shall be such that no more than one year of data (starting with January each year) is presented on each sheet of paper. If at any point the action leakage rate is exceeded, this event must also be indicated on the graph.

   b. A graphical representation of the elevation of the liquid level in each Leachate Monitoring/Withdrawal Well/Sump for the month. For each Sump, the graph needs to identify the following: the elevation of leachate over time, elevation of the top of liner, and elevation of the bottom of the cover system all in feet above MSL. Compliance levels should also be marked on the graph.

3. A completed "RCRA Facility Groundwater, Leachate and Gas Reporting Form" (LPC 592) must accompany all Leachate Data Reports required by this permit. A copy of this form is provided in Attachment A to this permit. This form is not to be used for permit modification requests. This form is available on the Illinois EPA web site.

4. If quarterly leachate level measurements at Area 3 landfill indicate non-compliance at any of the leachate monitoring points listed in Conditions I.E.9.a.i, I.E.9.a.ii, and I.E.9.a.iii, a

written notification shall be sent to Illinois EPA BOL Permit Section and Illinois EPA BOL Regional Office. For instances of non-compliance in the 1st and 2nd quarter, the notice shall be sent by July 31st of that year. For instances of non-compliance in the 3rd and 4th quarter, the notice shall be sent by January 31st of the following year.

5. If monthly leachate level measurements at Area 4 landfill indicate non-compliance at any of the leachate monitoring points, a notification shall be sent to Illinois EPA BOL and Illinois EPA BOL Regional Office. For instances of non-compliance in the 1st and 2nd quarter, the notice shall be sent by July 31st of that year. For instances of non-compliance in the 3rd and 4th quarter, the notice shall be sent by January 31st of the following year.

6. Information required by Condition I.E.10 and I.E.10.a must be submitted in an electronic format. The information is to be submitted as fixed-width text files formatted as found in Attachment A.

   Additional guidance regarding the submittal of the information in an electronic format can be found on the Illinois EPA website.

7. The following leachate withdrawal points will be used in leachate quality analysis required by conditions I.E.10 and I.E.10.a. For purposes of electronic reporting, the points will be renamed as shown below.

Name in Application	Name for Electronic Reporting
A3LC (Area 3 Composite)	L311
A3L3 (Area 3 LW 3)	L312
A3M6 (Area 3 MH 6)	L313
A4LC (Area 4 Composite)	L331

8. The Permittee shall notify the Illinois EPA BOL Permit Section in writing within thirty (30) days of the leachate quality analysis report received by the Permittee required in Condition I.E.10 if the following occurs:

   a. If the analysis of the leachate detects a parameter for which the groundwater was not analyzed for in the last sampling event. The Illinois EPA may require the Permittee to modify their groundwater monitoring program based on this additional information.

9. In accordance with 35 Ill. Adm. Code 724.404(b), if the flow rate in the Area 4 Phase VI leak detection sump 4G-SEC exceeds the action leakage rate described above, the Permittee shall:

a. Notify the Illinois EPA BOL Permit Section and the Illinois EPA BOL Regional office in writing of the exceedance within 7 days of the determination;

b. Submit a preliminary written assessment to the Illinois EPA BOL Permit Section and the Illinois EPA BOL Regional office within 14 days of the determination, as to the amount of liquids, likely sources of liquids, possible location, size and cause of any leaks, and short-term actions taken and planned;

c. Determine to the extent practicable the location, size and cause of any leak;

d. Determine whether any waste should be removed from the unit for inspection, repairs or controls;

e. Determine any other short-term and longer-term actions to be taken to mitigate or stop any leaks; and

f. Within 30 days after the notification that the action leakage rate has been exceeded, submit to the Illinois EPA BOL Permit Section and the Illinois EPA BOL Regional office the results of the determinations specified above, the results of actions taken, and actions planned. Monthly thereafter, as long as the flow rate in the leak detection system exceeds the action leakage rate, the Permittee shall submit to the Illinois EPA BOL Permit Section and the Illinois EPA BOL Regional office a report summarizing the results of any remedial actions taken and action planned.

The Permittee shall follow the procedures listed in 35 Ill. Adm. Code 724.404(c) to make the determinations required above.

The address for the Illinois EPA BOL Regional Office cited in this condition is:

Illinois EPA Field Office
9511 West Harrison
Des Plaines, Illinois 60016

G. NOTICES AND CERTIFICATION

1. A request to change the Post-Closure Plan must be submitted in the form of a permit modification request. This request must be in accordance with applicable requirements of Parts 702, 703 and 724 and must include a copy of the amended Post-Closure Plan for approval by the Illinois EPA.

2. If the Permittee or any subsequent owner or operator of the land upon which the Area 3 and Area 4 landfills listed in Condition I.B.1 above is located wishes to remove hazardous wastes, hazardous waste residues, the liner, if any, or contaminated soil, they must request a modification to this RCRA post-closure permit in accordance with the applicable requirements in 35 Ill. Adm. Code Parts 703, 705 and 724. At a minimum, the owner or operator must demonstrate that the removal of such material will satisfy the criteria of 35 Ill. Adm. Code 724.217(c).

3. If the Permittee seeks to demonstrate that they should be allowed to end the post-closure care period (e.g., all waste has been removed, and leachate and groundwater monitoring results do not indicate a potential for migration of waste at levels which may be harmful to human health and the environment), the permittee shall submit an Environmental Covenant (EC) for the future land use and management of the property on which the Area 3 landfill and Area 4 landfill is located. The EC shall be submitted at least one year prior to the date the Permittee expects to submit the Certification of Completion of Post-Closure.

   Pursuant to Section 39(g) of the Environmental Protection Act, the purpose of the EC is to place restrictions upon the future use of the site necessary to protect public health and the environment, including permanent prohibition of the use of the site for purposes which may create an unreasonable risk of injury to human health or the environment. The EC shall be pursuant to a consent order between the Permittee and the State of Illinois and in the form and format specified by Illinois EPA.

4. If the Permittee seeks to exit post-closure care, the Permittee shall submit the following documents to the Illinois EPA Bureau of Land Permit Section by registered mail no later than sixty (60) days after completion of the established post-closure care period for Area 3 landfill and Area 4 landfill listed in Condition I.B.1 of this permit:

   a. A properly completed Certification of Completion of Post-Closure Form provided in Appendix H to this permit that states the post-closure care for the hazardous waste disposal unit (Area 3 or Area 4) was performed in accordance with the specifications in the approved post-closure plan in the approved permit application and the conditions in this permit. The owner and operator and a qualified Professional Engineer registered in the State of Illinois must sign the Certification Form.

   b. A Post-Closure Documentation Report that documents the post-closure care conditions and activities at your facility during the post-closure period. The Post-Closure Documentation Report must include the following:

i. Background information about the facility and the unit subject to the post-closure certification. Describe the facility and RCRA permit history of the unit.

ii. A detailed description of the unit subject to the post-closure care certification that includes:

1. The Unit's design, including liner system, sumps, leachate collection, leak detection, gas systems, and cover system including stormwater run-off and run-on controls. Provide this information in both a narrative form, and scaled drawings.

2. How it was operated, and how it was closed.

3. When it was operated, and when it was closed.

4. The wastes disposed of in the unit (including waste codes).

5. The amount of leachate pumped each year from each sump (combined amount for Area 3) in the unit's leachate collection and leak detection systems during the post-closure period. Provide this information in both a table and graphically. Demonstrate the unit has met the requirements of 35 Ill. Adm. Code 724.410(b)(2).

6. A scaled map showing location of the unit within the facility. Include all wells in the groundwater monitoring system for the unit on this map.

7. Scaled drawings (plan view and cross-section) showing the horizontal and vertical extent of the unit at the time it was certified closed, every 10 years after it was closed (if available), and at the time the Post-Closure Documentation Report is submitted (e.g. at the end of the post-closure period). The scale of the plan view should be 1 inch = 200 feet. All design components of the unit must be shown on the drawings.

When the drawings are compared; if a difference in elevation of more than 2 feet exists at any location on the unit, the Post-Closure Documentation Report needs to indicate the reason for the change in elevation, and why it would not be a concern in the future.

8. A survey of the unit when it was certified closed and at the time the Post-Closure Documentation Report is submitted (e.g. when the post-closure period ended). The surveys must be certified by a professional land surveyor.

iii. A general discussion on the inspection and maintenance of, and repairs to, the cover system, leachate collection, leak detection, gas collection, stormwater run-off & run-on controls, and wells in the groundwater monitoring system. Describe any problems and/or repairs to these systems that were addressed over the post-closure care period in chronological order. Show the locations of each of the repairs to these systems during post-closure care on a scaled drawing of the unit.

iv. A discussion on the groundwater monitoring program, including any corrective measures that were completed during the post-closure care period and a summary of the three (3) most recent years of groundwater data. Identify the horizontal and vertical extent of any groundwater contaminant plume from the unit that existed at the beginning of the post-closure period and every 5 years after that. The facility must have complied with all requirements of 35 Ill. Adm. Code 620 and 724 in order to certify completion of post-closure care activities.

v. Colored photos of unit(s) at post-closure completion. Photo documentation of the unit should include at least one aerial (satellite) photo and representative photos of above-ground design features of the unit.

vi. Illinois EPA form LPC-PA23.

c. Documentation that the IC/ EC required by Condition I.G.3 above has been placed on the deed to the property on which Area 3 and Area 4 are located and has been filed with the County Recorder's Office.

5. The certification of completions of post-closure care shall not be approved by the Illinois EPA until the Permittee demonstrated that the IC/EC required by Condition I.G.3 above has been properly filed with the appropriate governmental office (e.g. State of Illinois, or County Recorder's office).

6. Within sixty (60) days after receiving certifications from the owner or operator and a qualified Professional Engineer that the post-closure care period has been completed for Area 3 and/or Area 4 landfills listed in Condition I.B.1 of this permit in accordance with the approved post-closure plan, the Illinois EPA shall notify the owner or operator that it

is no longer required to maintain financial assurance for post-closure care of that unit unless the Illinois EPA determines that post-closure care has not been in accordance with the approved post-closure plan. The Illinois EPA shall provide the owner or operator with a detailed written statement of any such determination that post-closure care has not been in accordance with the approved post-closure plan.

H. SUBSURFACE GAS MANAGEMENT

The Permittee must operate the gas monitoring and collection system for the Area 3 landfill in accordance with Section E.5 of the approved permit application, the approved Clean Air Act Program Permit issued January 13, 2022, and any subsequent modifications to the permit, and the following conditions:

1. The Permittee shall recover or flare the subsurface gas generated at Area 3 during the post-closure care period

   a. Condensate from any gas recovery system is considered hazardous and must be managed as hazardous waste.

2. If subsurface gas problems occur, a corrective action plan shall be submitted, for approval, to the Illinois EPA BOL within thirty (30) days of discovering such gas problems.

I. FINANCIAL ASSURANCE

1. The Permittee shall maintain financial assurance for post-closure care of the closed Area 3 landfill of at least the amount of $12,585,185 (2021 dollars). The Permittee shall maintain financial assurance for post-closure care of the closed Area 4 landfill of at least the amount of $2,901,051 (2021 dollars). A summary of the cost estimate for post-closure care of this facility is shown in Attachment C to this permit. The financial assurance maintained by the facility shall be sufficient to meet the requirements of 35 Ill. Adm. Code 724 Subpart H.

2. Post-closure care costs are determined by multiplying annual costs by either the full 30-year post-closure care period, or the post-closure care period remaining at the time the estimate is prepared. However, financial assurance for a minimum of ten (10) years of post-closure care costs shall be maintained at all times.

SECTION II: AREA 4 DETECTION MONITORING PROGRAM

A. SUMMARY

The detection monitoring program consists of nineteen (19) existing groundwater monitoring wells. This includes nine (9) monitoring wells that are utilized to monitor the Silurian Dolomite and ten (10) that are utilized to monitor the Dolton Sand. Due to highly variable groundwater flow conditions in the Silurian Dolomite in the vicinity of the facility, intrawell statistical analyses will be conducted at each monitoring well. Therefore, there will not be designated upgradient and downgradient monitoring wells in this program.

B. DEFINITIONS

As used herein, the words or phrases set forth below shall have the following definitions:

1. "Uppermost Aquifer" refers to the geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically connected with this aquifer in the vicinity of the facility. The uppermost aquifer underlying Area 4 has been identified as a weathered, fractured, and/or jointed Silurian dolomite which overlies a bedrock aquitard and underlies a perched outwash sand unit with minimal hydraulic connection.

2. "Point of Compliance" refers to the vertical surface located at the hydraulically downgradient limits of the waste management area (Area 4) extending down into the uppermost aquifer underlying the regulated unit.

3. "Ft bgs" refers to the number of feet below the ground surface.

4. "Ft-MSL" refers to elevation referenced feet above mean sea level.

5. "Detected" shall mean a concentration equal to or above the PQL listed in USEPA's SW-846 (Third Edition) or as approved by the Illinois EPA for the applicable analytical methods specified in the approved Sampling and Analysis Procedures, which are incorporated by reference in Condition II.H of the Permit.

6. "Progressive Increase" shall mean an increase in the concentration of a constituent in successive sampling events.

7. "Stick-up" refers to the height of the reference survey datum. This point is determined within ± 0.01 foot in relation to mean sea level, which in turn is established by reference to an established National Geodetic Vertical Datum.

C. IMPLEMENTATION

1. The Permittee shall implement the detection monitoring program established in the permit to determine if the regulated unit is in compliance with the groundwater protection standard listed in Condition II.E.1. The detection monitoring requirements set forth in this permit shall supersede those established in the 35 Ill. Adm. Code 724 compliance monitoring program previously approved by the Illinois EPA.

2. The Permittee shall carry out the detection monitoring program specified in this Permit on the groundwater found in the Silurian Dolomite and the Dolton Sand beneath the CID-RDF facility in Calumet City, Illinois. Groundwater occurring within the Silurian Dolomite beneath the CID-RDF facility has been designated a 35 Ill. Adm. Code 620, Class I: Potable Resource Groundwater. Groundwater occurring within the Dolton Sand beneath the CID-RDF facility has been designated a 35 Ill. Adm. Code 620, Class II: General Resource Groundwater.

3. The point of compliance, defined as a vertical surface located at the hydraulically downgradient limits of Area 4 that extends down into the uppermost aquifer underlying the waste management units, is shown on Figure C-2c of the approved permit application.

D. WELL LOCATION AND CONSTRUCTION

1. The Permittee shall maintain the groundwater monitoring wells identified in the following table in accordance with the approved permit application to allow for the collection of groundwater samples and elevation from the uppermost aquifer. The location of these wells is specified in Figure C-2c of the approved permit application.

IEPA Well No.	Facility Well No.	Well Depth (ft.)	Well Depth Elevation (ft. MSL)	Well Screen Interval
Area 4 Dolomite Monitoring Wells				
G02D*[V]	G202	67.2	521.13	530.13-521.13
R06D*[V]	R06D	80.0	510.80	520.80-510.80
R08D*[V]	R08D	64.6	523.79	533.79-523.79

G10D*[V]	G210	71.9	515.16	524.36-515.16
G16D*[V]	G216	66.3	517.70	524.00-517.70
G18D*[V]	G218	77.5	508.66	517.56-508.66
G20D*[V]	G220	77.9	511.56	520.46-511.56
R04D*[V]	G04DR	90.9	503.98	513.98-503.98
G05D*[V]	G05D	88.7	502.76	512.76-502.76

Area 4 Dolton Sand Monitoring Wells

G01S*[VII]	G201	11.3	577.36	581.64 - 577.36
G04S*[VII]	G204	18.6	575.22	579.42 - 575.22
G05S*[VII]	G205	17.1	574.72	578.92 - 574.72
G07S*[VI]	G207	13.8	574.70	578.90 - 574.70
G09S*[VI]	G209	11.5	576.33	580.53 - 576.33
G13S*[VII]	G213	21.3	573.13	581.67 - 573.13
R15S*[VII]	G215R	12.4	575.54	581.54 - 575.54
R17S*[VI]	R17S	13.6	576.97	581.67 - 576.97
G19S*[VI]	G219	12.1	573.95	579.15 - 573.95
G21S*[VII]	G221	11.8	577.02	581.75 - 577.02

NOTE:
* - Denotes point of compliance monitoring well.
[V]- Analysis of List G1, G2, G3, G4 and G5 parameters in accordance with Condition II.E.1.
[VI]- Analysis of List G1 and G2 parameters in accordance with Condition II.E.1.
[VII] Analysis of Lists G1, G2, G6 and G7 parameters in accordance with Condition II.E.1.

2. Construction of any new monitoring well/piezometer must be at a minimum in accordance with the diagram contained in Attachment A to this Permit unless otherwise approved in writing by the Illinois EPA. Any new monitoring wells/piezometers must be continuously sampled and logged on an Illinois EPA boring log and well completion report as provided in Attachment A unless otherwise approved by the Illinois EPA.

3. The Permittee shall notify the Illinois EPA within thirty (30) days in writing if any of the wells identified in Condition II.D.1 are damaged or the structure integrity has been compromised causing the well not to serve its function or to act as a contaminant pathway. A proposal for the replacement of the subject well requires Illinois EPA approval, and shall accompany this notification. The well shall not be plugged until the new well is on-line and monitoring data has been obtained and verified, unless the well is extremely damaged and would create a potential route for groundwater contamination.

4. Should any well become consistently dry or unserviceable, a replacement well shall be provided within ten (10) feet of the existing well. This well shall monitor the same zone

as the existing well and be constructed in accordance with the current Illinois EPA groundwater monitoring well construction standards at the time that the well is replaced. A replacement well which is more than ten (10) feet from the existing well or which does not monitor the same geologic zone must be approved by the Illinois EPA and designated as a new well. If the facility determines that a replacement well will be a dry well, then it must submit for Illinois EPA approval either a proposal to install a new monitoring well or a proposal not to replace the well with appropriate rationale.

5. The Permittee shall submit boring logs, construction diagrams, and data sheets from the installation and development of a new or replacement well to the Illinois EPA at the address below within thirty (30) days of the date that installation of the well is completed. In addition, the Permittee shall submit certification that plugging and abandonment of a well was carried out in accordance with the approved procedures (see Attachment A to this Permit) to the Illinois EPA at the address below within thirty (30) days of the date that the well is plugged and abandoned. All information should be submitted to the appropriate State Agencies.

   Illinois Environmental Protection Agency
   Bureau of Land - #33
   Permit Section
   1021 North Grand Avenue East
   Springfield, Illinois 62702

6. All wells/piezometers shall be clearly identified and shall be equipped with protective caps and locks. Monitoring wells or piezometers in high traffic areas must be protected with bumper guards.

7. All monitoring wells and piezometers not utilized in the approved groundwater monitoring system, but retained by the facility, must be constructed and maintained in accordance with 77 Ill. Adm. Code 920 regulations. Monitoring wells and piezometers that are improperly constructed must be abandoned in accordance with Attachment A to this Permit.

E. GROUNDWATER PROTECTION STANDARD

1. The following hazardous constituents and concentration limits comprise the groundwater protection standard in the vicinity of the CID-RDF facility. Total (unfiltered) values, derived from the applicable USEPA SW-846 (Latest Version) method or equivalent methods listed in Section C of the approved permit application, will be used for comparison with the concentration limits.

List G1 Field Parameters	STORET No.	Units	Concentration Limit (µg/L) Class I	Class II
pH	00400	standard	6.5-9.0	--
Specific Conductance at 25°C	00094	µmhos/cm	--	--
Temperature of Water Sample	00011	Fahrenheit	--	--
Turbidity	00076	NTUs	--	--
Depth to Water (below land surface)	72019	Feet	--	--
Depth to Water (below measuring point)	72109	Ft-bgs	--	--
Elevation of Groundwater Surface	71993	Ft-MSL	--	--
Elevation of Bottom of Well#	72020	Ft-MSL	--	--
Elevation of Measuring Point (Top of Casing)##	72110	Ft-MSL	--	--

\# Shall be determined in accordance with Condition II.G.3
Shall be determined in accordance with Condition II.G.2

Hazardous Waste Constituents

List G2 Organics	STORET No.	PQL (µg/L)	Concentration Limit (µg/L) Class I	Class II
Toluene	34010	1	1,000	2,500
Benzene	34030	1	5	25
Ethylbenzene	78113	1	700	1,000
Xylene (total)	81551	2	10,000	10,000
BTEX(total)	11750	3	11,705	13,525
1,4-dioxane	81582	5	7.7	7.7
List G3 – Organics				
Naphthalene	34696	5	140	220
Acetone	81552	10	6,300	6,300
bis(2-ethylhexyl)phthalate	39100	5	6	60
Chlorobenzene	34301	1	100	500
Methylene Chloride	34423	1	5	50
List G4 – Inorganics (total)				
Barium, total	01007	TBD	1,000	--
Chloride, total	00940	1000	200,000	--
Chromium, total	01034	TBD	100	--
Cobalt, total	01037	TBD	1,000	--

Lead, total	01051	TBD	7.5	--
Nickel, total	01067	TBD	100	--
Zinc, total	01092	TBD	5,000	--
List G5 – Inorganics (dissolved)				
Barium, dissolved	01005	2	--	--
Chloride, dissolved	00941	1000	--	--
Chromium, dissolved	01030	4	--	--
Cobalt, dissolved	01035	4	--	--
Lead, dissolved	01049	10	--	--
Nickel, dissolved	01065	10	--	--
Zinc, dissolved	01090	10	--	--
List G6 – Inorganics (total)				
Arsenic, total	01002	TBD	--	200
Chromium, total	01034	TBD	--	1000
Cobalt, total	01037	TBD	--	1000
Vanadium, total	01087	TBD	--	100
List G7 – Inorganics (dissolved)				
Arsenic, dissolved	01000	TBD	--	--
Chromium, dissolved	01030	TBD	--	--
Cobalt, dissolved	01035	TBD	--	--
Vanadium, dissolved	01055	TBD	--	--

2. The background values established for the purpose of intrawell statistical analysis, shall initially be established from the historical groundwater data from the initial sampling of each monitoring well under the initial RCRA Part B Permit (March 1988) to the Fourth Quarter 2006, utilizing the following procedures. This may include data from original monitoring wells and replacement wells as appropriate. This submittal shall include example calculations and shall include, in table form, all groundwater data used in the calculation for each well, the number of pieces of data used to determine the mean, and a list of derived prediction limits.

   a. For those parameters or constituents which are found to be above the PQL in 85-100 percent of the background data set, the background values for that parameter or constituent shall be calculated using the methodology described in Attachment B, Page 1. The facility must utilize a value of one half the PQL for non-detect results included in the data set.

b. For the parameters or constituents which are found to be above the PQL in 50-85 percent of the background data set, the background values for that parameter shall be calculated using methodology described in Attachment B, Page 2 or 5 as appropriate.

c. For those parameters or constituents from the background data set which do not meet the requirements of Conditions II.E.2.a or II.E.2.b above, the average background value shall be set at the PQL as shown in Condition II. E.1 above.

d. Sampling and analytical procedures utilized to establish background values shall be in accordance with Condition II.F below.

e. The Permittee must determine the distribution of the background data set for each parameter that meets the requirements of II.E.2.a and II.E.2.b above.

i. The Permittee must calculate a coefficient of variation for the background data set from each monitoring well in accordance with Attachment B.

ii. If the coefficient of variation is less than or equal to 1.00, the facility may assume a normal data distribution for statistical analysis.

iii. In the event that the coefficient of variation is greater than 1.00, the Permittee may choose to transform the background data in lieu of proposing a non-parametric statistical procedure in accordance with Condition II.E.2.e.iv below. The Permittee must demonstrate that the original non-transformed data are inappropriate for a normal theory test.

iv. If the Permittee determines that the transformed background data does not pass the test described in Condition II.E.2.e.ii above, it must assume that the background data set is not appropriate for normal theory statistical analysis. In this event, the Permittee must submit for Illinois EPA review and approval a proposed statistical procedure that is appropriate for the distribution of the data used to establish background values, and provides a reasonable balance between the probability of falsely identifying a non-contaminating regulated unit and the probability of failing to identify a contaminating unit.

v. The Permittee may submit for Illinois EPA review and approval a proposal for an alternative procedure for evaluation of background data distribution.

3. The facility must reestablish intrawell background values every two (2) years as follows:

Background values must be established for each List G2, G3 and G5 parameter listed in Condition II.E.1 above in each Silurian Dolomite monitoring well listed in Condition II.D.1 above, and each List G2 and G7 parameter listed in Condition II.E.1 above for each Dolton Sand monitoring well listed in Condition II.D.1 above where sampling is required by the notes at the end of Condition II.D.1.

a. The facility must use a data set consisting of the results of the eight (8) most recent sampling events;

b. The facility must utilize the procedures outlined in Conditions II.E.2.a through II.E.2.e above.

c. Recalculated background values must be submitted for Illinois EPA review and approval by July 15 of each odd numbered calendar year beginning with July 15, 2023. This submittal shall include example calculations and shall include, in table form, all groundwater data used in the calculation for each well, the number of pieces of data used to determine the mean, and a list of derived prediction limits.

4. For those parameters and constituents which have not been sampled and analyzed in eight (8) previous sampling events, background values shall be established by the methodology approved by Condition II.E.2 above following four (4) sampling events after the effective date of this Renewal Permit. The results of this determination shall be submitted to the Illinois EPA for review and approval within 90 days from the fourth sampling event.

5. Each of the monitoring wells listed in Condition II.D.1 above shall be sampled semi-annually in accordance with the schedule in Condition II.J.2 below. The groundwater samples collected at each well shall be analyzed for the appropriate Condition II.E.1 constituents indicated by footnotes provided in Condition II.D.1.

6. Alternate concentration limits may be established in accordance with 35 Ill. Adm. Code 724.194(b) where the Permittee can determine a constituent will not pose a substantial hazard to human health and the environment. The alternative concentration limits proposed by the facility must be approved by the Illinois EPA.

F. DETECTION MONITORING PROGRAM

The Permittee shall conduct the Detection Monitoring Program in accordance with Section C of the approved permit application, and in accordance with the following:

1. The Permittee shall collect, preserve, and analyze samples pursuant to Condition II.H below.

2. The Permittee shall determine groundwater quality at each monitoring well identified in Condition II.D.1 semi-annually (as defined in Condition II.J.2 below) during the active life of the Area 4 landfill (including the closure and post-closure care periods), beginning with the effective date of this Permit. The Permittee shall express the groundwater quality data in a form necessary for the determination of statistically significant increases, as described in Condition II.I below. Replicate measurements are not required. Groundwater quality at each well shall be determined by analyzing a sample from the well for the appropriate Condition II.E.1 constituents indicated by footnotes provided in Condition II.D.1.

3. After determination of background water quality, the Permittee shall determine whether there is a statistically significant increase over the background values for each parameter identified in Condition II.E.1 above each time groundwater quality is determined at the point of compliance as required by Condition II.F.2 above. In determining whether such an increase has occurred, the Permittee must compare the groundwater quality at each monitoring well specified in Condition II.D.1 above to the background values in accordance with the statistical procedures specified in Condition II.I below. All activities described in Condition II.I must be completed within the same quarter that the initial sample required by Condition II.F.2 above was collected.

4. The Permittee shall determine the groundwater flow rate and direction in the Silurian Dolomite unit at least annually from the Silurian Dolomite monitoring wells listed in Condition II.D.1.

5. The Permittee shall evaluate the results of the analyses required by Condition II.F.2 above and identify:

   a. The concentration of any Condition II.E.1 List G2, G3, G4, G5, G6 and G7 constituent which is above the appropriate PQL or EQL listed in the approved analytical method(s) specified in Section C of the approved permit application.

   b. The concentration of any constituent detected which was not detected during the previous sampling event.

   c. The concentration of any Condition II.E.1 List G2, G3, G4, G5, G6 and G7 constituent that exhibits a progressive increase over four (4) consecutive sampling events.

6. Originally beginning the 2nd Quarter 2015, and for the 2nd Quarter every five (5) years thereafter, the Permittee must report the concentration of any tentatively identified compound (TIC) detected by laboratory analysis of that monitoring event. This

information must be provided in the report required by Condition II.J.10 below.

7. For any 35 Ill. Adm. Code 724, Appendix I constituent found in the analysis required by Condition II.F.6 above that is not currently included in Condition II.E.1 the Permittee must, within 30 days, resample all of the monitoring wells listed in Condition II.D.1 for the detected constituent. If the results of the second analysis confirm the presence of the constituent in groundwater, the Permittee must follow the procedures of Condition II.J.13 below.

G. GROUNDWATER ELEVATION

1. The Permittee shall determine the groundwater surface elevation referenced to the nearest 0.01 foot MSL at each well each time groundwater is sampled in accordance with Condition II.J.3.

2. The Permittee shall report the surveyed elevation of stick-up, referenced to MSL, when the well is installed (with as-built diagrams) and every two (2) years (during the First or Second Quarter), or at the request of the Illinois EPA, or whenever the elevation changes in accordance with Condition II.J.5.

3. Elevation, as referenced to MSL, of the bottom of each monitoring well (STORET 72020), shall be taken in the event a performance problem is identified with the dedicated pumps found in the monitoring wells, or whenever the downhole equipment is removed from the monitoring well in accordance with Condition II.J.7.

H. SAMPLING AND ANALYTICAL PROCEDURES

The Permittee shall use the following techniques and procedures described in the approved permit application, as modified below, when obtaining and analyzing samples from the groundwater monitoring wells described in Condition II.D.1 above:

1. Samples shall be collected using the techniques described in the approved permit application.

2. Samples shall be preserved, shipped, and handled in accordance with the procedures specified in the approved permit application.

3. Samples shall be analyzed in accordance with the procedures specified in the approved permit application.

4. Samples shall be tracked and controlled using the chain-of-custody procedures specified in the approved permit application.

I. STATISTICAL PROCEDURES

When evaluating the monitoring results in accordance with Section II.F above, the Permittee shall use the following procedures:

1. The groundwater quality for each well shall be collected in accordance with Condition II.H and shall be compared to the background values which were established for that well in accordance with Condition II.E.2 or II.E.3. The value for each parameter shall be compared to the background value established for that parameter at that well.

2. For those constituents identified in Condition II.E.1 which have background values established in accordance with Conditions II.E.2.a and II.E.2.b above, the Permittee shall conduct the following statistical analysis (NOTE: This procedure shall not be used if the coefficient of variation of the background values is greater than 1.00):

   a. The difference between the measured concentration of the constituent in a sample from each well and the background value for that constituent shall be evaluated using prediction limits as described in Attachment B to this permit. If the test indicates the difference is significant at the 0.01 level, the Permittee may resample the monitoring well(s), or the Permittee may choose not to resample and shall conclude that a statistically significant increase has occurred.

   b. If a resample is obtained, it shall be analyzed for the constituent(s) which was (were) initially found to be present in the sample at a value significantly different from its background value. Collection, preservation and analysis of this resample shall be carried out in accordance with Condition II.H. The results of this resample shall be compared to the background value for the constituent, again using the statistical procedure describe in this condition. If the second round of analysis indicated the difference is significant, the Permittee shall conclude that a statistically significant increase has occurred.

3. For those constituents identified in Condition II.E.1 which have background values established in accordance with Condition II.E.2.c above, the Permittee shall conduct the following statistical analysis at each well:

   a. The measured concentration of each of these constituents present in a sample collected from each well shall be compared to the PQL. If, for a given well, (A) the measured concentration of a single constituent is greater than two (2) times the PQL,

or (B) the measured concentration of any two (2) or more of these constituents is greater than the PQL, the Permittee may immediately resample that well(s), or the Permittee may choose not to resample and shall conclude evidence of statistically significant increase has occurred.

b. If a resample is obtained, it shall be analyzed for the constituents detected above the PQL in the initial sample collected and analyzed in accordance with this condition. Collection, preservation and analysis of this sample shall be carried out in accordance with Condition II.H above. The results of this resampling shall again be compared to the PQL's as described in this condition. If the measured concentrations for this resampling fail either of the comparisons, the Permittee shall conclude that a significant change has occurred.

4. For those constituents that have intrawell background values that exceed appropriate 35 Ill. Adm. Code 620 Groundwater Quality Standards (GQSs), the facility shall conduct the following statistical evaluation:

a. The Permittee shall conclude that there has been a statistically significant increase if either of the following has occurred:

i. The measured concentration of the constituent exceeds the background value calculated in accordance with Conditions II.E.2 or II.E.3 above; or

ii. A trend analysis (e.g., Mann-Kendall Trend test or Sen's Trend Estimator) of the ten (10) most recent sampling events indicates a statistically significant increasing trend at the 95% confidence level.

b. If the statistical evaluation required in Condition II.I.4.a. above indicates a statistically significant increase, the facility may immediately resample the monitoring well(s), or the Permittee may choose not to resample and shall conclude that a statistically significant increase has occurred.

c. If a resample is obtained, it shall be analyzed for the constituent(s) that failed the evaluation in Condition II.I.4.a above. Collection, preservation and analysis of the resample shall be carried out in accordance with Condition II.H. above. The results of this resample shall again be evaluated as required by Condition II.I.4a above substituting the resample result for the most recent sampling event. If the resample results again fail the evaluation required by Condition II.I.4.a. the facility must conclude that as statistically significant increase has occurred.

5. Each time samples are collected for the statistical comparisons required by Conditions II.I.2, II.I.3, or II.I.4 above, the Permittee shall prepare lab (trip) blanks in accordance with the procedures described in the approved permit application.

   a. If any volatile organic compound identified in Condition II.E.1 above cause the initial sample from a given well to fail the tests required by Conditions II.I.2, II.I.3, or II.I.4 above, and the constituent(s) is (are) found above the PQL in a field and/or lab blank associated with the collection or analysis of the sample, the Permittee shall immediately resample the well of concern. This sample, taken to verify the concentration of those constituents found in the initial sample, shall be collected, preserved and analyzed in accordance with the procedures set forth in Condition II.H.

      i. Analysis of the resample.

         A. If the constituent found in the blank is statistically evaluated in accordance with Condition II.I.2, the resample shall be analyzed for the constituents which failed the test and were also found in the blanks.

         B. If the constituent found in the blank is statistically evaluated in accordance with Condition II.I.3, the resample shall be analyzed for all the constituents statistically evaluated in accordance with Condition II.I.3.

         C. If the constituent found in the blank is statistically evaluated in accordance with Condition II.I.4, the resample shall be analyzed for all the constituents statistically evaluated in accordance with Condition II.I.4.

      ii. The measured concentration of the constituents in the resample shall be compared to background values in accordance with Conditions II.I.2, II.I.3 and II.I.4 above.

         A. If this comparison passes the tests set forth in Condition II.I.2, II.I.3 and/or II.I.4 above, the Permittee may conclude that no significant increase has occurred for the constituents of concern at the well in question.

         B. If this comparison fails the test set forth in Conditions II.I.2, II.I.3 and/or II.I.4, the Permittee shall immediately collect a "verification sample" in accordance with Conditions II.I.2, II.I.3 and II.I.4.

   b. If the same problem described in Condition II.I.5.a above occurs in the analysis of the "resample" required by Conditions II.I.2, II.I.3 and II.I.4, the Permittee may collect and analyze a verification sample in accordance with Condition II.I.5.a. as modified below:

i. The phrase "resample" shall be substituted for "initial sample."

ii. The verification sample need only be analyzed for those constituents which the "resample" was analyzed for.

iii. If the comparison of the analytical results fails the tests in Conditions II.I.2, II.I.3 and/or II.I.4, the Permittee shall conclude that a significant change has occurred.

c. Chemical and statistical analyses which are not affected by the interpretation of blank data shall not be repeated, except as described above.

J. REPORTING AND RECORDKEEPING

1. The Permittee shall enter all monitoring, testing, and analytical data obtained in accordance with Conditions II.E, II.F, II.G, II.H, and II.I above in the operating record. The data must include all computations, calculated means, variances, prediction limits and statistical or results of statistical tests that the Illinois EPA has determined to be equivalent.

2. Samples collected to meet the requirements of the groundwater monitoring program described in Conditions II.E, II.F, II.G, II.H and II.I shall be collected and reported as identified in the table below. All additional information required by the groundwater monitoring program (as specified in Conditions II.E, II.F, II.G and II.I) shall also be submitted to the Illinois EPA at the address listed in Condition II.D.5 in accordance with this schedule.

Sampling Event of Calendar Year	Samples to be Collected During the Months of	Results Submitted to the Illinois EPA by the Following
Second Quarter	April – June	July 15
Fourth Quarter	October – December	January 15

3. Groundwater surface elevation data, measured pursuant to Condition II.G.1, shall be collected semi-annually and submitted to the Illinois EPA as identified in Condition II.J.2 above.

4. The Permittee shall report the groundwater flow rate and direction in the Silurian Dolomite, as required by Condition II.F.4, by July 15 of each year.

5. The Permittee shall report the surveyed elevation, as required by Condition II.G.2, of the top of the well casing ("stick-up"), referenced to MSL, in accordance with the following schedule:

   a. For wells identified in Condition II.D.1 above, every two (2) years (during the First or Second Quarter), or at the request of the Illinois EPA, or whenever the elevation changes.

   b. For any new wells, at the time of installation and reported in the as-built diagrams. Subsequent measurements shall be made every two (2) years (during the First or Second Quarter) or at the request of the Illinois EPA, or whenever the elevation changes.

6. Elevation of the bottom of each monitoring well identified in Condition II.D.1 referenced to MSL, is to be reported when maintenance activities are conducted in accordance with Condition II.J.7 below. This measurement shall be taken during the first semi-annual sampling event and reported by July 15 of that year.

7. The Permittee shall maintain all equipment associated with groundwater monitoring wells. Dedicated pumps found in monitoring wells identified in Condition III.D.1 must be removed, inspected and repaired, if necessary, every five (5) years. Information regarding the inspection and maintenance of pumps must be reported by July 15 of that year.

8. The Permittee shall submit a completed "RCRA Facility Groundwater, Leachate and Gas Reporting Form" (LPC 592) as a cover sheet for any notices or reports required by the facility's Permit for identification purposes. Only one (1) copy of the LPC 592 must accompany your submittal. However, the Permittee must submit one (1) original and (excluding the groundwater and leachate monitoring results submitted in an electronic format) a minimum of two (2) copies of each notice or report you submit to the Illinois EPA. The form is not to be used for Permit modification requests.

9. Information required by Conditions II.G.3, II.J.2, II.J.3, II.J.5 and II.J.6 must be submitted in an electronic format. The information is to be submitted, as fixed-width text files formatted as found in Attachment A to this permit, in accordance with the schedule in Condition II.J.2 above. Additional guidance regarding the submittal of the information in an electronic format can be found on the Illinois EPA website.

10. In addition to submitting analytical results electronically as required by Condition II.J.9 above, a summary report describing the results of the groundwater sampling event must be submitted after each sampling event in accordance with the schedule found in Condition II.J.2 above. These reports must include, but not be limited to:

a. A description of any problems encountered during the event.

b. A tabulated summary of groundwater and analytical data collected during the sampling event including the appropriate groundwater quality standard, appropriate PQL or EQL, and appropriate derived background value for each parameter.

c. A summary table of groundwater elevations collected during the sampling event and potentiometric map(s) based on that data.

d. Copies of any statistical analysis required to be conducted in accordance with Conditions II.I.2, II.I.3, and II.I.4 above.

e. Information required by Conditions II.F.5, II.F.6, and II.F.7 above.

II. If the Permittee determines, pursuant to Condition II.I above, that there is a statistically significant increase for any of the parameters specified in Condition II.E.1 above at any monitoring well at the compliance point, the Permittee shall:

a. Notify the Illinois EPA in writing indicating what parameters and wells have shown statistical increases and provide all statistical calculations which have been completed This notification shall be submitted to the Illinois EPA within seven (7) days of the date that the increase is discovered.

b. Sample the groundwater in all wells listed in Condition II.D.1 screened within the hydrostratigraphic unit in which the statistically significant increase was identified and determine the concentration of all constituents identified in 35 Ill. Adm. Code 724, Appendix I such that the results will accompany the permit modification required by Condition II.J.11.d below.

c. For any Appendix I compounds found in the analysis pursuant to this condition, the Permittee may resample within one (1) month and repeat the analysis for those compounds detected. If the results of this second analysis confirm the initial results, then these constituents will form the basis for compliance monitoring. If the Permittee does not resample for the compounds pursuant to this condition, the hazardous constituents found during this initial Appendix I analysis will form the basis for compliance monitoring.

d. Within ninety (90) days, submit to the Illinois EPA an application for a permit modification to establish a compliance monitoring program meeting the requirements of 35 Ill. Adm. Code 724.199. The application must include the following information:

i. An identification of the concentration of any 35 Ill. Adm. Code 724, Appendix I constituents found in the groundwater at each monitoring well at the compliance point;

ii. Any proposal changes to the groundwater monitoring system at the facility necessary to meet the requirements of Section 724.199;

iii. Any proposed changes to the monitoring frequency, sampling and analysis procedures, or methods or statistical procedures used at the facility necessary to meet the requirements of Section 724.199; and

iv. For each hazardous constituent found at the compliance point, a proposed concentration limit under 35 Ill. Adm. Code 724.194(a)(1) or 724.194(a)(2), or a notice of intent to seek an alternate concentration limit for a hazardous constituent under 35 Ill. Adm. Code 724.194(b).

e. Submit to the Illinois EPA a corrective action feasibility plan to meet the requirements of 35 Ill. Adm. Code 724.200 unless all hazardous constituents identified under Condition II.J.11.b above are listed in 35 Ill. Adm. Code 724.194 and their concentration do not exceed the respective values given in that table or the Permittee has sought an alternate concentration limit under II.J.11.d.iv above for every hazardous constituents identified under Condition II.J.11.b above.

f. Within 180 days, submit to the Illinois EPA all data necessary to justify any alternate concentration limits for a hazardous constituent sought under Condition II.J.11.d.iv above.

12. If the Permittee determines, pursuant to Condition II.F above, that there is a statistically significant increase above the background values for the parameters specified in Condition II.E.1 above, the Permittee may demonstrate that a source other than a regulated unit caused the increase or that the increase resulted from error in sampling, analysis, or statistical evaluation, or natural variation in groundwater. To make this demonstration, the Permittee shall:

a. Notify the Illinois EPA in writing within seven (7) days of the date that it intends to make a demonstration under 35 Ill. Adm. Code 724.198(g).

b. Within ninety (90) days submit a report to the Illinois EPA which demonstrates that a source other than a regulated unit caused the increase, or that the increase resulted from error in sampling, analysis, or evaluation.

c. Within ninety (90) days submit to the Illinois EPA an application to make any appropriate changes to the detection monitoring program at the facility.

d. Continue to monitor in accordance with the detection monitoring program established under Condition II.F.

13. If the Permittee determines that additional hazardous constituents not currently part of the Groundwater Protection Standard are present in the groundwater, the Permittee shall:

a. Report the concentration of these additional constituents detected in the groundwater to the Illinois EPA within seven (7) days after the receipt of the analytical data from the laboratory, and

b. Within thirty (30) days of the date that the additional constituents are confirmed, submit a Class 1* permit modification request to add the additional constituents to the monitoring list of the Groundwater Protection Standard, Lists G2 through G7 as necessary and establish the concentration limit for each additional constituent following procedures in Condition II.E.2 above.

14. Area 1 RFI activities do not relieve the facility of the responsibility to meet the requirements of 35 Ill. Adm. Code 724.198(g), which among other things, requires the reporting of statistically significant increases for 1,4-dioxane and chloride in Area 4 monitoring wells adjacent to Area 1.

K. REQUEST FOR PERMIT MODIFICATION

1. If the Permittee or the Illinois EPA determines that the detection monitoring program no longer satisfies the requirements of 35 Ill. Adm. Code 724, Subpart F, the Permittee must, within ninety (90) days, submit an application for a permit modification to the Illinois EPA to make any appropriate changes to the program which will satisfy the regulations.

2. Conditions in this section of the permit may be modified in accordance with 35 Ill. Adm. Code 705.128 if there is cause for such modification, as defined in 35 Ill. Adm. Code 702.184. Causes for modification identified in this section include, but are not limited to, alterations to the permitted facility, additional information which would have justified the application of different permit conditions at the time of issuance, and new regulations.

SECTION III
AREA 3 GROUNDWATER CORRECTIVE ACTION PROGRAM

A. SUMMARY

Groundwater contamination has been detected in groundwater monitoring wells in the Dolton Sand and the upper Silurian Dolomite aquifer at Area 3 of the CID-RDF. The groundwater contamination is in the form of light non-aqueous phase liquid (LNAPL), as well as organic constituents at concentrations which exceed the Groundwater Protection Standards established by 35 Ill. Adm. Code 724.192. Therefore, this corrective action program, meeting the requirements of 35 Ill. Adm. Code 724.200, must be implemented at Area 3.

The Area 3 Groundwater Corrective Action Program required by this Permit includes:

1. A Groundwater Management Zone (GMZ), established pursuant to 35 Ill. Adm. Code 620.250, as a three-dimensional region containing groundwater being managed through a corrective action system to mitigate impairment caused by the release of contamination;

2. Extraction of the LNAPL and groundwater contaminated with organic constituents found in the weathered Silurian Dolomite inside the northern portion of the GMZ.

3. Extraction of groundwater contaminated with organic constituents inside the southern portion of the GMZ.

4. Implementation of a phytoremediation system at the southern portion of the GMZ.

5. Monitoring of groundwater to ensure the effectiveness of the Corrective Action System within the GMZ. This monitoring will involve: (a) evaluating the zone of influence of the Corrective Action system; and (b) groundwater sampling and analysis to ensure the reduction of contaminant concentrations.

6. Monitoring of groundwater at uncontaminated wells that are situated at the perimeter of the GMZ. This monitoring system ensures wells located at the perimeter of the GMZ are in compliance with the Groundwater Protection Standard.

7. Monitoring of groundwater at the portions of Area 3 that are not included in the GMZ.

B. DEFINITIONS

1. "Uppermost Aquifer" refers to the geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically connected with this aquifer in the vicinity of the facility. The uppermost aquifer underlying Area 3 has been

identified as a weathered, fractured and/or jointed Silurian dolomite which overlies a bedrock aquitard, and underlies a perched outwash sand unit with minimal hydraulic connection.

2. "GMZ" refers to the three (3) dimensional region containing groundwater being managed to mitigate impairment caused by the release of contaminants from a site.

3. "Point of Compliance" refers to the vertical surface located at the hydraulically downgradient limits of the waste management area (Area 3) extending down into the uppermost aquifer underlying the regulated unit.

4. "Ft – bgs" refers to the number of feet below the ground surface.

5. "Ft-MSL" refers to elevation referenced to mean sea level.

6. "Detected" shall mean a concentration equal to or above the PQL listed in USEPA's SW-846 (Third Edition) or as approved by the Illinois EPA for the applicable analytical methods specified in the approved Sampling and Analysis Procedures, which are incorporated by reference in Condition III.H of the Permit.

7. "Progressive Increase" shall mean an increase in the concentration of a constituent in successive sampling events.

8. "Stick-up" refers to the height of the reference survey datum. This point is determined within ± 0.01 foot in relation to mean sea level, which in turn is established by reference to an established National Geodetic Vertical Datum.

C. IMPLEMENTATION

1. The Permittee shall implement the Corrective Action Program upon the effective date of this Permit. On that date, the corrective action and groundwater monitoring requirements set forth in this Permit shall supersede those previously established in the previous Part B Permit for the facility.

2. The Permittee shall carry out the corrective action monitoring program specified in this Permit on the groundwater beneath the CID-RDF facility in the City of Chicago, Illinois. The uppermost aquifer in the vicinity of the CID-RDF has been identified as a composite zone consisting of a perched outwash sand and gravel, where present and the underlying weathered, fractured and/or jointed Silurian dolomite which lies above a bedrock aquitard.

3. Monitoring wells at the facility are screened in the shallow outwash sand and gravel referred to as the "Dolton Sand", historic overlying fill material, and the deeper dolomite

unit referred to as the "Silurian Dolomite". For the purposes of this Permit and in accordance with 35 Ill. Adm. Code Part 620 regulations: (1) the Dolton Sand has been designated Class II: General Resource Groundwater; and (2) the Silurian Dolomite has been designated Class I: Potable Resource Groundwater. The analytical results obtained from the groundwater monitoring wells shall be compared to the appropriate Class I or Class II concentration limits that comprise the groundwater protection standard found in Condition III.E.1 or to established background values as appropriate.

4. Upon the effective date of this Permit, a GMZ is established as a 3-dimensional region containing groundwater within the previously defined uppermost aquifer pursuant to 35 Ill. Adm. Code 620.250. The GMZ consist of a northern portion and a southern portion. The geographic location of the northern portion of the GMZ is currently bound by monitoring wells H28D, C28D, D28D, R13D, M28D, P28D, and K28D. The geographic location of the southern portion of the GMZ is currently bound on the north by monitoring wells G23DR, G10S, RW8S, G38D, and G25D. The geometry of the GMZ and the corrective action activities conducted within the GMZ may be modified in accordance with Condition III.K.11 below as corrective action activities progress.

5. The GMZ shall apply to the constituents comprising the groundwater protection standard found in Condition III.E.1 below. The GMZ shall remain in place as long as corrective action activities are being conducted in a timely and appropriate manner.

6. The facility must remediate groundwater such that it meets appropriate groundwater quality standards at the Point of Compliance. At this time, the Point of Compliance shall be postponed for the Area 3 GMZ until such time that the GMZ monitoring wells have attained the applicable concentration limits that comprise the groundwater protection standard found in Condition III.E.1 and the GMZ expires. At that time, the CID-RDF facility must submit a proposal for establishment of a point of compliance which satisfies the regulatory requirements found in 35 Ill. Adm. Code 724, Subpart F and reflects the current conditions at the facility.

D. WELL LOCATIONS AND CONSTRUCTION

1. The Permittee shall maintain the groundwater monitoring wells identified in the following table in accordance with the approved permit application to allow for the collection of groundwater samples. The location of these wells is specified in Figures C-2a, C-2b, and C-2c of the approved permit application.

IEPA Well No.	Permittee Well No.	Well Depth (ft.)	Well Depth Elevation (ft. MSL)	Well Screen Interval
List J GMZ Observation Zone Monitoring Wells/LNAPL/Groundwater Extraction Network (GMZ wells located within the area of groundwater contamination)				
G1A1*[M]	A28D	74.7	518.90	528.40-518.90
G1A2*[M]	B28D	82.0	512.51	522.51-512.51
G1A3*[M]	C28D	71.6	521.54	531.54-521.54
G1A4[RM]	D28D	77.6	516.81	526.81-516.41
G1A5*[M]	E28DR	84.4	505.71	515.71-505.71
R1A6*[M]	F28DR	84.6	508.81	518.87-508.81
G1A7*[M]	G29D	88.2	505.24	515.24-505.24
G1B1*[M]	K28D	85.5	503.23	513.23-503.23
G1B2*[M]	L28D	93.8	496.76	506.76-496.76
G601[RE]	RW-1	79.52	511.97	511.97-522.14
G602[RE]	RW-2	84.17	506.58	506.63-516.63
G603[RM]	RW-3	90.9	502.07	512.07-502.07
A24D[O]	A24D	94.1	498.84	508.84-498.84
G36D[M]	G36D	90.7	497.97	507.97-497.97
G37D[M]	G37D	92.8	496.61	506.61-496.61
GU2D[M]	IW302D	89.0	503.44	513.44-503.44
G604[E]	EW1	79.00	509.06	519.56-509.56
G605[E]	EW2	11.50	576.73	583.23-577.23
P106[P]	P6W	13.6	577.12	582.12-577.12
G1C1[P]	RW1S	13.7	578.50	583.50-578.50
G1C2[P]	RW2S	18.0	576.14	586.14-576.14
G1C3[P]	RW3S	10.3	578.18	583.18-578.18
G1C4[P]	RW4S	10.7	579.73	584.73-579.73

List 2 – GMZ Perimeter Monitoring Wells (GMZ wells located outside the area of groundwater contamination)

R13D[M]	R13D	82.3	509.21	519.21-509.21
G1A8*[M]	H28D	71.6	520.74	530.74-520.74
G1B3[M]	M28D	96.3	494.27	504.27-494.27
G1B5[M]	P28D	94.5	495.61	505.61-495.61
G10S[P]	G10S	7.7	581.22	586.22-581.22
G25D[D]	G25D	102.6	488.46	498.46-488.46
G38D[M]	G38D	96.9	495.14	505.14-495.14
R23D[M]	G23DR	69.5	522.45	532.45-522.45
G1C5[P]	RW5S	11.0	579.51	585.51-579.51
R1C6[P]	RW6S	12.5	578.70	583.40-578.70
G1C7[S]	RW7S	11.9	580.99	585.64-580.99
G1C8[P]	RW8S	12.6	579.56	583.99-579.56

List 3 – Area 3 Dolomite Monitoring Wells (Outside the GMZ)

A12D[D]	A12D	54.7	534.65	544.65-534.65
R15D[D]	G15DR	97.7	490.85	495.85-490.85
G1B6[M]	O28D	60.8	529.06	539.06-529.06
G21D[D]	G21D	60.5	530.13	535.13-530.13
R107[D]	G107R	83.0	508.19	517.59-508.19
AW01[D]	AW01	98.9	490.39	500.39-490.39
R16D[D]	R16D	84.3	505.66	515.66-505.66
R26D[D]	G26DR	87.4	502.96	512.96-502.96
R27D[D]	G27DR	89.6	501.96	511.96-501.96

List 4 – Area 3 Dolton Sand Monitoring Wells (Outside the GMZ)

G12S[P]	G12S	7.3	581.21	582.21-581.21
R13S[P]	G13SR	7.6	583.92	588.92-583.92
G14S[P]	G14S	17.3	572.62	573.62-572.62
G15S[P]	G15S	18.1	570.33	571.33-570.33
G16S[P]	G16S	11.8	577.56	578.56-577.56

NOTE:
[E] -- Groundwater extraction well
[M] Analysis of List G1, G2, G3, G4 and G5 parameters in accordance with Condition III.E.1
[D] Analysis of List G1, G2, G3, G4 and G5 parameters in accordance with Condition III.E.1
[P] -- Analysis of List G1 and G2 parameters in accordance with Condition III.E.1
[R] -- Denotes LNAPL recovery well.
[S] -- Denotes monitoring well used only for groundwater elevation measurements

* -- Denotes well to be used for groundwater quality monitoring and supplemental LNAPL recovery.

2. Construction of each new or replacement monitoring well/piezometer must be at a minimum in accordance with the diagram contained in Attachment A to this Permit, unless otherwise approved in writing by the Illinois EPA. All new monitoring wells/piezometers must be continuously sampled and logged on an Illinois EPA boring log and well completion report, as provided in Attachment A unless otherwise approved by the Illinois EPA.

3. The Permittee shall notify the Illinois EPA within thirty (30) days in writing if any of the wells identified in Condition III.D.1 are damaged, the structural integrity has been compromised causing the well not to serve its function or to act as a contaminant pathway A proposal for the replacement of the subject well(s) shall accompany this notification. The well shall not be plugged until the new well is on-line and monitoring data has been obtained and verified, unless the well is extremely damaged and would create a potential route for groundwater contamination.

4. Should any well become consistently dry or unserviceable, a replacement well shall be provided within ten (10) feet of the existing well. This well shall monitor the same zone as the existing well and be constructed in accordance with the current Illinois EPA groundwater monitoring well construction standards at the time that the wells are replaced. A replacement well which is more than ten (10) feet from the existing well and which does not monitor the same geologic zone shall be approved by the Illinois EPA and designated as a new well. If the facility determines that a replacement well will be a dry well, then it must submit for Illinois EPA approval either a proposal to install a new monitoring well or a proposal not to replace the well with appropriate rationale.

5. The Permittee shall submit boring logs, construction diagrams, and data sheets from the installation and development of each new or replacement well to the Illinois EPA at the address below within thirty (30) days of the date that installation of the well is completed. In addition, the Permittee shall submit certification that plugging and abandonment of a well was carried out in accordance with the approved procedures (see Attachment A to this Permit) to the Illinois EPA at the address below within thirty (30) days of the date that the well is plugged and abandoned. All information shall be submitted to the appropriate Agencies.

Illinois Environmental Protection Agency
Bureau of Land -- #33
1021 North Grand Avenue East
Permit Section
Springfield, Illinois 62702

6. All wells/piezometers shall be clearly identified and shall be equipped with protective caps and locks. Monitoring wells or piezometers located in high traffic areas must be protected with bumper guards.

7. All groundwater monitoring wells and piezometers not utilized in the approved groundwater monitoring system, but retained by the facility, must be constructed and maintained in accordance with 77 Ill. Adm. Code 920 regulations. Monitoring wells and piezometers that are improperly constructed must be abandoned in accordance with Attachment A to this Permit.

K. GROUNDWATER PROTECTION STANDARD

1. The following hazardous constituents and concentration limits comprise the groundwater protection standard in the vicinity of the CID-RDF facility. Total (unfiltered) values, derived from the applicable USEPA SW-846 (latest version) or equivalent methods listed in Section C of the approved permit application, will be used for comparison with the concentration limits.

	STORET No.	Units	Concentration Limit Class I	Class II
List G1 – Field Parameters				
pH	00400	standard	6.5-9.0	
Specific Conductance at 25°C	00094	µmhos/cm	--	--
Temperature of Water Sample	00011	Fahrenheit	--	--
Turbidity	00076	NTUs	--	--
Depth to Water (below land surface)	72019	Feet	--	--
Depth to Water (below measuring point)	72109	Ft-bgs	--	--
Elevation of Groundwater Surface	71993	Ft-MSL	--	--
Elevation of Bottom of Well#	72020	Ft-MSL	--	--
Elevation of Measuring Point (Top of Casing) ##	72110	Ft-MSL	--	--

Hazardous Waste Constituents

List G2 – Organics	STORET No.	PQL (µg/L)	Concentration Limit (µg/L)	
			Class I	Class II
Toluene	34010	6	1,000	2,500
Benzene	34030	5	5	25
Ethylbenzene	78113	7.2	700	1,000
Xylene (total)	81551	5	10,000	10,000
BTEX(total)	11750	--	11,705	13,525
1,4-dioxane	81582	5	7.7	7.7
Chlorobenzene	34301	6	100	500
List G3 - Organics				
Naphthalene	34696	10	140	220
Acetone	81552	100	6,300	6,300
bis(2-ethylhexyl)phthalate	39100	6	6	60
Methylene Chloride	34423	5	5	50
1,4-dichlorobenzene	34571	2	25	375
Vinyl Chloride	39175	2	2	10
Fluoranthene	34376	5	280	1400
List G4 – Inorganics (total)				
Chloride, total	00940	1,000	200,000	200,000
List G5 – Inorganics (dissolved)				
Chloride, dissolved	00941	1000	—	—

Shall be determined in accordance with Condition III.G.3
Shall be determined in accordance with Condition III.G.2

2. Alternate concentration limits may be established in accordance with 35 Ill. Adm. Code 724.194 (b) where the Permittee can determine a constituent will not pose a substantial hazard to human health or the environment. The alternate concentration limits proposed by the facility must be approved by the Illinois EPA.

3. The compliance period when the Groundwater Protection Standard applies is the number of years equal to the active life of the waste management area (including any waste management activity prior to permitting and the closure period). The compliance period

at the CID-RDF facility has been defined as 30 years following certification of closure of the Area 3 Landfill.

4. This Corrective Action Program shall continue during the compliance period until the Permittee demonstrates that the LNAPL has been removed to greatest extent practicable, and that the Groundwater Protection Standard has not been exceeded for four (4) consecutive monitoring events. However, if the owner or operator is engaged in a corrective action at the end of the defined compliance period, the compliance period is extended until the owner or operator can demonstrate that the Groundwater Protection Standard has not been exceeded for three (3) consecutive years.

5. The Permittee shall not be relieved of the responsibility to remediate a release that has migrated beyond the facility boundary where off-site access is denied.

F. CORRECTIVE ACTION PROGRAM

The Permittee shall conduct the corrective action program and perform groundwater monitoring detailed in this section, in accordance with the following:

1. List 1, Observation Zone Monitoring Wells/LNAPL/Groundwater Extraction Network

   a. The GMZ Observation Zone monitoring wells identified in Condition III.D.1, List 1 are the wells that comprise the Groundwater Remediation System. The Groundwater Remediation System consists of wells that are used for recovery of LNAPL, contaminated groundwater, and for groundwater quality monitoring when LNAPL is not present. For the northern portion of the GMZ, the Permittee shall implement, at these wells, the corrective measures detailed in Section C.8 of the approved permit application as modified by Illinois EPA Log No. B-27R-M-67. For the southern portion of the GMZ, the Permittee shall implement the corrective measures detailed in the document entitled, "Class 2 Permit Modification", dated May 24, 2013 and additional information to that document dated July 30, 2013, with the following conditions:

      i. Extraction using the LNAPL Extraction System shall begin within thirty (30) days of the effective date of this Permit. Extraction at newly installed extraction wells shall begin within thirty (30) days of the date of installation of the new well.

      ii. The facility must extract LNAPL from each northern GMZ well identified in Condition III.D.1, List 1 on a quarterly basis. LNAPL extraction must be conducted in accordance with the procedures described in Section C.8.3 of the approved permit application.

iii. Written approval in the form of a Class I* Permit Modification must be obtained from the Illinois EPA prior to the installation of additional LNAPL extraction well(s).

iv. LNAPL extraction shall be evaluated quarterly and reported semi-annually in accordance with Conditions III.I.1 and III.K.2 below.

b. The Permittee shall demonstrate the effectiveness of the Corrective Action Program by monitoring the groundwater from the GMZ Observation Zone well network identified in Condition III.D.1, List 1. The effectiveness shall be evaluated in accordance with the procedures described in the approved permit application and the following conditions:

i. Groundwater samples shall be collected semi-annually (2nd and 4th quarters) in accordance with the schedule provided in Condition III.K.2 below and analyzed for List G1, G2, G3, G4 and G5 parameters as identified by the Notes in Condition III.D.1 above. However, if measurable LNAPL is present within a well at the time of a sampling event, the well must be monitored for the presence and thickness of LNAPL in lieu of the above lists.

ii. Wells that exhibit measurable quantities of LNAPL must be recorded as containing free product and are not required to be sampled for pH, specific conductance, water temperature, turbidity, or Lists G2, G3, G4 and G5 parameters during that event. Wells that do not exhibit measurable quantities of LNAPL (i.e., wells with sheens, emulsions or no evidence of free product) must be sampled for pH, specific conductance, water temperature, turbidity, and Lists G2, G3, G4 and G5 parameters, as identified by the Notes to Condition III.D.1 above, during that event.

iii. The volume of LNAPL removed by each well in the LNAPL Extraction System shall be determined quarterly during the time that measurable LNAPL is extracted from the LNAPL Extraction System. If no measurable LNAPL is extracted by the LNAPL Extraction System, the facility shall note that no LNAPL was recovered during this period.

iv. The facility must report the method of LNAPL extraction utilized for each well during each extraction event and the criteria used to determine the extraction method.

v. The volume of groundwater extracted by each well must be reported in accordance with the requirements of Condition III.K.2 below.

vi. Sampling and analytical procedures utilized in the Observation Zone wells shall be in accordance with Condition III.H below.

vii. Statistical analysis of the data collected from Observation Zone wells must be conducted in accordance with Condition III.I.1.a below.

viii. Results of the Observation Zone monitoring and LNAPL/groundwater extraction activities must be reported in accordance with Condition III.K below.

2. Perimeter Wells

a. The Permittee shall determine whether the Groundwater Protection Standard has been exceeded at the GMZ Perimeter (non-impacted) wells. The wells identified in Condition III.D.1, List 2 shall be used for this evaluation. These wells shall be evaluated during the compliance period as follows:

i. Groundwater samples shall be collected semi-annually (2nd and 4th quarters) in accordance with the schedule provided in Condition III.K.2 below and analyzed for Lists G1, G2, G3, G4 and G5 parameters as identified by the Notes in Condition III.D above.

ii. Sampling and analytical procedures shall be in accordance with Condition III.H below.

iii. Statistical analysis of the data collected from the GMZ Perimeter wells must be conducted in accordance with Condition III.I.1.b below.

iv. Results of the GMZ Perimeter well monitoring must be reported in accordance with Condition III.K below.

3. List 3 Area 3 Dolomite Monitoring Wells (Outside the GMZ)

a. The facility must monitor groundwater in the Silurian Dolomite for releases from portions of Area 3 that are not associated with the current GMZ. The wells identified in Condition III.D.1, List 3 shall be used for this evaluation. These wells shall be evaluated during the compliance period as follows:

i. Groundwater samples shall be collected semi-annually (2nd and 4th quarters) in accordance with the schedule provided in Condition III.K.2 below and analyzed for List G1, G2, G3, G4 and G5 parameters identified in Condition III.E above.

ii. Sampling and analytical procedures shall be in accordance with Condition III.H below

iii. Statistical analysis of the data collected from the List 3 – Area 3 Dolomite Monitoring wells must be conducted for the List G2, G3 and G5 parameters in accordance with Conditions III.J below.

iv. Results of the List 3 well monitoring must be reported in accordance with Condition III.K below.

4. List 4 – Area 3 Dolton Sand Monitoring Wells (Outside the GMZ)

a. The facility must monitor groundwater in the Dolton Sand for releases from portions of Area 3 that are not associated with the current GMZ. The wells identified in Condition III.D.1, List 4 shall be used for this evaluation. These wells shall be evaluated during the compliance period as follows:

i. Groundwater samples shall be collected semi-annually (2nd and 4th quarters) in accordance with the schedule provided in Condition III.K.2 below and analyzed for List G1 and G2 parameters identified in Condition III.E above.

ii. Sampling and analytical procedures shall be in accordance with Condition III.H below.

iii. Statistical analysis of the data collected from the List 4 – Area 3 Dolton Sand Monitoring wells must be conducted for the List G2 parameters in accordance with Condition III.J below.

iv. Results of the List 4 well monitoring must be reported in accordance with Condition III.K below.

5. The Permittee shall determine the groundwater flow rate and direction in the Dolton Sand and the Silurian Dolomite at least annually from the wells listed in Condition III.D, Lists 1, 2, 3 and 4. The groundwater flow rate should be reported as a minimum and maximum range.

6. The Permittee shall provide, on a semi-annual basis (2nd and 4th quarters), isoconcentration maps, by monitored zone, of the extent of contamination in groundwater at the corrective action area.

7. The Permittee shall evaluate the effectiveness of the Groundwater Remediation System to hydraulically capture and withdraw the off-site plume of groundwater contamination. This evaluation shall be conducted semi-annually (2nd and 4th quarters). If the evaluation indicates the off-site plume of contamination is not completely captured by the current corrective action system design, the Permittee shall submit within thirty (30) days of the

semi-annual evaluation proper notification or modification request to achieve capture of the groundwater contamination.

8. The Permittee shall evaluate the results of the analyses required by Conditions III.F.1, III.F.2, III.F.3 and III.F.4 above, excluding the List G1 parameters, and identify:

   a. The concentration of any constituent listed in Condition III.E.1 which is above the appropriate PQL or EQL listed in the approved analytical method(s) specified in Section C of the approved permit application.

   b. The concentration of any constituent detected which was not detected during the previous sampling event.

   c. The concentration of any constituent that exhibits a progressive increase over four (4) consecutive sampling events.

9. Originally beginning the 2nd Quarter 2015, and for the 2nd Quarter every five (5) years thereafter, the Permittee must report the concentration of any tentatively identified compound (TIC) detected by laboratory analysis of that monitoring event. This information must be provided in the report required by Condition III.K.10 below.

10. For any 35 Ill. Adm. Code 724, Appendix I constituent found in the analysis required by Condition III.F.8 above that is not currently included in Condition III.E.1 the Permittee must, within 30 days, resample all of the monitoring wells listed in Condition III.D.1 for the detected constituent. If the results of the second analysis confirm the presence of the constituent in groundwater, the Permittee must follow the procedures of Condition III.K.13 below.

G. GROUNDWATER ELEVATION

1. The Permittee shall determine the groundwater surface elevation referenced to the nearest 0.01 foot MSL at each well each time groundwater is sampled in accordance with Condition III.K.3.

2. The Permittee shall report the surveyed elevation of stick-up, referenced to MSL, when the well is installed (with as-built diagrams) and every two (2) years (during the First or Second Quarter), or at the request of the Illinois EPA, or whenever the elevation changes in accordance with Condition III.K.5.

3. Elevation, as referenced to MSL, of the bottom of each monitoring well (STORET 72020), shall be taken in the event a performance problem is identified with the dedicated pumps found in the monitoring wells. Additionally, the elevation of the bottom of each

monitoring well shall be taken whenever the downhole equipment is removed from the monitoring well.

H. SAMPLING AND ANALYSIS PROCEDURES

The Permittee shall use the techniques and procedures described in approved permit application when obtaining samples from the groundwater monitoring wells described in Condition III.D.1 above with the following conditions:

1. Samples shall be collected by the techniques described in the approved permit application.
2. Samples shall be preserved, shipped, and handled in accordance with the procedures specified in the approved permit application.
3. Samples shall be analyzed according to the procedures specified in the approved permit application.
4. Samples shall be tracked and controlled using the chain-of-custody procedures specified in the approved permit application.

I. STATISTICAL PROCEDURES FOR THE GMZ MONITORING WELLS

To determine the effectiveness of the corrective action system in reducing the concentration of contaminants within the GMZ the facility must conduct the following activities:

1. The Permittee shall evaluate the quality of groundwater samples acquired during the semi-annual sampling events identified below in Condition III.K.2.
    a. List 1 GMZ Observation Zone wells shall be evaluated according to the following procedures:
        i. When measurable LNAPL is present, LNAPL thickness and elevation referenced to feet MSL for each well must be tabulated and graphed to indicate historical trends.
        ii. Measurable LNAPL/groundwater volume recovered from each recovery well must be tabulated and graphed to indicate historical trends.
        iii. Concentrations of each List G2, G3 and G5 parameter analyzed in accordance with Condition III.F.1.b at each well must be tabulated and graphed to indicate historical trends.

iv. The results of Observation Zone analyses must be reported in accordance with Condition III.K.2.

b. List 2 GMZ Perimeter wells shall be evaluated according to the following procedures:

i. The concentration of each List G2, G3 and G4 parameter shall be compared to its PQL and its respective Concentration Limit. If a List G2, G3 or G4 constituent is found to exceed the appropriate concentration limit(s) in the sample collected from the well, the Permittee may resample within thirty (30) days. If the Permittee chooses not to resample, it shall conclude that a statistically significant increase has occurred and follow the procedures in Conditions III.K.11 or III.K.12.

ii. If the Permittee chooses to resample, it must repeat the analysis for those compounds detected. Collection preservation and analysis of this resample shall be carried out in accordance with Condition III.H. If the second round of analysis indicates an exceedance of appropriate concentration limit(s), the Permittee shall conclude that a statistically significant increase has occurred and shall follow the procedures specified in Conditions III.K.11 or III.K.12.

iii. Constituents detected below the PQL shall be determined to be showing no change and no action is necessary.

iv. Constituents detected above the PQL shall be plotted on graphs which show historical concentration versus time. Plots indicating statistically significant increasing trends shall be reported, in accordance with Condition III.K.14 below, as a potential area of increasing contamination. The trend analysis must be based on data from a minimum of four (4) and a maximum of the ten (10) most recent consecutive sampling events and use of an appropriate trend test (e.g. Mann-Kendall Trend Test or Sen's Trend Estimator) of the 95% confidence level. In addition, this report shall contain an evaluation as to whether the corrective actions are operating effectively and whether adjustments or additional remedial actions are necessary based on this trend.

v. If the Permittee determines at any time that free product is present in any GMZ Perimeter well listed in Condition III.D.1, List 2, it must be reported and addressed in accordance with Condition III.K.11 and III.K.12 below.

J. STATISTICAL PROCEDURES FOR THE AREA 3 MONITORING WELLS OUTSIDE THE GMZ

To monitor for releases of contamination to groundwater underlying Area 3 that are not associated with the GMZ, the facility must conduct the following activities:

1. The background values established for the purpose of intrawell statistical analysis for the groundwater parameters monitored at the List 3 and List 4 monitoring wells listed in Condition III.D.1 above, shall initially be established from the historical groundwater data from the initial sampling of each monitoring well under the initial RCRA Part B Permit (1988) to the Fourth Quarter 2006. This may include data from original monitoring wells and replacement wells as appropriate. The parameters for which background values must be established at the List 3 wells include the List G2, G3 and G5 parameters. The parameters monitored at the List 4 wells for which background values must be established include the List G2 parameters.

2. The background values established for the purpose of intrawell statistical analysis, shall be established from the background data set, utilizing the following procedures. This submittal shall include example calculations and shall include, in table form, all groundwater data used in the calculation for each well, the number of pieces of data used to determine the mean, and a list of derived prediction limits.

   a. For those parameters or constituents which are found to be above the PQL in 85-100 percent of the background data set, the background values for that parameter or constituent shall be calculated using the methodology described in Attachment B, Page 1. The facility must utilize a value of one half the PQL for non-detect results included in the data set.

   b. For the parameters or constituents which are found to be above the PQL in 50-85 percent of the background data set, the background values for that parameter shall be calculated using methodology described in Attachment B, Page 2 or 5 as appropriate.

   c. For those parameters or constituents in the background data set which do not meet the requirements of Conditions III.J.2.a or III.J.2.b above, the average background value shall be set at the PQL as shown in Condition III.E.1 above.

   d. Sampling and analytical procedures utilized to establish background values shall be in accordance with Condition III.H.

   e. The Permittee must determine the distribution of the background data set for each parameter that meets the requirements of III.J.2.a and III.J.2.b above.

      i. The Permittee must calculate a coefficient of variation for the background data set from each monitoring well in accordance with Attachment B.

      ii. If the coefficient of variation is less than or equal to 1.00, the facility may assume a normal data distribution for statistical analysis.

iii. In the event that the coefficient of variation is greater than 1.00, the Permittee may choose to transform the background data in lieu of proposing a non-parametric statistical procedure in accordance with Condition III.J.2.e.iv below. The Permittee must demonstrate that the original non-transformed data are inappropriate for a normal theory test.

iv. If the Permittee determines that the transformed background data does not pass the test described in Condition III.J.2.e.ii above, it must assume that the background data set is not appropriate for normal theory statistical analysis. In this event, the Permittee must submit for Illinois EPA review and approval a proposed statistical procedure that is appropriate for the distribution of the data used to establish background values, and provides a reasonable balance between the probability of falsely identifying a non-contaminating regulated unit and the probability of failing to identify a contaminating unit.

v. The Permittee may submit for Illinois EPA review and approval a proposal for an alternative procedure for evaluation of background data distribution.

3. The facility must reestablish intrawell background values at the List 3 and List 4 monitoring wells every two (2) years as follows:

   a. The parameters for which background values must be established at the List 3 wells include the List G2, G3 and G5 parameters. The parameters monitored at the List 4 wells for which background values must be established include the List G2 parameters.

   b. The facility must use a data set consisting of the results of the eight (8) most recent sampling events.

   c. The facility must utilize the procedures outlined in Conditions III.J.2.a through II.J.2.e above.

   d. Recalculated background values must be submitted for Illinois EPA review and approval by July 15 of each odd numbered calendar year beginning with July 15, 2023. This submittal shall include example calculations and shall include, in table form, all groundwater data used in the calculation for each well, the number of pieces of data used to determine the mean, and a list of derived prediction limits.

4. For those parameters and constituents which have not been sampled and analyzed in eight (8) previous sampling events, background values shall be established by the methodology approved by Condition III.J.2 above following four (4) sampling events after the effective date of this Permit. The results of this determination shall be submitted to the Illinois EPA for review and approval within 90 days from the fourth sampling event.

5. Each of the List 3 and List 4 monitoring wells in Condition III.D.1 above shall be sampled semi-annually in accordance with the schedule in Condition III.K.2 below. The semi-annual sampling events must be conducted during the Second and Fourth Quarters of each calendar year during the compliance period.

6. The groundwater quality for each List 3 and List 4 monitoring well shall be collected in accordance with Condition III.H and shall be compared to the background values which were established for that well in accordance with Condition III.J.2 or III.J.3. The value for each parameter shall be compared to the background value established for that parameter at that well.

7 For those constituents identified in Condition III.E.1 which have background values established in accordance with Conditions III.J.2.a and III.J.2.b above, the Permittee shall conduct the following statistical analysis (NOTE: This procedure shall not be used if the coefficient of variation of the background values is greater than 1.00):

   a. The difference between the measured concentration of the constituent in a sample from each well and the background value for that constituent shall be evaluated using prediction limits as described in Attachment B to this permit. If the test indicates the difference is significant at the 0.01 level, the Permittee may resample the monitoring well(s), or the Permittee may choose not to resample and shall conclude that a statistically significant increase has occurred.

   b. If a resample is obtained, it shall be analyzed for the constituent(s) which was (were) initially found to be present in the sample at a value significantly different from its background value. Collection, preservation and analysis of this resample shall be carried out in accordance with Condition III.H. The results of this resample shall be compared to the background value for the constituent, again using the statistical procedure describe in this condition. If the second round of analysis indicated the difference is significant, the Permittee shall conclude that a statistically significant increase has occurred.

8. For those constituents identified in Condition III.E.1 which have background values established in accordance with Condition III.J.2.c above, the Permittee shall conduct the following statistical analysis at each well:

   a. The measured concentration of each of these constituents present in a sample collected from each well shall be compared to the PQL. If, for a given well, (A) the measured concentration of a single constituent is greater than two (2) times the PQL, or (B) the measured concentration of any two (2) or more of these constituents is greater than the PQL, the Permittee may immediately resample from that well(s), or the Permittee may choose not to resample and shall conclude evidence of statistically significant increase has occurred.

b. If a resample is obtained, it shall be analyzed for the constituents detected above the PQL in the initial sample collected and analyzed in accordance with this condition. Collection, preservation and analysis of this sample shall be carried out in accordance with Condition III.H above. The results of this resampling shall again be compared to the PQLs as described in this condition. If the measured concentrations for this resampling fail either of the comparisons, the Permittee shall conclude that a significant change has occurred.

9. For those constituents that have intrawell background values that exceed appropriate 35 Ill. Adm. Code 620 Groundwater Quality Standards (GQSs), the facility shall conduct the following statistical evaluation:

   a. The Permittee shall conclude that there has been a statistically significant increase if any one of the following has occurred:

      i. The measured concentration of the constituent exceeds the intrawell background value calculated in accordance with Conditions III.J.1, III.J.2, or III.J.3 above; or

      ii. A trend analysis (e.g., Mann-Kendall Trend test or Sen's Trend Estimator) of the ten most recent sampling events indicates a statistically significant increasing trend at the 95% confidence level.

   b. If the statistical evaluation required in Condition III.J.9.a above indicates a statistically significant increase, the facility may immediately resample the monitoring well(s), or the Permittee may choose not to resample and shall conclude that a statistically significant increase has occurred.

   c. If a resample is obtained, it shall be analyzed for the constituent(s) that failed the evaluation in Condition III.J.9.a above. Collection, preservation and analysis of the resample shall be carried out in accordance with Condition III.H. above. The results of this resample shall again be evaluated as required by Condition III.J.9.a above substituting the resample result for the most recent sampling event. If the resample results again fail the evaluation required by Condition III.J.9.a, the facility must conclude that as statistically significant increase has occurred.

10. Each time samples are collected for the statistical comparisons required by Conditions III.J.7, III.J.8 or III.J.9 above, the Permittee shall prepare lab (trip) blanks in accordance with the procedures described in the approved permit application.

   a. If any volatile organic compound identified in Condition III.E.1 above cause the initial sample from a given well to fail the tests required by Conditions III.J.7 or III.J.8 above, and the constituent(s) is (are) found above the PQL in a field and/or lab blank associated with the collection or analysis of the sample, the Permittee shall

immediately resample the well of concern. This sample, taken to verify the concentration of those constituents found in the initial sample, shall be collected, preserved and analyzed in accordance with the procedures set forth in Condition III.H.

i. Analysis of the resample

A. If the constituent found in the blank is statistically evaluated in accordance with Condition III.J.7, the resample shall be analyzed for the constituents which failed the test and were also found in the blanks.

B. If the constituent found in the blank is statistically evaluated in accordance with Condition III.J.8, the resample shall be analyzed for all the constituents statistically evaluated in accordance with Condition III.J.8.

C. If the constituent found in the blank is statistically evaluated in accordance with Condition III.J.9, the resample shall be analyzed for the constituents statistically evaluated in accordance with Condition III.J.9.

ii. The measured concentration of the constituents in the resample shall be compared to background values in accordance with Conditions III.J.7, III.J.8, and III.J.9 above.

A. If this comparison passes the tests set forth in Condition III.J.7, III.J.8 and/or III.J.9 above, the Permittee may conclude that no significant increase has occurred for the constituents of concern at the well in question.

B. If this comparison fails the test set forth in Conditions III.J.7, III.J.8 and/or III.J.9, the Permittee shall immediately collect a "verification sample" in accordance with Conditions III.J.7, III.J.8 and III.J.9.

b. If the same problem described in Condition III.J.10.a above occurs in the analysis of the "resample" required by Conditions III.J.7, III.J.8, and III.J.9, the Permittee may collect and analyze a verification sample in accordance with Condition III.J.10.a as modified below:

i. The phrase "resample" shall be substituted for "initial sample."

ii. The verification sample need only be analyzed for those constituents which the "resample" was analyzed for.

iii. If the comparison of the analytical results fails the tests in Conditions III.J.7, III.J.8 and/or III.J.9, the Permittee shall conclude that a significant change has occurred.

c. Chemical and statistical analyses which are not affected by the interpretation of blank data shall not be repeated, except as described above.

K. REPORTING AND RECORDKEEPING

1. The Permittee shall enter all monitoring, testing and analytical data obtained in accordance with Conditions III.E, III.F, III.G, III.H, III.I and III.J into the operating record. The data must include all computations, calculated means, variance, prediction limits, and statistical or results of statistical tests that the Illinois EPA has determined to be equivalent.

2. Samples collected to meet the requirements of the groundwater monitoring described in Conditions III.E, III.F, III.G, III.H, III.I and III.J shall be collected and reported as identified in the table below. All additional information required by the groundwater monitoring program (as specified in Conditions III.E, III.F, III.G, III.H, III.I and III.J) shall also be submitted to the Illinois EPA at the address listed in Condition III.D.5 in accordance with this schedule.

Sampling Event of Calendar Year*	Samples to be Collected in the Months of	Results Submitted to the Illinois EPA by the Following
Second Quarter	April-June	July 15
Fourth Quarter	October-December	January 15

Note: Quarterly LNAPL extraction results and evaluations must be submitted semi-annually. First and second quarter LNAPL results and evaluations are to accompany the report due July 15; third and fourth quarter LNAPL results and evaluations are to accompany the report due January 15.

3. Groundwater surface elevation data, measured pursuant to Condition III.G.1, shall be collected and submitted to the Illinois EPA as identified in Condition III.K.2 above.

4. The Permittee shall report the groundwater flow rate and direction in the Dolton Sand and the Silurian Dolomite, as required by Condition III.F.5 by July 15 of each year.

5. The Permittee shall report the surveyed elevation, as required by Condition III.G.2, of the top of the well casing ("stick-up"), referenced to MSL, in accordance with the following schedule:

a. For wells identified in Condition III.D.1 above, every two (2) years (during the First or Second quarter), or at the request of the Illinois EPA, or whenever the elevation changes.

b. For any new wells, at the time of installation and reported in the as-built diagrams. Subsequent measurements shall be made every two (2) years (during the First or Second quarter), or at the request of the Illinois EPA, or whenever the elevation changes.

6. Elevation of the bottom of each monitoring well identified in Condition III.D.1 referenced to MSL, is to be reported when maintenance activities are conducted in accordance with Condition III.K.7 below. This measurement shall be taken during the first semi-annual sampling event and reported by July 15 of that year.

7. The Permittee shall maintain all equipment associated with groundwater monitoring wells Dedicated pumps found in monitoring wells identified in Condition III.D.1 must be removed, inspected and repaired if necessary every five (5) years. Information regarding the inspection and maintenance of pumps must be reported by July 15 of that year.

8. The Permittee shall submit a completed "RCRA Facility Groundwater, Leachate and Gas Reporting Form" (LPC 592) as a cover sheet for any notices or reports required by the facility's Permit for identification purposes. Only one (1) copy of the LPC 592 must accompany your submittal. However, the Permittee must submit one (1) original and (excluding the groundwater and leachate monitoring results submitted in an electronic format) a minimum of two (2) copies of each notice or report submitted to the Illinois EPA. The form is not to be used for Permit modification requests.

9. Information required by Conditions III.F above must be submitted in an electronic format. The information is to be submitted, as fixed-width text files formatted as found in Attachment A to this Permit, in accordance with the schedule in Condition III.K.2 above. Additional guidance regarding the submittal of the information in an electronic format can be found on the Illinois EPA website.

10. In addition to submitting analytical results electronically as required by Condition III.K.9 above, a summary report describing the results of the groundwater sampling event must be submitted after each sampling event in accordance with the schedule found in Condition III.K.2 above. These reports must include, but not be limited to:

a. A description of any problems encountered during the event.

b. A tabulated summary of groundwater and analytical data collected during the sampling event including the appropriate groundwater quality standard, appropriate PQL, and appropriate derived background value for each parameter.

c. A summary table of groundwater elevations collected during the sampling event and potentiometric map(s) based on that data.

d. Copies of any statistical analysis required to be conducted in accordance with Conditions III.I and III.J.

e. Information required by Condition III.F.6, III.F.7, III.F.8, III.F.9 and III.F.10 above.

11. If the Permittee determines pursuant to Condition III.I.1.b above that any Concentration Limits specified in the Groundwater Protection Standard are being exceeded at any monitoring well within the List 2 GMZ Perimeter wells, or pursuant to Condition III.J.6 that a statistically significant increase has occurred in any of the List 3 Dolomite or List 4 Dolton Sand monitoring wells, the Permittee shall:

a. Notify the Illinois EPA of this finding in writing within seven (7) days. The notification must indicate what exceedances have been observed.

b. Within 90 days of the date that the increase is discovered, submit to the Illinois EPA a request for modification to the Corrective Action Program to meet the requirements of 35 Ill. Adm. Code 724.200. The application must at a minimum include the following information:

i. A detailed description of corrective actions that will achieve compliance with the Groundwater Protection Standard.

ii. A plan for a groundwater monitoring program that will demonstrate the effectiveness of the corrective action. Such a groundwater monitoring program may be based on a compliance monitoring program.

12. If the Permittee determines, pursuant to Condition III.I.1.b that the groundwater Concentration Limits in Condition III.E are being exceeded at any GMZ Perimeter well, or that a statistically significant increase has occurred in any of the List 3 Dolomite or List 4 Dolton Sand monitoring wells, the Permittee may demonstrate that a source other than a regulated unit caused the contamination or that the detection is an artifact caused by an error in sampling, analysis or statistical evaluation, or natural variation in groundwater. In making a demonstration under this condition, the Permittee shall:

a. Notify the Illinois EPA in writing within seven (7) days of the date that the increase is discovered that they intend to make this demonstration under this condition;

b. Within ninety (90) days, submit a report to the Illinois EPA, which demonstrates that a source other than a regulated unit caused the increase, or that the increase resulted from an error in sampling analysis or evaluation;

c. Within ninety (90) days, submit to the Illinois EPA an application to make any appropriate changes to the corrective action monitoring program at the facility; and

d. Continue to monitor in accordance with Condition III.F.

13. If the Permittee determines that additional constituents not currently part of the Groundwater Protection Standard are present in the groundwater, the Permittee shall:

a. Report the concentration of these additional constituents detected in the groundwater to the Illinois EPA within seven (7) days of receipt of the analytical data from the laboratory; and

b. Within thirty (30) days of the date that the additional constituents are confirmed, submit a permit modification request to add the additional constituents to the monitoring list of the Groundwater Protection Standard, Lists G2 and G3 and establish the concentration limit for each additional constituent following procedures in Condition III.J.2 above.

14. The Permittee shall submit a written report to the Illinois EPA annually which discusses the effectiveness of the Corrective Action Program and place it in the operating record for the facility. The report must be submitted by July 15 of each year that the Corrective Action Program is in effect. At a minimum, the report must:

a. Present a detailed summary of the information requirements in Conditions III.E, III.F, III.G, III.H, III.I and III.J presented during the previous calendar year;

b. Evaluate the effectiveness of the hydraulic control and contaminant removal from the Groundwater Remediation System; and

c. Provide recommendations for the Corrective Action Program based on the information provided in III.K.14.a and III.K.14.b above.

d. This annual report may also be used to fulfill the Second Quarter reporting requirements listed in Conditions II.J.10 and III.K.10, provided that all information required by Conditions II.J.10 and III.K.10 is included.

15. In accordance with 35 Ill. Adm. Code 620.250(c), a review of the GMZ must take place no less often than every five (5) years and the results shall be presented to the Illinois EPA in a written report. The most recent review was approved by permit modification B-27R-

M-87 dated March 23, 2020. The next GMZ review must be submitted to the Illinois EPA by March 31, 2025.

L. REQUEST FOR PERMIT MODIFICATION

1. If the Permittee or the Illinois EPA determines that the corrective action program no longer satisfies the requirements of 35 Ill. Adm. Code 724, Subpart F, the Permittee must, within ninety (90) days, submit an application for a permit modification to make any appropriate changes to the program which will satisfy the regulations.

2. Conditions in this section of this Permit may be modified in accordance with 35 Ill. Adm. Code 705.128 if there is cause for such modification, as defined in 35 Ill. Adm. Code 702.184. Causes for modification identified in this section include, but are not limited to, alteration to the permitted facility, additional information which would have justified the application of different permit conditions at the time of issuance, and new regulations.

SECTION IV:
CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

A. INTRODUCTION

1. In accordance with Section 3004(u) of RCRA and 35 Ill. Adm. Code 724.201, the Permittee shall institute such corrective action as necessary to protect human health and the environment from all releases of hazardous wastes or hazardous waste constituents from any solid waste management unit (SWMU) at its facility in Calumet City, Illinois. This section contains the conditions which must be followed to ensure these requirements are met.

2. The Illinois EPA may include restrictions upon the future use of Area 1 and Area 2 if necessary, to protect public health and the environment, including permanent prohibition of the use of Area 1 and Area 2 for purposes which may create an unreasonable risk of injury to human health or the environment. After any administrative and judicial challenges to such restrictions have been exhausted, the Illinois EPA shall file such restrictions of record in the Office of the Recorder of the county in which the waste disposal site is located.

3. The Permittee shall not allow the property where Area 1 and Area 2 are located to be used in a way that could disturb the integrity of the final cover, liners, any components of the containment system, or function of the facility's monitoring systems, unless the Illinois EPA finds, by way of a permit modification, that such use is necessary for either of the following reasons:

    a. It is necessary to the proposed use of the property, and will not increase the potential hazard to public health or the environment, or

    b. It is necessary to reduce a threat to human health or the environment.

4. The original USEPA RCRA permit, issued March 4, 1988, contained, among other things, corrective action requirements for SWMUs at the facility. A summary of the corrective action activities completed under the initial RCRA permit overseen by USEPA is provided in Section IV.C below. This summary also discusses completed closure efforts at several former hazardous waste management units at the facility. The Permittee has implemented corrective measures, which will be maintained and monitored under this permit.

5. The Illinois EPA now has authority for imposing corrective action requirements at RCRA permitted facilities and thus will now be responsible for overseeing future corrective

action activities at this facility.

6. The Permittee must provide corrective action, as appropriate, for: (1) any newly discovered SWMUs; or (2) future releases from existing SWMUs.

7. The requirements of 35 Ill. Adm. Code 620 and 742 must be met, when applicable, in establishing remediation objectives for corrective action. In addition, all corrective action efforts must meet the requirements of 35 Ill. Adm. Code 724.201.

8. All Illinois EPA final decisions regarding RCRA corrective action at this facility are subject to the appeal provisions of Sections 39(a) and 40(a) of the Illinois Environmental Protection Act.

B. CORRECTIVE ACTION REQUIREMENTS

1. Groundwater contamination has been detected in groundwater monitoring wells in the Dolton Sand and the upper Silurian Dolomite aquifer at Area 3 of the CID-RDF. The groundwater contamination is in the form of light non-aqueous phase liquid (LNAPL), as well as organic constituents at concentrations which exceed the Groundwater Protection Standards established by 35 Ill. Adm. Code 724.192. A corrective action program, meeting the requirements of 35 Ill. Adm. Code 724.200, has been implemented at Area 3. Detailed information about this program may be found in Section III of this permit.

2. Corrective measures have been completed at two SWMUs. These units, which must be monitored and maintained, are Areas 1 and 2 landfills. Section IV.C to this permit contains a summary of corrective action activities completed at these SWMUs.

3. A summary of the approved corrective action program for the SWMUs still of concern (the Areas 1 and 2 landfills) consists of:

   a. operation and maintenance of a landfill gas management system for the Area 1 landfill;

   b. operation and maintenance of a leachate management system for each landfill;

   c. inspecting/maintaining the final cover of each landfill.

   The monitoring and maintenance program for Areas 1 and 2 landfills shall be in accordance with the approved operating and maintenance plan for the Areas 1 and 2 landfills found in Appendix F-5 of the approved permit application.

4. Based on the current groundwater conditions at the facility and the requirements of the October 29, 1997 USEPA letter, the Illinois EPA has determined that groundwater monitoring of the Areas 1 and 2 landfills will continue to be accomplished via the groundwater monitoring programs for the Areas 3 and 4 landfills. The Illinois EPA reserves the right to require the installation of additional groundwater monitoring wells, as well as implementation of groundwater monitoring programs specific to the Area 1 and/or Area 2 landfill, in the event that groundwater flow conditions change or groundwater contamination has been determined to be present in the vicinity of those landfills.

5. Leachate maintenance elevations for seven Area 1 leachate trench risers (PLC-184 through PLC-190) and eleven Area 2 leachate trench risers (PLC-270 through PLC-280) are based on quarterly measurement of groundwater elevations at seven piezometers located around Area 1 (P-1 and P-2) and Area 2 (P-3E, P-4E, P-5E, P-6W, and P-7W) screened in the Dolton Sand. Leachate maintenance elevations are established relative to groundwater elevations in the Dolton Sand because both Areas 1 and 2 are surrounded by slurry walls and an inward gradient across each slurry wall is integral to the approved corrective action. Maintenance elevations are defined as 1 foot below the average groundwater elevation in the Dolton Sand and are measured quarterly.

6. The Permittee must record the leachate level in all wells at the Area 1 landfill (gas and leachate) on a monthly basis and submit the results electronically with their quarterly reports to the Illinois EPA.

7. An annual report shall be submitted to the Illinois EPA by February 1 of each year (for the preceding calendar year). This report shall document the dates of inspections, problems discovered, and actions completed to remedy any problems. This report shall also contain an evaluation of the leachate collection efforts at Area 1 landfill including recommendations, as appropriate, to modify the leachate management system to reduce the amount of leachate in the landfill so that it has minimal impact on the groundwater beneath and around Area 1.

8. The Permittee may modify the approved plans and programs set forth in this subsection; such modifications must first be approved by the Illinois EPA. Requests to modify the approved plans and programs set forth in the subsection must be submitted as requests to modify the approved corrective action program for Areas 1 and 2.

9. The Plat of Survey for the Area 1 landfill (PIN No. 29-01-100-008-0000, 29-01-200-010-0000 and 29-01-201-001-0000) and Area 2 landfill (PIN No. 25-36-300-002-0000 and 25 36-300-003-0000), Drawing No. 19-R0710, was filed with the Cook County Recorder's Office in Chicago, IL on July 19, 2019. The record data is Document No. 1920006110.

The Plat of Survey was attached to the deed to the property and serves as an instrument which is normally examined during title search that will in perpetuity notify any potential purchasers of the property that:

a. The property has been used to manage hazardous wastes;

b. The use of the property is restricted under 35 Ill. Adm. Code, Part 724, Subpart G;

c. A survey plat and record of the type of waste material in the Area 1 landfill and Area 2 landfill was filed with the Illinois EPA and the County Recorder.

C. CORRECTIVE ACTION EFFORTS COMPLETED TO DATE

The Permittee performed corrective action activities with oversight from the USEPA for Area 1 and Area 2 landfills. In a letter dated October 29, 1997, USEPA determined no additional remediation activities were required for Area 1 and Area 2 landfills. As part of the RCRA corrective action program, the Permittee conducted corrective measures to prevent releases that may occur to the Dolton Sand layer adjacent to the closed Areas 1 and 2 landfills. The USEPA and Illinois EPA have determined that corrective measures are complete. Continued monitoring of the groundwater, landfill gas management system, leachate management system and final cover for the Areas 1 and 2 landfills will be required.

Corrective measures for the Dolton Sand included construction of a slurry wall along the boundaries of Area 1 and 2 landfills. Additional corrective measures at Areas 1 and 2 landfills included: (1) installation of a leachate collection system inside the slurry wall; (2) upgrading the Landfill Gas Removal System; and (3) repair, regrading, reseeding and maintenance of the final cover for Areas 1 and 2 landfills.

The following table is a list of former hazardous waste management units (HWMU) at the facility, and thus solid waste management unit, which have been clean closed in accordance with plans approved by Illinois EPA and which need no further action.

Name of HWMU	Description
Pug Mill	This unit was used between 1980 and February 1987 for acid neutralization and solidification of liquid hazardous wastes. Illinois EPA approved certification of closure for the Pug Mill on March 27, 1992 (Illinois EPA Log No. C-317).
Drum Tipping Unit	This unit was a hydraulically operated table-like unit housed in a small roofed structure, which transferred liquid waste from drums into bulk containers for subsequent treatment, processing or disposal. Illinois EPA approved certification of closure for the

Name of HWMU	Description
	Drum Tipping Unit on June 8, 1989 (Illinois EPA Log No. C-317-M-1).
Surface Impoundments	These units were operated for storage of acidic, metal-bearing waste prior to treatment. They were referred to as the 'North Pond', the 'South Pond', the 'East Pond', and the 'West Pond'. These units were closed in accordance with a plan approved by Illinois EPA (Log No. C-317 and associated modifications). Certification of closure of these units was accepted by Illinois EPA on August 24, 2005 (Log No. C-317).
Dewatering Plant	Certified closed on July 29, 1991. IEPA acknowledged closure of this on December 7, 1999 (Log No B-27-M-73, 81, 83) by removing the tanks associated with this plant from the facility's RCRA Permit.
Drum Storage Building	Certified closed on June 14, 1995 (IEPA Log No. B-27-M-54).
Stabilization Facility	Certified closed on December 7, 1999 (IEPA Log No. B-27-M-73).
Container Storage Area	Certified closed January 13, 2005 (IEPA Log No. PS04-169).

D. GROUNDWATER SPECIFIC CORRECTIVE ACTION

1,4-dioxane has been detected in the shallow and deep groundwater present between the Area 1 and 4 landfills. A plan to investigate this contamination in the shallow groundwater, which included soil investigations, groundwater investigation, and an evaluation of the construction/operation details of the Area 1 and Area 4 landfills, was approved by IEPA on January 19, 2010 (B-27R-CA-1). On July 16, 2010, CID submitted the results of that investigation. In a letter from Illinois EPA, dated January 20, 2011 (B-27R-CA-2), IEPA concurred with CID that the source of the 1,4-dioxane is Area 1 and required CID to submit a RCRA Facility Investigation (RFI) work plan and a Current Conditions Report (CCR) for Area 1. On April 18, 2011, CID submitted their RFI and CCR to the IEPA. IEPA conditionally approved the work plan and CCR on June 21, 2011 (B-27R-CA-3). Following investigation activities, a January 2012 investigation report was conditionally approved by IEPA on July 16, 2012 (B-27R-CA-3 and 5). A Basis of Design Report was submitted by the facility on October 12, 2012 and the report was conditionally approved by IEPA on December 18, 2012 (B-27R-CA-6). A Final Design Report was submitted by the facility on March 18, 2013, and the report was conditionally approved by IEPA on October 28, 2013 (B-27R-CA-7). Installation of the approved corrective measures began in the spring of 2014. A Construction Completion Report and a proposed Groundwater Management Zone (GMZ) was

submitted to Illinois EPA on July 7, 2017 (B-27R-CA-12). This application is currently under review by Illinois EPA.

1. The Permittee shall submit quarterly reports documenting the operation, maintenance and monitoring of the groundwater extraction system and phytoremediation system at the Area 1 landfill. The reports must contain the following information:

   a. Introduction. This portion of the document should provide a brief description of the facility operations, scope of the corrective measures project, and summary of the project objectives.

   b. System Description. This portion of the document should provide a description of the corrective measures constructed/installed at the site, and identify significant equipment.

   c. Monitoring Results. This portion of the document should provide a description of the monitoring and inspection procedures to be performed on the corrective measures. A summary of the monitoring results for the corrective measure, including copies of any laboratory analyses which document system effectiveness, provide a description of the monitoring procedures and inspections performed.

   d. Effectiveness Determination. This portion of the document should provide calculations and other relevant documentation that demonstrates the effectiveness of the selected corrective measure in remediating/stabilizing contamination to the extent anticipated by the corrective measures final design. Copies of relevant analytical data should be provided to substantiate this determination.

   e. System Effectiveness Recommendation. Based upon the results of the effectiveness determination required under 1.d above, this portion of the report should provide a recommendation on continuance of the corrective measure. If the corrective measure is not performing in accordance with the final design, a recommendation on revisions of expansion of the system should be provided. Additionally, based upon the monitoring result, a schedule for achieving the cleanup objective should be included with each evaluation.

   Eventually, the Permittee must submit a final report documenting that the required corrective measures have achieved the established remediation objectives.

2. The quarterly report required by Conditions IV.D.1 above must be prepared and submitted to the Illinois EPA in accordance with the following table:

Quarter of Calendar Year	**Report for the Month of**	**Report to the Illinois EPA by the Following**
1st Quarter	January - March	April 15th
2nd Quarter	April - June	July 15th

3rd Quarter	July - September	October 15th
4th Quarter	October - December	January 15th

E. CORRECTIVE MEASURES REQUIREMENTS

1. If it is determined that corrective measures must be taken at a newly identified SWMU, then the Permittee must implement a Corrective Measures Program (CMP) for such SWMUs in general accordance with the procedures set forth in Attachment G to this permit. The corrective measures implemented by the Permittee must be sufficient to ensure the appropriate requirements of 35 Ill. Adm. Code 302, 620, 724, and 742 are met.

2. The types of corrective measures which may be implemented include, but are not limited to:

   a. Removal of the contaminants or the contaminated media so that the remaining media meet remediation objectives developed in accordance with 35 Ill. Adm. Code 742;

   b. Closing the SWMU as a landfill by establishing a proper final cover over the SWMU and then providing proper long-term monitoring/maintenance/management of: (1) leachate; (2) subsurface gas: (3) final cover system; and (4) groundwater;

   c. Establishing engineered barriers to restrict exposure to the contaminants remaining at the SWMU (necessary to certain remediation objectives developed in accordance with 35 Ill. Adm. Code 742);

   d. Establishing institutional controls to restrict activities at the facility, as necessary, to support remediation objectives established in accordance with 35 Ill. Adm. Code 742.

3. The Corrective Measures Program described in Attachment G consists of five phases:

   - Phase I--conceptual design of the selected corrective measure;
   - Phase II--development of the final design plans for the corrective measure, including installation and operation/maintenance plans;
   - Phase III--actual construction/installation/implementation of the corrective measure;
   - Phase IV—operation/maintenance/monitoring, as necessary, of the corrective measure to ensure it is being properly implemented and is properly protecting human health and the environment.

- Phase V--demonstration/verification that the corrective measure has been completed and that the established remediation objectives have been achieved.

The phases may be combined or skipped, depending on the actual corrective measure selected. The overall CMP implemented at a given SWMU must: (1) be logical in nature; and (2) allow for Illinois oversight and approval throughout the entire process. As such, it will be necessary for the Permittee to submit workplans and reports regarding all aspects of corrective measures for the Illinois EPA review and approval prior to carrying out any corrective measure activity.

4. A Phase I CMP Plan, or its equivalent, must be submitted to the Illinois EPA within ninety (90) days of the date that the Illinois EPA notifies the Permittee of the need for a Corrective Measures Program.

5. Subsequent CMP related workplans and reports must be submitted to the Illinois EPA for review and approval in accordance with a schedule approved by the Illinois EPA.

6. For units closed as landfills:

   a. The Phase II report must include a plan for the construction of a final cover system as well as a post-closure care plan (the post-closure care plan must include provisions for (1) inspecting the final cover; (2) monitoring the groundwater and soil gas; and (3) taking corrective action if any problems are observed during the inspection/monitoring effort.

   b. The Phase III report must document the construction of the approved final cover system and any other systems required for closure of the unit.

   c. During Phase IV, quarterly reports must be submitted documenting the results of the inspection/monitoring efforts as well as any corrective measures taken in response to problems observed during these efforts. It will be necessary to submit plans to the Illinois EPA for review and approval to address any groundwater quality or gas migration problems.

   d. The Phase V report will not be submitted until the post-closure care period has been completed. This report must demonstrate that all applicable post-closure requirements have been met and that the groundwater at the site meets the applicable standards.

7. Once all corrective measures have been completed, a report must be developed documenting all efforts and results associated with the completed measure, including, as appropriate, information demonstrating the approved remediation objectives for the

project have been achieved.

8. The Illinois EPA's action on all Corrective Measures Program submittals shall be subject to the appeal provisions of Sections 39(a) and 40(a) of the Illinois Environmental Protection Act.

F. FINANCIAL ASSURANCE FOR CORRECTIVE ACTION

1. The current cost estimate for corrective action at this facility is $10,303,004 (in 2021 dollars). This corrective action estimate includes costs associated with inspection and maintenance of Areas 1 and Area 2 landfills, operation of gas collection system at Area 1 landfill, leachate collection system at Areas 1 and 2 landfills, and groundwater remediation systems at Area 1 landfill. The Permittee shall develop its corrective action cost estimate using a minimum period of at least ten (10) years. Attachment C provides a summary of cost estimates.

2. The Permittee shall demonstrate compliance with 35 Ill. Adm. Code 724.201 by providing documentation of financial assurance using a mechanism specified in 35 Ill. Adm. Code 724.243, in at least the amount of the cost estimate required under Condition IV.F.1. The words "completion of corrective action" shall be substituted for "closure and/or post-closure", as appropriate in the financial instrument specified in 35 Ill. Adm. Code 724.251. The Illinois EPA may accept financial assurance for completion of corrective action in combination with another financial mechanism that is acceptable under 35 Ill. Adm. Code 724.246.

3. The cost estimate must be supported by a detailed breakdown of the estimated third-party cost for completing each required task. The amount of the various resources needed to complete each task must be provided, as well as the unit cost of these resources and an adjustment for contingencies. Justification for all data used in these calculations must also be provided.

4. The financial assurance requirements of 35 Ill. Adm. Code 724.201 must also be met for any investigative or corrective action efforts carried out in accordance with Sections IV.G or IV.H below. Detailed cost estimates must be developed for any activities carried out under this Section and must accompany any workplan/report submitted to Illinois EPA for review and approval.

   Appropriate documentation of financial assurance in at least the amount of the approved cost estimate must be submitted to Illinois EPA within 60 days after the cost estimates are approved.

5. All cost estimates prepared under the requirements of Conditions IV.F.1 through IV.F.4 must be submitted as a Class 1* permit modification request in accordance with 35 Ill. Adm. Code 703.281.

G. REQUIREMENTS FOR ADDRESSING NEWLY- IDENTIFIED SWMU(S) AND AREA OF CONCERN (AOC

1. The Permittee shall notify the Illinois EPA in writing of any newly-identified SWMU(s) or Areas of Concern (AOCs) discovered during the course of groundwater monitoring, field investigations, environmental audits, or other means, no later than thirty (30) calendar days after discovery. The notification shall provide the following information, as available:

   a. The location of the newly-identified SWMUs/AOCs in relation to other SWMUs/AOCs on a scaled map or drawing;

   b. The type and past and present function of the unit;

   c. The general dimensions, capacities, and structural description of the unit (available drawings and specifications provided);

   d. The time period during which the units was operated;

   e. The specifics on all materials, including but not limited to, wastes and hazardous waste constituents, that have been or are being managed at the SWMU/AOC, to the extent available; and,

   f. The results of any relevant available sampling and analysis which may aid in determining whether releases of hazardous wastes or hazardous constituents have occurred or are occurring from the unit.

2. If the submitted information demonstrates a potential for a release of hazardous waste or hazardous constituents from the newly identified SWMU/AOC, the Illinois EPA may request, in writing, that the Permittee prepare a Solid Waste Management Unit Assessment Plan (Plan) and a proposed schedule of implementation of the Plan for any additional SWMUs/AOCs discovered subsequent to the issuance of this Permit. This Plan must propose investigations, including field investigations, if necessary, to determine the release potential to specific environmental media for the newly-identified SWMU/AOC. The Plan must demonstrate that the sampling and analysis program, if applicable, is capable of yielding representative samples and must include parameters sufficient to

identify migration of hazardous waste and hazardous constituents from the newly discovered SWMUs/AOCs to the environment.

3. Within ninety (90) calendar days after receipt of the Illinois EPA's request for a SWMU Assessment Plan, the Permittee shall submit the Plan to the Illinois EPA for review and approval.

4. The Illinois EPA shall either approve, conditionally approve or disapprove the Plan in writing. If the Plan is approved, the Permittee shall implement the Plan within forty-five (45) calendar days of receiving such written notification or in accordance to the terms and schedule established within the Plan and any conditions placed on it. If the Plan is disapproved, the Illinois EPA shall notify the Permittee, in writing, of the Plan's deficiencies and specify a due date for submittal of a revised plan.

5. The Permittee shall submit a report documenting the results of the approved Plan to the Illinois EPA in accordance with the schedule in the approved Plan. The report shall describe all results obtained from the implementation of the approved Plan.

6. The Permittee must implement a Corrective Measures Program, as necessary, to properly address any contamination encountered during the assessment. Guidance regarding the implementation of this program will be provided at the time Illinois EPA notifies the Permittee of the need for such a program.

H. FUTURE RELEASES FROM SWMUs

There exists a potential that a release may occur in the future from SWMUs/AOCs identified in the RFA or RFI which did not require any corrective action at the time that the RFA or RFI was completed. If the Permittee discovers that a release has occurred from a SWMU/AOC in the future, then the Illinois EPA must be notified of this release within thirty (30) days after its discovery following the procedures set forth in Condition IV.G.1 above.

Additional investigation and, as necessary, corrective measures efforts at this SWMU/AOC must be carried out in accordance with the procedure set forth in Section G above. The results of all corrective action efforts required by this condition must meet the requirements of 35 Ill. Adm. Code 724.201.

I. INTERIM MEASURES

At any time during the course of this permit, the Permittee may initiate interim measures for the purpose of preventing continuing releases and/or mitigating the results of releases and/or

mitigating the migration of hazardous wastes or hazardous waste constituents. It shall not be necessary to conduct all phases of an investigation prior to implementing an interim measure if the Illinois EPA and the Permittee agree that a problem can be corrected, or a release cleaned up, without additional study and/or without a formal Corrective Measures Study (CMS).

1. Prior to implementing any interim measures, the Permittee must submit detailed information regarding the proposed interim measure to the Illinois EPA for approval. This information shall include, at a minimum:

   a. Objectives of the interim measure, how the measure is mitigating a potential threat to human health and the environment; and/or, is consistent with, and integrated into, any long-term solution at the facility;

   b. Design, construction, and maintenance requirements;

   c. Schedules for design and construction; and

   d. Schedule for progress reports.

2. If the Illinois EPA determines that a release cannot be addressed without additional study and/or a formal CMS, then the Illinois EPA will notify the Permittee that these must be performed. Any proposal made under this provision or any other activity resulting from such proposal, including the invocation of dispute resolution, shall not affect the schedule for implementation of any other portion of the permit.

3. If the Illinois EPA determines that interim measures are necessary to protect human health or the environment, the Permittee will be notified by way of a permit modification.

SECTION V: SPECIAL CONDITIONS

A. REPOSITORY

1. The permittee shall maintain a repository at the Hegewisch Branch of the Chicago Public Library, located at 3048 East 130th Street, Chicago, Illinois. The following information shall be sent to the repository:

    a. A copy of the approved RCRA Post-Closure Renewal Permit.

    b. All permit applications and permit modification requests.

    c. All Illinois EPA responses to modification requests made to the RCRA Post-Closure Permit (Log No. B-27R2).

B. 39i CERTIFICATION

1. The permitted shall submit a current 39i certification and supporting documentation with all applications for a permit.

C. COMPLIANCE SCHEDULE

1. Within 180 days of the approval of this renewal permit, the permittee shall submit an updated Operations and Maintenance (O&M) Plan for the Area 1 and Area 2 landfills as a Class 1* permit modification request. The O&M Plan must provide specific details of the current operation and maintenance of the leachate collection and gas collection systems at Areas 1 and 2 including a diagram of each system.

SECTION VI: STANDARD CONDITIONS FOR POST CLOSURE CARE

GENERAL REQUIREMENTS

1. EFFECT OF PERMIT. The existence of a RCRA permit shall not constitute a defense to a violation of the Environmental Protection Act or Subtitle G, except for development, modification or operation without a permit. Issuance of this permit does not convey property rights or any exclusive privilege. Issuance of this permit does not authorize any injury to persons or property or invasion of other private rights, or infringement of state or local law or regulations. (35 Ill. Adm. Code 702.181)

2. PERMIT ACTIONS. This permit may be modified, reissued or revoked for cause as specified in 35 Ill. Adm. Code 703.270 through 703.273 and Section 702.186. The filing of a request by the Permittee for a permit modification or revocation, or a notification of planned changes or anticipated noncompliance on the part of the Permittee does not stay the applicability or enforceability of any permit condition. (35 Ill. Adm. Code 702.146)

3. SEVERABILITY. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby. (35 Ill. Adm. Code 700.107)

4. PERMIT CONDITION CONFLICT. In case of conflict between a special permit condition and a standard condition, the special condition will prevail. (35 Ill. Adm. Code 702.160)

5. DUTY TO COMPLY. The Permittee shall comply with all conditions of this permit except for the extent and for the duration such noncompliance is authorized by an emergency permit. Any permit noncompliance constitutes a violation of the Environmental Protection Act and is grounds for enforcement action; permit revocation or modification; or for denial of a permit renewal application. (35 Ill. Adm. Code 702.141 and 703.242)

6. DUTY TO REAPPLY. If the Permittee wishes to continue an activity allowed by this permit after the expiration date of this permit, the Permittee must apply for a new permit at least 180 days before this permit expires, unless permission for a later date has been granted by the Illinois EPA. (35 Ill. Adm. Code 702.142 and 703.125)

7. PERMIT EXPIRATION. This permit and all conditions herein will remain in effect beyond the permit's expiration date if the Permittee has submitted a timely, complete application (see 35 Ill. Adm. Code 703.181-703.209) and through no fault of the Permittee the Illinois EPA has not issued a new permit as set forth in 35 Ill. Adm. Code 702.125.

8. NEED TO HALT OR REDUCE ACTIVITY NOT A DEFENSE. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. (35 Ill. Adm. Code 702.143)

9. DUTY TO MITIGATE. In the event of noncompliance with the permit, the permittee shall take all reasonable steps to minimize releases to the environment and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment. (35 Ill. Adm. Code 702.144)

10. PROPER OPERATION AND MAINTENANCE. The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance include effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory, and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit. (35 Ill. Adm. Code 702.145)

11. DUTY TO PROVIDE INFORMATION. The Permittee shall furnish to the Illinois EPA, within a reasonable time, any relevant information which the Illinois EPA may request to determine whether cause exists for modifying, revoking and reissuing or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Illinois EPA, upon request, copies of records required to be kept by this permit. (35 Ill. Adm. Code 702.148)

12. INSPECTION AND ENTRY. The Permittee shall allow an authorized representative of the Illinois EPA, upon the presentation of credentials and other documents as may be required by law, to:

a. Enter at reasonable times upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the appropriate Act, any substances or parameters at any location. (35 Ill. Adm. Code 702.149)

VI. MONITORING AND RECORDS. (35 Ill. Adm. Code 702.150)

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the waste must be the appropriate method from Appendix A of 35 Ill. Adm. Code 721. Laboratory methods must be those specified in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, latest versions; Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, latest versions; or an equivalent method as specified in the approved Waste Analysis Plan.

b. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports and records required by this permit, and records of all data used to complete the application for this permit for a period of at least 3 years from the date of the sample, measurement, report or application. These periods may be extended by request of the Illinois EPA at any time. The permittee shall maintain records from all groundwater monitoring wells and associated groundwater surface elevations, for the active life of the facility, and for disposal facilities for the post-closure care period as well.

c. Records of monitoring information shall include:

i. The date(s), exact place, and time of sampling or measurements;

ii. The individual(s) who performed the sampling or measurements;

iii. The date(s) analyses were performed;

iv. The individual(s) who performed the analyses;

v The analytical technique(s) or method(s) used; and

vi. The result(s) of such analyses. (35 Ill. Adm. Code 702.150)

VII. REPORTING PLANNED CHANGES. The permittee shall give written notice to the Illinois EPA as soon as possible of any planned physical alterations or additions to the permitted facility. In general, proposed changes to the facility will need to be submitted to

the Illinois EPA as permit modification request that complies with the requirements of 35 Ill. Adm. Code 703.280. (35 Ill. Adm. Codes 702.152(a))

15. CONSTRUCTION CERTIFICATION. For a new hazardous waste management facility, the permittee shall not commence treatment, storage or disposal of hazardous waste; and for a facility being modified the permittee shall not treat, store or dispose of hazardous waste in the modified portion of the facility, until:

a. The permittee has submitted to the Illinois EPA by certified mail or hand delivery a letter signed by the permittee and a qualified professional engineer stating that the facility has been constructed or modified in compliance with the permit; and

b. 1. The Illinois EPA has inspected the modified or newly constructed facility and finds it is in compliance with the condition of the permit; or

2. If, within 15 days of the date of submission of the letter in paragraph (a), the permittee has not received notice from the Illinois EPA of its intent to inspect, prior inspection is waived, and the permittee may commence treatment, storage or disposal of hazardous waste. (35 Ill. Adm. Code 703.247)

16. ANTICIPATED NONCOMPLIANCE. The Permittee shall give advanced written notice to the Illinois EPA of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements, regulations, or the Act. (35 Ill. Adm. Code 702.152(b))

17. TRANSFER OF PERMITS. This permit may not be transferred by the permittee to a new owner or operator unless the permit has been modified or reissued pursuant to 35 Ill. Adm. Code 703.260(b) or 703.272. Changes in the ownership or operational control of a facility must be made as a Class 1 modification with the prior written approval of the Illinois EPA. The new owner or operator shall submit a revised permit application no later than 90 days prior to the scheduled change. (35 Ill. Adm. Code 703.260)

18. MONITORING REPORTS. Monitoring results shall be reported at the intervals specified in the permit. (35 Ill. Adm. Code 702.152(d))

19. COMPLIANCE SCHEDULES. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than specified in 35 Ill. Adm. Code 702.162. (35 Ill. Adm. Code 702.152(e))

20. TWENTY-FOUR HOUR REPORTING.

a. The Permittee shall report to the Illinois EPA any noncompliance with the permit which may endanger health or the environment. Any such information shall be reported orally within 24 hours from the time the Permittee becomes aware of the following circumstances. This report shall include the following:

i. Information concerning the release of any hazardous waste that may cause an endangerment to public drinking water supplies.

ii. Information concerning the release or discharge of any hazardous waste or of a fire or explosion at the HWM facility, which could threaten the environment or human health outside the facility.

b. The description of the occurrence and its cause shall include:

i. Name, address, and telephone number of the owner or operator;

ii. Name, address, and telephone number of the facility;

iii. Date, time, and type of incident;

iv. Name and quantity of material(s) involved;

v. The extent of injuries, if any;

vi. An assessment of actual or potential hazards to the environment and human health outside the facility, where applicable; and

vii. Estimated quantity and disposition of recovered material that resulted from the incident.

c. A written submission shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance including exact dates and times and if the noncompliance has not been corrected; the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Illinois EPA may waive the five day written notice requirement in favor of a written report within fifteen days. (35 Ill. Adm. Code 702.152(f) and 703.245(b))

21 OTHER NONCOMPLIANCE. The Permittee shall report all instances of noncompliance not otherwise required to be reported under Standard Conditions 14, 15, and 16, at the

time monitoring reports, as required by this permit, are submitted. The reports shall contain the information listed in Standard Condition 20. (35 Ill. Adm. Code 702.152(g))

22. OTHER INFORMATION. Where the Permittee becomes aware that it failed to submit any relevant facts in the permit application or submitted incorrect information in a permit application or in any report to the Illinois EPA, the Permittee shall promptly submit such facts or information. (35 Ill. Adm. Code 702.152(h))

23. SUBMITTAL OF REPORTS OR OTHER INFORMATION. All written reports or other written information required to be submitted by the terms of this permit shall be sent to:

Illinois Environmental Protection Agency
Bureau of Land #33
1021 North Grand Avenue East
Springfield, Illinois 62702

24. SIGNATORY REQUIREMENT. All permit applications, reports or information submitted to the Illinois EPA shall be signed and certified as required by 35 Ill. Adm. Code 702.126. (35 Ill. Adm. Code 702.151)

25. CONFIDENTIAL INFORMATION. Any claim of confidentiality must be asserted in accordance with 35 Ill. Adm. Code 702.103 and 35 Ill. Adm. Code 161.

26. DOCUMENTS TO BE MAINTAINED AT FACILITY SITE. The Permittee shall maintain at the facility, until post-closure is complete, the following documents and amendments, revisions and modifications to these documents:

a. Post-closure plan as required by 35 Ill. Adm. Code 724.218(a) and this permit.

b. Cost estimate for post-closure care as required by 35 Ill. Adm. Code 724.244(d) and this permit.

c. Operating record as required by 35 Ill. Adm. Code 724.173 and this permit.

d. Inspection schedules as required by 35 Ill. Adm. Code 724.115(b) and this permit.

GENERAL FACILITY STANDARDS

27. GENERATOR REQUIREMENTS. Any hazardous waste generated at this facility shall be managed in accordance with the generator requirements at 35 Ill. Adm. Code Part 722.

28. SECURITY. The Permittee shall comply with the security provisions of 35 Ill. Adm. Code 724.114(b) and (c).

29. GENERAL INSPECTION REQUIREMENTS. The Permittee shall follow the approved inspection schedule. The Permittee shall remedy any deterioration or malfunction discovered by an inspection as required by 35 Ill. Adm. Code 724.115(c). Records of inspections shall be kept as required by 35 Ill. Adm. Code 724.115(d).

30. CLOSURE REQUIREMENTS FOR ACCUMULATION AREAS. The Permittee shall close containers storage areas, tanks, drip pads, or containment buildings used for the accumulation of on-site generated hazardous waste in accordance with the requirements identified at 35 Ill. Adm. Code 722.117(a)(8).

PREPAREDNESS AND PREVENTION

31. DESIGN AND OPERATION OF FACILITY. The Permittee shall maintain and operate the facility to minimize the possibility of fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment. (35 Ill. Adm. Code 724.131)

RECORD KEEPING

32. OPERATING RECORD. The Permittee shall maintain a written operating record at the facility in accordance with 35 Ill. Adm. Code 724.173.

POST-CLOSURE

33. CARE AND USE OF PROPERTY. The Permittee shall provide post-closure care for the facility as required by 35 Ill. Adm. Code 724.217 and in accordance with the approved post-closure plan.

34. AMENDMENT TO POST-CLOSURE PLAN. The Permittee must amend the post-closure plan whenever a change in the facility operation plans or facility design affects the post-closure plan or when an unexpected event has occurred which has affected the post-closure plan pursuant to 35 Ill. Adm. Code 724.218(d).

35. COST ESTIMATE FOR POST-CLOSURE. The Permittee's original post-closure cost estimate, prepared in accordance with 35 Ill. Adm. Code 724.244, must be:

    a. Adjusted for inflation either 60 days prior to each anniversary of the date on which the first closure cost estimate was prepared or if using the financial test or corporate guarantee, within 30 days after close of the firm's fiscal year.

b. Revised whenever there is a change in the facility's post-closure plan increasing the cost of post closure.

c. Kept on record at the facility and updated. (35 Ill. Adm. Code 724.244)

36. FINANCIAL ASSURANCE FOR POST-CLOSURE CARE. The Permittee shall demonstrate compliance with 35 Ill. Adm. Code 724.245 by providing documentation of financial assurance, as required by 35 Ill. Adm. Code 724.251, in at least the amount of the cost estimates required by the previous Permit Condition. Changes in financial assurance mechanisms must be approved by the Illinois EPA pursuant to 35 Ill. Adm. Code 724.245.

Financial assurance documents submitted to Illinois EPA should be directed to the following address:

Illinois Environmental Protection Agency
Bureau of Land #24
Financial Assurance Program
1021 North Grand Avenue East
Springfield, IL 62702

37. INCAPACITY OF OWNERS OR OPERATORS, GUARANTORS, OR FINANCIAL INSTITUTIONS. The Permittee shall comply with 35 Ill. Adm. Code 724.248 whenever necessary.

SECTION VII: REPORTING AND NOTIFICATION REQUIREMENTS

The reporting and notification requirements of each Section of the RCRA permit are summarized below. This summary is provided to highlight the various reporting and notification requirements of this permit.

Condition	Submittal	Due Date
SECTION I: POST-CLOSURE		
E.6.c. iv	Leachate analyses from Area 3 and Area 4	June 1 of each year
E.8.a	Notify IEPA in writing that flow into the leak detection system exceeds the action leakage rate.	7 days after the determination is made
E.8.b	Submit a preliminary assessment of the liner and leachate collection/detection system	14 days after the Permittee determines flow into the leak detection system has exceeded the action leakage rate
E.8.f	Submit a report meeting the requirements of 35 Ill. Adm. Code 724.404(b) if the action leakage rate has been exceeded	30 days after the notification that the action leakage rate has been exceeded
F.1	Quarterly leachate levels, monthly volumes across all sumps and total volume of leachate removed from Area 3 for the previous calendar year	January 31 of each year
F.2	Monthly leachate levels, monthly leachate volumes and total volume of leachate removed from Area 4 for the previous calendar year	January 31 of each year
F.4, F.5	Non-compliance of leachate level for Area 3 and Area 4	July 31 (1st & 2nd Qtr.) January 31 (3rd & 4th Qtr.)
G.3	Submit certification for completion of post-closure care and post-closure documentation report	60 days after completion of post-closure care
SECTION II: AREA 4 DETECTION MONITORING PROGRAM		
D.3	Notification/proposal to replace damaged monitoring well	30 days from date of determination
D.5	Submit as-built of additional wells to be installed	30 days after they have been installed and developed
D.5	Submit well plugging and abandonment certifications	30 days after well abandonment
E.3.c	Submit recalculated intrawell background values	July 15 of each odd numbered calendar year

Condition	Submittal	Due Date
E.4	Submit proposed background values for constituents not sampled during eight previous sampling events	90 days after fourth sampling event
F.4	Report groundwater flow rate and direction in accordance with Condition II.J.4	July 15 of every year
G.2	Report surveyed elevation of stick-up.	July 15 every two years
G.3	Report elevation of well bottom when a problem is identified, or when downhole equipment is removed	with groundwater report
J.2	Groundwater monitoring data/summary report. All information collected during preceding months of April-June and October-December	Results to Illinois EPA by: July 15 January 15
J.6 and J.7	Report elevation of well bottom when downhole equipment is removed for five-year inspection	July 15
J.11.a	Notify Illinois EPA of statistically significant increase	7 days after discovery of increase
J.11.b	Apply for permit modification establishing corrective action program	90 days after discovery of increase
J.12.a	Notify Illinois EPA that the Permittee intends to demonstrate that a source other than the regulated unit is responsible for a statistical increase or that the increase was due to error	7 days after discovery of increase
J.12.b	Submit report which demonstrates that a source other than the regulated unit caused a statistical increase or that the increase resulted from error in sampling, analysis or evaluation	90 days after discovery of increase
J.12.c	Submit application for modification of Detection Monitoring program	90 days after discovery of increase
J.13.a	Report concentration of additional constituents detected	7 days after receipt of data confirming increase
J.13.b	Permit modification request to add additional constituents to Groundwater Protection Standard	30 days after the date of the confirmation of the increase
K.1	Submit application for permit modification.	90 days after determination that the compliance monitoring program no longer satisfies 35 Ill. Adm. Code 724 Subpart F requirements

Condition	Submittal	Due Date
SECTION III: AREA 3 GROUNDWATER CORRECTIVE ACTION PROGRAM		
D.3	Notification/proposal to replace damaged monitoring well	30 days from date of determination
D.5	Submit well plugging and abandonment	30 days after well abandonment from monitoring program
D.5	Submit as-built diagrams, boring logs, drawing for new and replacement wells	30 days after they have been installed and developed data sheets, grid coordinates and location
F.5	Report groundwater flow rate and direction in accordance with Condition III.K.4	July 15 of each year
G.2	Report surveyed elevation of stick-up.	July 15 every two years
G.3	Report elevation of well bottom when a problem is identified, or when downhole equipment is removed	with groundwater monitoring
J.3.d	Submit recalculated intrawell background values	July 15 of each odd numbered calendar year
J.4	Submit proposed background values for constituents not sampled during eight previous sampling events	90 days after fourth sampling event
K.2	Groundwater monitoring data/summary report All information collected during preceding months of April-June and October-December	July 15 January 15
K.6 and K.7	Report elevation of well bottom when downhole equipment is removed for five-year inspection	July 15
K.11.a	Notify Illinois EPA of statistically significant increase	7 days after discovery of increase
K.11.b	Submit request to modify Corrective Action Program	90 days after discovery of increase
K.12.a	Notify Illinois EPA that the Permittee intends to demonstrate that a source other than the regulated unit is responsible for a statistical increase or that the increase was due to error	7 days after discovery of increase
K.12.b	Submit report which demonstrates that a source other than the regulated unit caused a statistical increase or that the increase resulted from error in sampling, analysis or evaluation	90 days after discovery of increase
K.12.c	Submit application for modification of Corrective Action monitoring program	90 days after discovery of increase
K.13.a	Report concentration of additional constituents detected	7 days after receipt of data confirming increase

Condition	Submittal	Due Date
K.13.b	Permit modification request to add additional constituents to Groundwater Protection Standard	30 days after the date of the confirmation of the increase
K.14	Annual evaluation of Corrective Action Program	July 15
SECTION IV: CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS		
B.6	Submit quarterly leachate levels and quantity removed report for Area 1 landfill.	April 15 July 15 October 15 January 15
B.7	Submit annual monitoring and maintenance report for Area 1 and Area 2 landfills	February 1 of each year
D.1	Submit quarterly ground water remediation report for Area 1 landfill	April 15 July 15 October 15 January 15
E.4	Phase I Corrective Measures Program Plan	Within 90 days of notification from Illinois EPA
F.4	Shall meet the requirements of 35 Ill. Adm. Code 724.201 and provide financial assistance to Illinois EPA in the amount approved	Within 60 days after the cost estimates are approved by Illinois EPA
G.1	Notify Illinois EPA in writing of any newly identified SWMUs discovered during the course of groundwater monitoring	30 calendar days after discovery
G.3	SWMU Assessment Plan	Within 90 days of request from Illinois EPA
G.5	SWMU Assessment Plan Report	In accordance with approved Plan
H	Notify Illinois EPA of any releases from SWMUs	30 days after its discovery
SECTION V: SPECIAL CONDITIONS		
B	Current 39i certification and supporting documentation	With all applications for a permit
SECTION VI: STANDARD CONDITIONS		
6	Complete application for new permit	180 days prior to permit expiration
11	Information requested by the Illinois EPA and copies of records required to be kept by this permit	Submittal date to be determined by the Illinois EPA
14	Notify Illinois EPA of planned physical alterations or additions	As soon as possible.

Condition	Submittal	Due Date
16	Notify Illinois EPA of changes which may result in permit noncompliance	Within 15 days of change
17	Application for permit modification indicating permit is to be transferred	at least 90 days prior to transfer date
19	Submission of any information required in a compliance schedule	14 days after each schedule date
20	Report to the Illinois EPA any non-compliance which may endanger health or environment	
	By telephone	24 hours after discovery, and
	In writing	5 days after discovery
21	Report all other instances of non-compliance.	With monitoring report required by this permit
34	Application for permit modification amending post-closure plan	When a change in operation or design affects the post-closure plan
35(a)	Adjust post-closure cost estimate for inflation	60 days prior to anniversary date
35(b)	Revision of post closure-cost estimate.	Whenever there is a change that increases costs
36	Change in financial assurance mechanism for post-closure	As needed
37	Notify Illinois EPA of commencement of voluntary or involuntary bankruptcy proceedings	10 days after commencement of proceeding

ATTACHMENT A

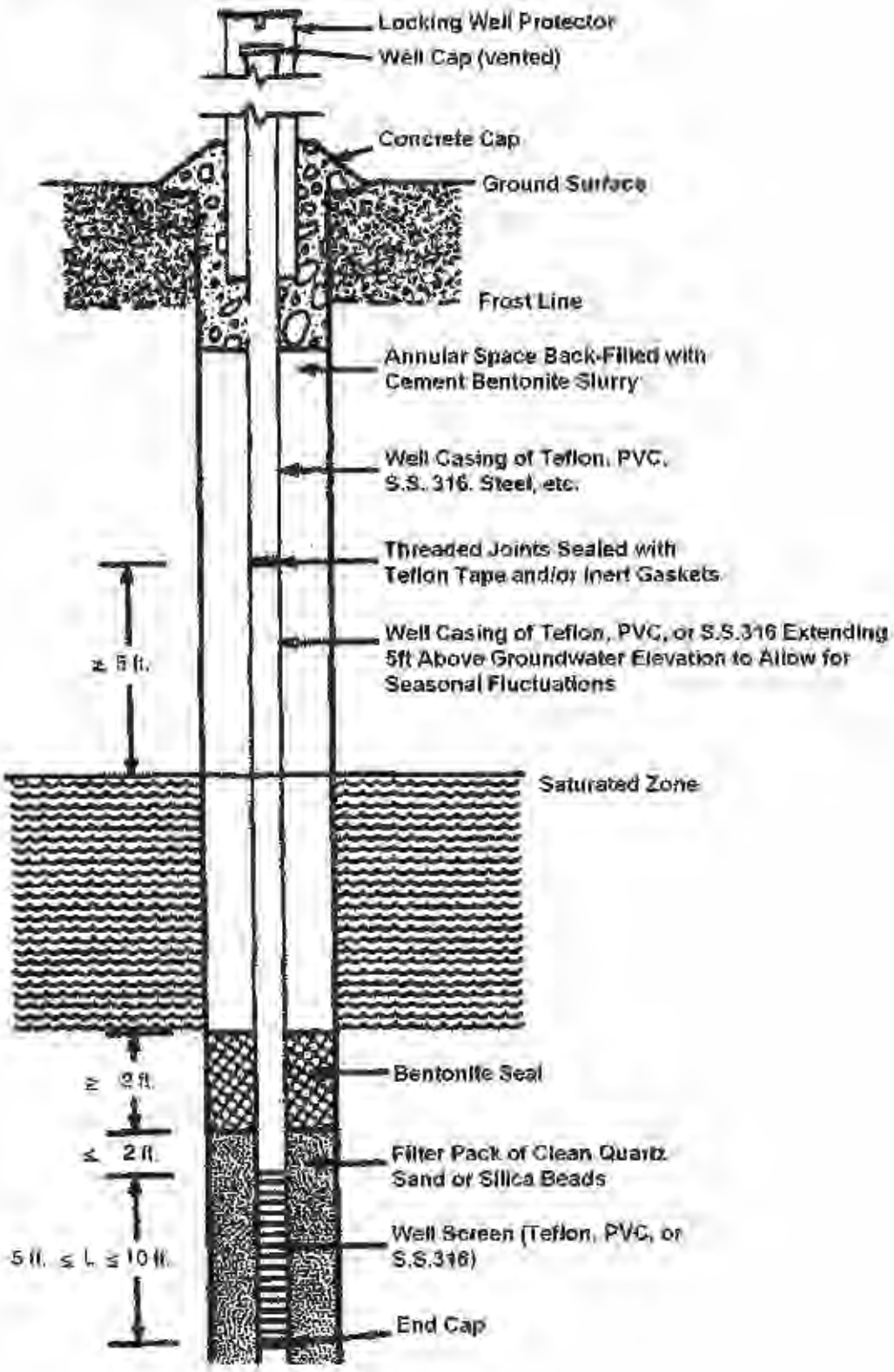
GROUNDWATER MONITORING ATTACHMENTS

STATE ID # 0310390001

ILD010284248

POST-CLOSURE PERMIT LOG NO. B-27R2

Monitoring Well Diagram



ILLINOIS EPA MONITOR WELL PLUGGING AND ABANDONMENT PROCEDURES

	Well Construction		Plugging Procedure
I. Unconsolidated Sediment Wells	I-A	...if backfilled with cement grout above bentonite seal and/or sandpack.	1. Cut casing off at desired depth. 2. Mix neat cement slurry (5 gal. water per 94 lb. bag cement). 3. Insert tremi pipe (1" i.d. pvc) into well and extend to bottom. 4. Slowly pump slurry under low pressure through tremi pipe. 5. Slowly withdraw tremi pipe - making sure bottom of pipe remains below pure slurry. 6. Continue slow pumping until all formation water and the watery slurry mix is displaced from top of casing.
	I-B	...if backfilled with soft sediments (cuttings) above bentonite seal and/or sandpack.	1. Knock out and remove thin surface concrete plug, if present. 2. Re-auger entire length of well. 3. Remove well casing from re-augured borehole. 4. Mix neat cement slurry (5 gal. water per 94 lb. bag cement). 5. Insert tremi pipe (1" i.d. pvc) into augers and extend to bottom. 6. Slowly pump slurry under low pressure through tremi pipe. 7. Continue slow pumping until all formation water and the water slurry mix is displaced from top of casing. 8. Slowly withdraw tremi pipe - making sure bottom of pipe remains below pure slurry. 9. Pull a flight of augers (5" if in unstable materials and hole collapse is likely or 10" if in competent material and collapse is unlikely) 10. Top off cement slurry after each flight is removed.
	I-C	...if monitor well construction is unknown.	1. Follow procedures in I-A.
II. Bedrock Wells	II-A	...All bedrock monitor wells.	1. Cut casing off at desired depth. 2. Mix neat cement slurry (5 gal. water per 94 lb. bag cement). 3. Insert tremi-pipe (1" i.d. pvc) into well and extend to bottom. 4. Slowly pump slurry under low pressure through tremi pipe. 5. Slowly withdraw pipe making sure bottom of pipe remains below pure slurry. 6. Continue slow pumping until all formation water and the watery slurry mix is displaced from top of casing.

Illinois Environmental Protection Agency

Field Boring Log

Page ____ of ____

County: _____

Site File No. _____ Federal ID No. _____

Site File Name: _____

Quadrangle: _____ Sec. _____ T. _____ R. _____

UTM (or State Plane) Coord. N. (X) _____ E (Y): _____

Latitude ____ ° ____ ' ____ " Longitude ____ ° ____ ' ____ "

Drilling Location: _____

Drilling Equipment: _____

Boring No. _____ Monitoring Well No.: _____

Surface Elevation: _____ Completion Depth: _____

Auger Depth: _____ Rotary Depth: _____

Date: Start _____ Finish: _____

Elev.	Description of Material	SAMPLES: Graphic Log	Depth in Feet	Sample No.	Sample Type	Sample Recovery (%)	Penetrometer	N Value (Blow Counts)	OVA or HNU Readings	Personnel: G - D - R - H -	Remarks

Illinois Environmental Protection Agency **Well Completion Report**

Site Number: _____ County: _____

Site Name: _____ Well #: _____

State:

Plane Coordinate: X __ Y __ (or) Latitude: __° __' __" Longitude: __° __' __" Borehole #: _____

Surveyed by: _____ IL Registration #: _____

Drilling Contractor: _____ Driller: _____

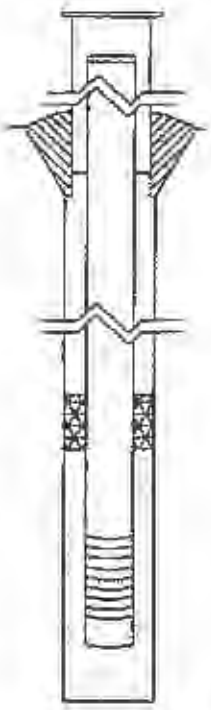
Consulting Firm: _____ Geologist: _____

Drilling Method: _____ Drilling Fluid (Type): _____

Logged By: _____ Date Started: _____ Date Finished: _____

Report Form Completed By: _____ Date: _____

ANNULAR SPACE DETAILS



Type of Surface Seal: _____

Type of Annular Sealant: _____

Installation Method: _____

Setting Time: _____

Type of Bentonite Seal: Granular, Pellet, Slurry (Choose One)

Installation Method: _____

Setting Time: _____

Type of Sand Pack: _____

Grain Size: _____ (Sieve Size)

Installation Method: _____

Type of Backfill Material: _____ (if applicable)

Installation Method: _____

Elevations (MSL)* **Depth (BGS)** **(.01ft.)**

____ ____ Top of Protective Casing

____ ____ Top of Riser Pipe

____ ____ Ground Surface

____ ____ Top of Annular Sealant

____ ____ Static Water Level (After Completion)

____ ____ Top of Seal

____ ____ Top of Sand Pack

____ ____ Top of Screen

____ ____ Bottom of Screen

____ ____ Bottom of Well

____ ____ Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC, or Other
Screen	SS304, SS316, PTFE, PVC, or Other

CASING MEASUREMENTS

Diameter of Borehole (inches)	
ID of Riser Pipe (inches)	
Protective Casing Length (feet)	
Riser Pipe Length (feet)	
Bottom of Screen to End Cap (feet)	
Screen Length (1st slot to last slot) (feet)	
Total Length of Casing (feet)	
Screen Slot Size**	

**Hand-Slotted Well Screens are Unacceptable

Illinois Bureau of Land
Environmental 1021 North Grand Avenue East
Protection Agency Box 19276
Springfield, IL 62794-9276

RCRA FACILITY GROUNDWATER, LEACHATE AND GAS REPORTING FORM

This form must be used as a cover sheet for the notices and reports, identified below as required by: (1) a facility's RCRA interim status closure plan; (2) the RCRA interim status regulations; or (3) a facility's RCRA permit. All reports must be submitted to the Illinois EPA's Bureau of Land Permit Section. This form is for use by Hazardous Waste facilities only. Reporting for Solid Waste facilities should be submitted on a separate form. All reports submitted to the Illinois EPA's Bureau of Land Permit Section must contain an original, plus a minimum of two copies.

Note: This form is not to be used with permit or closure plan modification requests. The facility's approved permit or closure plan will state whether the document you are submitting is required as a report or a modification request.

Facility Name: _____ Site ID #: _____
Facility Address: _____ Fed ID #: _____

Check the appropriate heading. Only one heading may be checked for each corresponding submittal. Check the appropriate sub-heading, where applicable. Attach the original and all copies behind this form.

___ LPC-160 Forms

Groundwater
___ Quarterly – Indicate one: 1 2 3 4
___ Semi-Annual
___ Annual
___ Biennial

Leachate
___ Quarterly – Indicate one: 1 2 3 4
___ Semi-Annual
___ Annual
___ Biennial

___ Groundwater Data (without LPC-160 Forms)
___ Quarterly – Indicate one: 1 2 3 4
___ Annual ___ Semi-Annual ___ Biennial

___ Well Construction Information
___ Well Construction Forms, Boring Logs and/or Abandonment Forms
___ Well Survey Data (e.g., Stick-up Elevation Data)

___ Notice of Statistically Significant Evidence of Groundwater Contamination (35 Ill. Adm. Code 724.198)

___ Notice of Exceedence of Groundwater Concentration Limit (35 Ill. Adm. Code 724.199(h))

___ Notice of Alternate Source or Error in Sampling Analysis or Evaluation of Groundwater (35 Ill. Adm. Code 724.199(i))

___ Gas Monitoring Reports

___ Other (identify) _____

Formatting Requirements for the 01 Record of the Electronically Submitted Groundwater and Leachate Data (the 01 Record portion of the LPC-160 is included for example purposes)

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF LAND POLLUTION CONTROL Page 1 of _____
CHEMICAL ANALYSIS FORM

RECORD CODE: L P C S M 0 1 (1–7) TRANS CODE: A (8)

REPORT DUE DATE ___/___/___ (36 M D Y 41)

FEDERAL ID NUMBER _____

SITE INVENTORY NUMBER _____ (9–18)

MONITOR POINT NUMBER (see Instructions) _____ (19–22)

REGION _____ CO. _____

DATE COLLECTED ___/___/___ (23 M D Y 28)

FACILITY NAME _____

FOR IEPA USE ONLY

LAB _____ (29)

DATE RECEIVED ___/___/___ (42 M D Y 47)

BACKGROUND SAMPLE (X) _____ (54)

TIME COLLECTED (24 Hr. Clock) _____ (55 H M 58)

UNABLE TO COLLECT SAMPLE (see Instructions) _____ (59)

MONITOR POINT SAMPLED BY (see Instructions) _____ (60) OTHER (SPECIFY)

SAMPLE FIELD FILTERED - INORGANICS (X) _____ (61) ORGANICS (X) _____ (62)

SAMPLE APPEARANCE - _____ (63–102)

COLLECTOR COMMENTS _____ (103–142)

LAB COMMENTS _____ (143–182)

IL 532 1213
LPC 160 12/2011

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111½, Section 1004 and 1021. Disclosure of this information is required. Failure to do so may result in a civil penalty up to $25,000 for each day the failure continues a fine up to $1,000.00 and imprisonment up to one year. This form has been approved by the Forms Management Center.

All analytical procedures must be performed in accordance with the methods contained in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," SW 846, 3rd Edition, September 1986 or equivalent methods approved by the Agency. Proper sample chain of custody control and quality assurance/quality control procedures must be maintained in accordance with the facility sampling and analysis plan.

***Only Keypunch with Data in Column 35 or Columns 38–47**

KEY:

Spaces Numbered	Description	Format
Spaces 1-7	Record Code	LPCSM01
Space 8	Trans Code	A
Spaces 9-18	Site ID	0000000000
Spaces 19-22	Mon Pt ID	G000
Spaces 23-28	Date Collected	000000
Space 29	Lab	
Spaces 30-35	Filler	
Spaces 36-41	Report Due Date	000000
Spaces 42-47	Date Received	000000
Spaces 48-53	Filler 2	
Space 54	Background Sample	
Spaces 55-58	Time Collected	0000
Space 59	Unable to Collect Sample	
Space 60	Monitoring Point Sampled By	
Space 61	Field Filtered - Inorganic	
Space 62	Field Filtered - Organic	
Spaces 63-102	Sample Appearance	
Spaces 103-142	Collector Comments	
Spaces 143-149	Filler 3	
Spaces 150-159	Lab Comments	

Formatting Requirements for the 02 Record of the Electronically Submitted Groundwater and Leachate Data (the 02 Record portion of the LPC-160 is included for example purposes)

RECORD CODE | L | P | C | S | M | 0 | 2 | (1–7) TRANS CODE | A | (8) (COLUMNS 9-29 FROM ABOVE)

	FIELD MEASUREMENTS CONSTITUENT DESCRIPTION AND REQUIRED UNIT OF MEASURE	STORET NUMBER	Remarks See Inst.	Replicate	< or >	Value
Q	TEMP OF WATER (unfiltered °F)	0 0 0 1 1 (30–34)	35	36	37	* (38–47)
Q	SPEC COND (unfiltered umhos)	0 0 0 9 4				*
Q	pH (unfiltered units)	0 0 4 0 0				*
Q	ELEV OF GW SURF (ft ref MSL)	7 1 9 9 3				*
Q	DEPTH OF WATER (ft below LS)	7 2 0 1 9				*
A	BTM WELL ELEV (ft ref MSL)	7 2 0 2 0				*
Q	DEPTH TO WATER FR MEA PT (ft)	7 2 1 0 9				*
						*
						*

IL 532 1213
LPC 160 12/2011

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 ½, Section 1004 and 1021. Disclosure of this information is required. Failure to do so may result in a civil penalty up to $25,000 for each day the failure continues a fine up to $1,000.00 and imprisonment up to one year. This form has been approved by the Forms Management Center.

All analytical procedures must be performed in accordance with the methods contained in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," SW-846, 3rd Edition, September 1986 or equivalent methods approved by the Agency. Proper sample chain of custody control and quality assurance/quality control procedures must be maintained in accordance with the facility sampling and analysis plan.

*Only Keypunch with Data in Column 35 or Columns 38-47

KEY:

Spaces Numbered	Description	Format
Spaces 1-7	Record Code	LPCSM02
Space 8	Trans Code	A
Spaces 9-18	Site ID	0000000000
Spaces 19-22	Mon Pt ID	
Spaces 23-28	Date Collected	
Space 29	Lab	
Spaces 30-34	STORET Number	
Space 35	Remarks	
Space 36	Replicate	
Space 37	< or >	
Space 38-47	Value	

ATTACHMENT B

STATISTICAL PROCEDURE

STATE ID # 0310390001

ILD010284248

POST-CLOSURE PERMIT LOG NO. B-27R2

Attachment B-1

The following statistical procedure must be followed as referenced in Section II (Area 4 Compliance Monitoring Program) and Section III (Area 3 Groundwater Corrective Action Program). This statistical procedure is only valid for normally distributed data sets.

1. Calculate the arithmetic mean, $\bar{x}_b$, of the background values as follows:

$$\bar{x}_b = \frac{x_{b1} + x_{b2} + \ldots + x_{bn}}{n}$$

where: x_b = background concentration
n = number of observations

2. Calculate the variance, S_b^2, of the background values:

$$S_b^2 = \frac{(x_{b1} - \bar{x}_b)^2 + (x_{b2} - \bar{x}_b)^2 + \ldots + (x_{bn} - \bar{x}_b)^2}{n-1}$$

3. Calculate the standard deviation, S_b, of the background values:

$$S_b = \sqrt{S_b^2}$$

4. Specify the number of future observations per well (k) and calculate the prediction limit (PL) using the following equation:

$$PL = \bar{x}_b + C * S_b$$

where: $\bar{x}_b$ = background mean value
C = factor for obtaining a one-sided 99% prediction limit for k additional samples given a background sample size of n (see "Note" below)
S_b = Background standard deviation

Note: C is determined from Tables 1-3 of "Standard Prediction Intervals for the Evaluation of Groundwater Quality", R. Gibbons, Ground Water, Vol. 25, No. 4, July-August 1987. Refer to Attachment F, pages F-6 through F-8.

Reference: "Statistical Analysis of Ground-water Monitoring Data at RCRA Facilities, Interim Final Guidance", USEPA, February 1989

Attachment B-2

Cohen's Method for Calculating Estimates of the Mean and Variance of Background Measurements when Some Observations (≤ 50%) are Below the Practical Quantitation Limit (PQL)

This method is to be used only when PQLs are equal for the data set. Let n be the total number of observations, m represents the number of data points above the PQL, and x_i represents the value of the i^{th} constituent value above the PQL.

1. Compute the sample mean $\bar{x}_d$ from the data above the PQL as follows:

$$\bar{x}_d = \frac{1}{m}\sum_{i=1}^{m} x_i$$

2. Compute the sample variance S_d^2 from the data above the PQL as follows:

$$S_d^2 = \sum_{i=1}^{m} \frac{(x_i - \bar{x}_d)^2}{m-1} = \frac{\sum_{i=1}^{m} x_i^2 - \frac{1}{m}\left(\sum_{i=1}^{m} x_i\right)^2}{m-1}$$

3. Compute the two parameters, h and γ (lower case gamma), as follows:

$$h = \frac{(n-m)}{n} \qquad \gamma = \frac{S_d^2}{(\bar{x} - PQL)^2}$$

where n is the total number of observations (i.e. above and below the PQL). These values are then used to determine the value of the parameter $\hat{\lambda}$ from Appendix B, Table 7 (see Attachment F.2A).

4. Estimate the corrected sample mean, which accounts for the data below the PQL, as follows:

$$\bar{x} = \bar{x}_d - \hat{\lambda}(\bar{x}_d - PQL)$$

5. Estimate the corrected sample standard deviation, which accounts for the data below the PQL, as follows:

$$S = (S_d^2 + \hat{\lambda}(\bar{x}_d - PQL)^2)^{1/2}$$

6. Use the corrected values of $\bar{x}$ and S in the procedure for constructing a prediction limit outlined in Attachment F-1.

$\bar{x}_d$ = sample mean
x_i = ith value above the PQL
m = number of data points above the PQL

h = parameter to determine λ from Appendix B, Table 7 (see Attachment B-2A).
γ = parameter to determine λ from Appendix B, Table 7 (see Attachment B-2A).
n = number of observations
S_x^2 = Sample variance
PQL = Practical Quantitation Limit

λ = parameter used to derive corrected x and corrected S

x = corrected sample mean
S = corrected sample standard deviation

Reference: "Statistical analysis of Ground-water Monitoring Data at RCRA Facilities, Interim Final Guidance", USEPA, February 1989

Attachment B-2A

Appendix B, Table 7, from: "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Interim Final Guidance," USEPA, February 1989.

Table 7. Values of the Parameter $\hat{\lambda}$ for Cohen's Estimates Adjusting for Nondetected Values

γ	.01	.02	.03	.04	.05	.06	.07	.08	.09	.10	.15	.20
.00	.010100	.020400	.030902	.041583	.052597	.063625	.074955	.08649	.09824	.11020	.17342	.24268
.05	.010551	.021294	.032255	.043350	.054670	.066159	.077909	.08983	.10197	.11431	.17925	.25033
.10	.010950	.022082	.033398	.044902	.056596	.068483	.080563	.09285	.10534	.11804	.18479	.25741
.15	.011310	.022798	.034465	.046318	.058356	.070586	.083009	.09568	.10848	.12148	.18995	.26403
.20	.011642	.023459	.035453	.047629	.059990	.072539	.085280	.09832	.11135	.12469	.19480	.27031
.25	.011951	.024076	.036377	.048858	.061522	.074372	.087414	.10065	.11408	.12772	.19910	.27626
.30	.012243	.024658	.037249	.050018	.062969	.076106	.089433	.10295	.11667	.13059	.20338	.28193
.35	.012520	.025211	.038077	.051120	.064345	.077756	.091355	.10515	.11914	.13333	.20747	.28737
.40	.012784	.025738	.038866	.052173	.065660	.079332	.093193	.10725	.12150	.13595	.21139	.29260
.45	.013036	.026243	.039624	.053182	.066921	.080845	.094958	.10926	.12377	.13847	.21511	.29765
.50	.013279	.026728	.040352	.054153	.068135	.082301	.096657	.11121	.12595	.14090	.21882	.30253
.55	.013513	.027196	.041054	.055089	.069306	.083708	.098298	.11308	.12806	.14325	.22235	.30725
.60	.013739	.027649	.041733	.055995	.070439	.085068	.099887	.11490	.13011	.14552	.22578	.31184
.65	.013958	.028087	.042391	.056874	.071538	.086388	.10143	.11666	.13209	.14773	.22910	.31630
.70	.014171	.028513	.043030	.057726	.072605	.087670	.10292	.11837	.13402	.14987	.23234	.32063
.75	.014378	.028927	.043652	.058556	.073643	.088917	.10438	.12003	.13590	.15196	.23550	.32489
.80	.014579	.029330	.044258	.059364	.074655	.090133	.10580	.12167	.13775	.15400	.23859	.32905
.85	.014775	.029723	.044848	.060153	.075642	.091319	.10719	.12325	.13952	.15599	.24158	.33307
.90	.014967	.030107	.045425	.060923	.076606	.092477	.10854	.12480	.14126	.15793	.24452	.33703
.95	.015154	.030483	.045989	.061676	.077549	.093611	.10987	.12632	.14297	.15983	.24740	.34091
1.00	.015338	.030850	.046540	.062413	.078471	.094720	.11116	.12780	.14465	.16170	.25022	.34471

γ	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.80	.90
.00	.31862	.4021	.4941	.5961	.7096	.8388	.9808	1.145	1.336	1.561	2.176	3.283
.05	.32293	.4130	.5066	.6101	.7252	.2540	.9994	1.166	1.358	1.585	2.203	2.314
.10	.32662	.4233	.5184	.6234	.7400	.8703	1.017	1.185	1.379	1.608	2.229	3.345
.15	.32980	.4330	.5296	.6361	.7542	.8860	1.035	1.204	1.400	1.630	2.255	3.376
.20	.33255	.4422	.5403	.6483	.7679	.9012	1.051	1.222	1.419	1.651	2.280	3.405
.25	.33495	.4510	.5506	.6600	.7810	.9158	1.067	1.240	1.439	1.672	2.305	3.435
.30	.33700	.4595	.5604	.6713	.7937	.9300	1.083	1.257	1.457	1.693	2.329	3.464
.35	.33879	.4676	.5699	.6821	.8060	.9437	1.098	1.274	1.475	1.713	2.353	3.492
.40	.34036	.4755	.5791	.6927	.8179	.9570	1.113	1.290	1.494	1.732	2.376	3.520
.45	.34173	.4831	.5880	.7029	.8295	.9700	1.127	1.306	1.511	1.751	2.399	3.547
.50	.34292	.4904	.5967	.7129	.8408	.9826	1.141	1.321	1.528	1.770	2.421	3.573
.55	.34397	.4976	.6051	.7225	.8517	.9950	1.155	1.337	1.545	1.788	2.443	3.601
.60	.34487	.5045	.6133	.7320	.8625	1.007	1.169	1.351	1.561	1.806	2.465	3.628
.65	.34568	.5114	.6215	.7412	.8729	1.019	1.182	1.368	1.577	1.824	2.486	3.654
.70	.34553	.5180	.6291	.7502	.8833	1.030	1.195	1.380	1.593	1.841	2.507	3.679
.75	.34090	.5245	.6367	.7590	.8932	1.042	1.207	1.394	1.608	1.851	2.528	3.705
.80	.34612	.5308	.6441	.7676	.9031	1.053	1.220	1.408	1.624	1.875	2.548	3.730
.85	.34122	.5370	.6515	.7781	.9127	1.064	1.232	1.422	1.639	1.893	2.568	3.754
.90	.34622	.5430	.6588	.7844	.9222	1.074	1.244	1.435	1.653	1.908	2.588	3.779
.95	.34112	.5490	.6658	.7925	.9318	1.085	1.256	1.448	1.668	1.924	2.607	3.803
1.00	.34592	.5548	.6727	.8005	.9406	1.095	1.267	1.461	1.682	1.940	2.626	3.827

Source: Cohen, A.C., Jr. 1961. "Tables for Maximum Likelihood Estimates: Singly Truncated and Singly Censored Samples." *Technometrics*.

Attachment B-3

Aitchison's Method for Calculating Estimates of the Mean and Variance of Background Measurements when Some Observations (≤ 50%) are Below the Practical Quantitation Limit (PQL)

This method may be used when PQLs are not equal for the dataset.

1. The corrected sample mean is calculated using the following equation:

$$\bar{X} = \left(1 - \frac{d}{n}\right)\bar{X}^*$$

2. The corrected standard deviation is calculated using the following equation:

$$S = \frac{n-(d+1)}{n-1}\left(S^*\right)^2 + \frac{d}{n}\left(\frac{n-d}{n-1}\right)\left(\bar{X}^*\right)^2$$

3. Use the corrected values of $\bar{X}$ and S in the procedure for constructing a prediction limit outlined in Attachment F-1.

$\bar{X}$ = corrected sample mean
$\bar{X}^*$ = sample mean of detected values
n = number of samples
S = corrected sample standard deviation
d = number of values below the PQL

Reference: "Statistical analysis of Ground-water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance", USEPA, July 1992

Attachment B-4

Coefficient of Variation Test

This test is a simple check for evidence of gross nonnormality in groundwater monitoring data.

1. Calculate the sample mean ($\bar{x}$) of n observations x_i, i=1, ..., n.

$$\bar{x} = \left(\sum_{i=1}^{n} x_i\right) / n$$

2. Calculate the sample standard deviation, S.

$$S = \left[\sum_{i=1}^{n} (x_i - \bar{x})^2 / (n-1)\right]^{1/2}$$

3. Divide the sample standard deviation by the sample mean. This ratio is the Coefficient of Variation (CV).

$$CV = S / \bar{x}$$

4. Determine if the result of Step 3 exceeds 1.00. If so, this is evidence that the assumption of normal distribution does not fit the data adequately.

Reference: "Statistical analysis of Ground-water Monitoring Data at RCRA Facilities, Interim Final Guidance", USEPA, February 1989

Attachment B-5

Table 1. Factors for Obtaining One-Sided 99% Prediction Limits for k Additional Samples Given a Background Sample of Size n

Previous n	Number of new measurements (k) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
4	4.70	5.81	6.52	7.06	7.49	7.86	8.17	8.45	8.71	8.94	9.15	9.35	9.53	9.70	9.86
5	3.96	4.77	5.28	5.66	5.96	6.22	6.44	6.63	6.81	6.97	7.11	7.24	7.37	7.48	7.59
6	3.67	4.23	4.63	4.93	5.17	5.37	5.54	5.69	5.83	5.95	6.06	6.16	6.26	6.35	6.43
7	3.32	3.89	4.24	4.49	4.69	4.86	5.00	5.13	5.24	5.34	5.43	5.52	5.60	5.67	5.74
8	3.16	3.67	3.98	4.20	4.38	4.52	4.65	4.75	4.85	4.94	5.02	5.09	5.16	5.22	5.28
9	3.04	3.61	3.79	3.99	4.16	4.28	4.39	4.49	4.58	4.66	4.73	4.79	4.85	4.91	4.96
10	2.95	3.39	3.65	3.84	3.98	4.10	4.21	4.30	4.37	4.45	4.51	4.57	4.62	4.68	4.72
11	2.88	3.30	3.54	3.72	3.85	3.97	4.06	4.14	4.22	4.28	4.34	4.40	4.45	4.50	4.54
12	2.82	3.22	3.46	3.62	3.76	3.86	3.95	4.03	4.09	4.16	4.21	4.26	4.31	4.36	4.40
13	2.78	3.16	3.39	3.54	3.67	3.77	3.85	3.93	3.99	4.05	4.11	4.16	4.20	4.24	4.28
14	2.74	3.11	3.33	3.48	3.60	3.70	3.78	3.85	3.91	3.97	4.02	4.07	4.11	4.15	4.19
15	2.71	3.07	3.28	3.43	3.54	3.63	3.71	3.78	3.84	3.90	3.95	3.99	4.03	4.07	4.11
16	2.68	3.03	3.24	3.38	3.49	3.58	3.66	3.72	3.78	3.84	3.88	3.93	3.97	4.00	4.04
17	2.66	3.00	3.20	3.34	3.46	3.54	3.61	3.68	3.73	3.78	3.83	3.87	3.91	3.95	3.98
18	2.64	2.97	3.17	3.31	3.41	3.50	3.57	3.63	3.69	3.74	3.78	3.82	3.86	3.89	3.93
19	2.62	2.95	3.14	3.28	3.38	3.46	3.53	3.60	3.65	3.70	3.74	3.78	3.82	3.85	3.88
20	2.60	2.93	3.12	3.25	3.35	3.43	3.50	3.56	3.61	3.66	3.70	3.74	3.78	3.81	3.84
21	2.69	2.91	3.10	3.22	3.32	3.41	3.47	3.53	3.58	3.63	3.67	3.71	3.75	3.78	3.81
22	2.57	2.89	3.08	3.20	3.30	3.38	3.45	3.51	3.56	3.60	3.64	3.68	3.71	3.75	3.78
23	2.66	2.88	3.06	3.18	3.28	3.36	3.42	3.48	3.53	3.58	3.62	3.65	3.69	3.72	3.75
24	2.65	2.86	3.04	3.17	3.26	3.34	3.40	3.46	3.51	3.55	3.59	3.63	3.66	3.69	3.72
25	2.64	2.85	3.03	3.15	3.24	3.32	3.39	3.44	3.49	3.53	3.57	3.61	3.64	3.67	3.70
26	2.63	2.84	3.01	3.14	3.23	3.30	3.37	3.42	3.47	3.51	3.55	3.59	3.62	3.65	3.68
27	2.62	2.83	3.00	3.12	3.21	3.29	3.35	3.41	3.45	3.50	3.53	3.57	3.60	3.63	3.66
28	2.62	2.82	2.99	3.11	3.20	3.27	3.34	3.39	3.44	3.48	3.52	3.55	3.58	3.61	3.64
29	2.61	2.81	2.98	3.10	3.19	3.26	3.32	3.38	3.42	3.46	3.50	3.54	3.57	3.60	3.62
30	2.60	2.80	2.97	3.09	3.18	3.25	3.31	3.36	3.41	3.45	3.49	3.52	3.55	3.58	3.61
31	2.50	2.79	2.96	3.08	3.17	3.24	3.30	3.35	3.40	3.44	3.47	3.51	3.54	3.57	3.59
32	2.49	2.79	2.95	3.07	3.16	3.23	3.29	3.34	3.39	3.43	3.46	3.50	3.53	3.55	3.58
33	2.49	2.78	2.94	3.06	3.16	3.22	3.28	3.33	3.37	3.41	3.45	3.48	3.51	3.54	3.57
34	2.48	2.77	2.94	3.05	3.14	3.21	3.27	3.32	3.36	3.40	3.44	3.47	3.50	3.53	3.56
35	2.48	2.77	2.93	3.04	3.13	3.20	3.26	3.31	3.35	3.39	3.43	3.46	3.49	3.52	3.54
36	2.47	2.76	2.92	3.04	3.12	3.19	3.25	3.30	3.35	3.39	3.42	3.45	3.48	3.51	3.53
37	2.47	2.76	2.92	3.03	3.12	3.19	3.24	3.29	3.34	3.38	3.41	3.44	3.47	3.50	3.53
38	2.46	2.75	2.91	3.02	3.11	3.18	3.24	3.29	3.33	3.37	3.40	3.44	3.46	3.49	3.52
39	2.46	2.75	2.91	3.02	3.10	3.17	3.23	3.28	3.32	3.36	3.40	3.43	3.46	3.48	3.51
40	2.46	2.74	2.90	3.01	3.10	3.17	3.22	3.27	3.31	3.35	3.39	3.42	3.45	3.47	3.50
41	2.45	2.74	2.90	3.01	3.09	3.16	3.22	3.27	3.31	3.35	3.38	3.41	3.44	3.47	3.49
42	2.45	2.73	2.89	3.00	3.09	3.15	3.21	3.26	3.30	3.34	3.37	3.41	3.43	3.46	3.48
43	2.45	2.73	2.89	3.00	3.08	3.15	3.20	3.25	3.30	3.33	3.37	3.40	3.43	3.45	3.48
44	2.44	2.73	2.88	2.99	3.08	3.14	3.20	3.25	3.29	3.33	3.36	3.39	3.42	3.45	3.47
45	2.44	2.72	2.88	2.99	3.07	3.14	3.19	3.24	3.28	3.32	3.36	3.39	3.41	3.44	3.46
46	2.44	2.72	2.88	2.98	3.07	3.13	3.19	3.24	3.28	3.32	3.35	3.38	3.41	3.43	3.46
47	2.44	2.72	2.87	2.98	3.06	3.13	3.18	3.23	3.27	3.31	3.34	3.38	3.40	3.43	3.45
48	2.43	2.71	2.87	2.98	3.06	3.12	3.18	3.23	3.27	3.31	3.34	3.37	3.40	3.42	3.45
49	2.43	2.71	2.86	2.97	3.06	3.12	3.18	3.22	3.26	3.30	3.34	3.37	3.39	3.42	3.44
50	2.43	2.71	2.86	2.97	3.05	3.12	3.17	3.22	3.26	3.30	3.33	3.36	3.39	3.41	3.44
60	2.41	2.68	2.84	2.94	3.02	3.08	3.14	3.18	3.22	3.26	3.29	3.32	3.35	3.37	3.40
70	2.40	2.67	2.82	2.92	3.00	3.06	3.12	3.16	3.20	3.24	3.27	3.30	3.32	3.35	3.37
80	2.39	2.66	2.80	2.91	2.98	3.05	3.10	3.14	3.18	3.22	3.25	3.28	3.30	3.33	3.35
90	2.38	2.65	2.79	2.89	2.97	3.03	3.08	3.13	3.17	3.20	3.23	3.26	3.29	3.31	3.33
100	2.38	2.64	2.79	2.89	2.96	3.02	3.07	3.12	3.16	3.19	3.22	3.25	3.27	3.30	3.32

Factor = $t_{(n-1),(1-\alpha)}\sqrt{1+\frac{1}{n}}$

Table 2. Factors for Obtaining One-Sided 99% Prediction Limits for k Additional Samples Given a Background Sample of Size n

Previous n	Number of new measurements (k) 16	17	18	19	20	21	22	23	24	25	26	27	28	29
4	10.01	10.16	10.30	10.43	10.55	10.67	10.79	10.90	11.00	11.11	11.21	11.30	11.40	11.49
5	7.70	7.79	7.89	7.97	8.06	8.14	8.22	8.29	8.36	8.43	8.50	8.56	8.62	8.68
6	6.51	6.58	6.65	6.72	6.79	6.85	6.90	6.96	7.02	7.07	7.12	7.17	7.21	7.26
7	5.80	5.86	5.92	5.98	6.03	6.08	6.13	6.17	6.21	6.26	6.30	6.34	6.38	6.41
8	5.34	5.39	5.44	5.49	5.53	5.57	5.61	5.65	5.69	5.73	5.76	5.80	5.83	5.86
9	5.01	5.06	5.10	5.14	5.18	5.22	5.25	5.29	5.32	5.35	5.39	5.42	5.44	5.47
10	4.77	4.81	4.85	4.89	4.92	4.96	4.99	5.02	5.05	5.08	5.11	5.14	5.16	5.19
11	4.58	4.62	4.66	4.69	4.73	4.76	4.79	4.82	4.84	4.87	4.90	4.92	4.94	4.97
12	4.44	4.47	4.51	4.54	4.57	4.60	4.63	4.65	4.68	4.71	4.73	4.75	4.77	4.80
13	4.32	4.35	4.38	4.42	4.44	4.47	4.50	4.52	4.55	4.57	4.59	4.62	4.64	4.66
14	4.22	4.25	4.28	4.31	4.34	4.37	4.39	4.42	4.44	4.46	4.48	4.50	4.52	4.54
15	4.14	4.17	4.20	4.23	4.25	4.28	4.30	4.33	4.35	4.37	4.39	4.41	4.43	4.45
16	4.07	4.10	4.13	4.15	4.18	4.20	4.23	4.25	4.27	4.29	4.31	4.33	4.35	4.37
17	4.01	4.04	4.07	4.09	4.12	4.14	4.16	4.18	4.20	4.22	4.24	4.26	4.28	4.30
18	3.96	3.99	4.01	4.04	4.06	4.08	4.11	4.13	4.15	4.17	4.18	4.20	4.22	4.24
19	3.91	3.94	3.97	3.99	4.01	4.04	4.06	4.08	4.10	4.11	4.13	4.15	4.17	4.18
20	3.87	3.90	3.92	3.95	3.97	3.99	4.01	4.03	4.05	4.07	4.09	4.10	4.12	4.14
21	3.84	3.86	3.89	3.91	3.93	3.95	3.97	3.99	4.01	4.03	4.05	4.06	4.08	4.09
22	3.80	3.83	3.85	3.88	3.90	3.92	3.94	3.96	3.98	3.99	4.01	4.03	4.04	4.06
23	3.77	3.80	3.82	3.85	3.87	3.89	3.91	3.93	3.94	3.96	3.98	3.99	4.01	4.02
24	3.75	3.77	3.80	3.82	3.84	3.86	3.88	3.90	3.92	3.93	3.95	3.96	3.98	3.99
25	3.72	3.75	3.77	3.79	3.82	3.84	3.85	3.87	3.89	3.91	3.92	3.94	3.95	3.97
26	3.70	3.73	3.75	3.77	3.79	3.81	3.83	3.85	3.87	3.88	3.90	3.91	3.93	3.94
27	3.68	3.71	3.73	3.75	3.77	3.79	3.81	3.83	3.84	3.86	3.87	3.89	3.90	3.92
28	3.66	3.69	3.71	3.73	3.75	3.77	3.79	3.81	3.82	3.84	3.85	3.87	3.88	3.90
29	3.65	3.67	3.69	3.71	3.73	3.75	3.77	3.79	3.80	3.82	3.83	3.85	3.86	3.88
30	3.63	3.66	3.68-	3.70	3.72	3.74	3.75	3.77	3.79	3.80	3.82	3.83	3.85	3.86
31	3.62	3.64	3.66	3.68	3.70	3.72	3.74	3.75	3.77	3.79	3.80	3.81	3.83	3.84
32	3.60	3.63	3.65	3.67	3.69	3.71	3.72	3.74	3.76	3.77	3.79	3.80	3.81	3.83
33	3.59	3.61	3.64	3.66	3.67	3.69	3.71	3.73	3.74	3.76	3.77	3.79	3.80	3.81
34	3.58	3.60	3.62	3.64	3.66	3.68	3.70	3.71	3.73	3.74	3.76	3.77	3.78	3.80
35	3.57	3.59	3.61	3.63	3.65	3.67	3.69	3.70	3.72	3.73	3.75	3.76	3.77	3.78
36	3.56	3.58	3.60	3.62	3.64	3.66	3.67	3.69	3.71	3.72	3.73	3.75	3.76	3.77
37	3.55	3.57	3.59	3.61	3.63	3.65	3.66	3.68	3.69	3.71	3.72	3.74	3.75	3.76
38	3.54	3.56	3.58	3.60	3.62	3.64	3.65	3.67	3.68	3.70	3.71	3.73	3.74	3.75
39	3.53	3.55	3.57	3.59	3.61	3.63	3.64	3.66	3.67	3.69	3.70	3.72	3.73	3.74
40	3.52	3.54	3.56	3.58	3.60	3.62	3.63	3.65	3.67	3.68	3.69	3.71	3.72	3.73
41	3.51	3.54	3.56	3.58	3.59	3.61	3.63	3.64	3.66	3.67	3.68	3.70	3.71	3.72
42	3.51	3.53	3.55	3.57	3.59	3.60	3.62	3.63	3.65	3.66	3.68	3.69	3.70	3.71
43	3.50	3.52	3.54	3.56	3.58	3.59	3.61	3.63	3.64	3.65	3.67	3.68	3.69	3.71
44	3.49	3.51	3.53	3.56	3.57	3.59	3.60	3.62	3.63	3.65	3.66	3.67	3.69	3.70
45	3.49	3.51	3.53	3.56	3.56	3.58	3.60	3.61	3.63	3.64	3.65	3.67	3.68	3.69
46	3.48	3.50	3.52	3.54	3.56	3.57	3.59	3.61	3.62	3.63	3.65	3.66	3.67	3.68
47	3.48	3.50	3.52	3.53	3.55	3.57	3.58	3.60	3.61	3.63	3.64	3.65	3.67	3.68
48	3.47	3.49	3.51	3.53	3.55	3.56	3.58	3.59	3.61	3.62	3.63	3.65	3.66	3.67
49	3.46	3.48	3.50	3.52	3.54	3.56	3.57	3.59	3.60	3.62	3.63	3.64	3.65	3.66
50	3.46	3.48	3.50	3.52	3.53	3.55	3.57	3.58	3.60	3.61	3.62	3.64	3.65	3.66
60	3.42	3.44	3.46	3.47	3.49	3.51	3.52	3.54	3.55	3.56	3.58	3.59	3.60	3.61
70	3.39	3.41	3.43	3.45	3.46	3.48	3.49	3.51	3.52	3.53	3.54	3.56	3.57	3.58
80	3.37	3.39	3.41	3.42	3.44	3.45	3.47	3.48	3.50	3.51	3.52	3.53	3.54	3.56
90	3.35	3.37	3.39	3.41	3.42	3.44	3.45	3.47	3.48	3.49	3.50	3.51	3.53	3.54
100	3.34	3.36	3.38	3.39	3.41	3.42	3.44	3.45	3.46	3.48	3.49	3.50	3.51	3.52

Factor = $t_{(n-1),1-\alpha/k}\sqrt{1+1/n}$

Table 3 Factors for Obtaining One-Sided 99% Prediction Limits for k Additional Samples Given a Background Sample of Size n

Previous n	Number of new measurements (k)														
	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
4	11.57	11.98	12.34	12.66	12.95	13.22	13.47	13.70	13.91	14.11	14.31	14.49	14.66	14.82	14.98
6	8.74	9.01	9.25	9.46	9.65	9.83	9.99	10.14	10.29	10.42	10.64	10.66	10.77	10.88	10.98
6	7.30	7.51	7.68	7.84	7.99	8.12	8.24	8.35	8.46	8.55	8.65	8.73	8.82	8.90	8.97
7	6.45	6.61	6.76	6.89	7.00	7.11	7.20	7.29	7.38	7.46	7.53	7.60	7.67	7.73	7.79
8	5.89	6.03	6.15	6.26	6.36	6.45	6.53	6.61	6.68	6.74	6.81	6.87	6.92	6.97	7.02
9	5.50	5.62	5.73	5.82	5.91	5.99	6.06	6.13	6.19	6.25	6.30	6.35	6.40	6.45	6.49
10	5.21	5.32	5.42	5.50	5.58	5.65	5.72	5.77	5.83	5.88	5.93	5.98	6.02	6.06	6.10
11	4.99	5.09	5.18	5.26	5.33	5.39	5.45	5.51	5.56	5.60	5.65	5.69	5.73	5.77	5.80
12	4.82	4.91	4.99	5.07	5.13	5.19	5.25	5.30	5.34	5.39	5.43	5.47	5.50	5.54	5.57
13	4.68	4.77	4.84	4.91	4.97	5.03	5.08	5.13	5.17	5.21	5.25	5.28	5.32	5.35	5.38
14	4.56	4.65	4.72	4.78	4.84	4.89	4.94	4.99	5.03	5.07	5.10	5.14	5.17	5.20	5.23
15	4.46	4.54	4.61	4.68	4.73	4.78	4.83	4.87	4.91	4.95	4.98	5.01	5.04	5.07	5.10
16	4.38	4.46	4.53	4.59	4.64	4.69	4.73	4.77	4.81	4.84	4.88	4.91	4.94	4.96	4.99
17	4.31	4.39	4.45	4.51	4.56	4.61	4.65	4.69	4.72	4.76	4.79	4.82	4.85	4.87	4.90
18	4.25	4.32	4.39	4.44	4.49	4.54	4.58	4.61	4.65	4.68	4.71	4.74	4.77	4.79	4.82
19	4.20	4.27	4.33	4.38	4.43	4.47	4.51	4.55	4.58	4.61	4.64	4.67	4.70	4.72	4.75
20	4.15	4.22	4.28	4.33	4.38	4.42	4.46	4.49	4.53	4.56	4.59	4.61	4.64	4.66	4.68
21	4.11	4.18	4.23	4.28	4.33	4.37	4.41	4.44	4.48	4.50	4.53	4.56	4.58	4.61	4.63
22	4.07	4.14	4.19	4.24	4.29	4.33	4.36	4.40	4.43	4.46	4.49	4.51	4.54	4.56	4.58
23	4.04	4.10	4.16	4.21	4.25	4.29	4.32	4.36	4.39	4.42	4.44	4.47	4.49	4.51	4.54
24	4.01	4.07	4.12	4.17	4.21	4.25	4.29	4.32	4.35	4.38	4.41	4.43	4.45	4.48	4.50
25	3.98	4.04	4.09	4.14	4.18	4.22	4.26	4.29	4.32	4.35	4.37	4.40	4.42	4.44	4.46
26	3.95	4.01	4.07	4.11	4.16	4.19	4.23	4.26	4.29	4.31	4.34	4.36	4.39	4.41	4.43
27	3.93	3.99	4.04	4.09	4.13	4.17	4.20	4.23	4.26	4.29	4.31	4.33	4.36	4.38	4.40
28	3.91	3.97	4.02	4.06	4.11	4.14	4.17	4.21	4.23	4.26	4.28	4.31	4.33	4.35	4.37
29	3.89	3.95	4.00	4.04	4.08	4.12	4.15	4.18	4.21	4.24	4.26	4.28	4.30	4.32	4.34
30	3.87	3.93	3.98	4.02	4.06	4.10	4.13	4.16	4.19	4.21	4.24	4.26	4.28	4.30	4.32
31	3.85	3.91	3.96	4.00	4.04	4.08	4.11	4.14	4.17	4.19	4.22	4.24	4.26	4.28	4.30
32	3.84	3.90	3.94	3.99	4.03	4.06	4.09	4.12	4.15	4.17	4.20	4.22	4.24	4.26	4.28
33	3.82	3.88	3.93	3.97	4.01	4.04	4.08	4.10	4.13	4.16	4.18	4.20	4.22	4.24	4.26
34	3.81	3.87	3.91	3.96	3.99	4.03	4.06	4.09	4.11	4.14	4.16	4.18	4.20	4.22	4.24
35	3.80	3.85	3.90	3.94	3.98	4.01	4.04	4.07	4.10	4.12	4.15	4.17	4.19	4.21	4.22
36	3.79	3.84	3.89	3.93	3.97	4.00	4.03	4.06	4.08	4.11	4.13	4.15	4.17	4.19	4.21
37	3.77	3.83	3.88	3.92	3.95	3.99	4.02	4.04	4.07	4.09	4.12	4.14	4.16	4.18	4.19
38	3.76	3.82	3.86	3.90	3.94	3.97	4.00	4.03	4.06	4.08	4.10	4.12	4.14	4.16	4.18
39	3.75	3.81	3.85	3.89	3.93	3.96	3.99	4.02	4.05	4.07	4.09	4.11	4.13	4.15	4.17
40	3.74	3.80	3.84	3.88	3.92	3.95	3.98	4.01	4.03	4.06	4.08	4.10	4.12	4.14	4.15
41	3.73	3.79	3.83	3.87	3.91	3.94	3.97	4.00	4.02	4.05	4.07	4.09	4.11	4.12	4.14
42	3.73	3.78	3.82	3.86	3.90	3.93	3.96	3.99	4.01	4.04	4.06	4.08	4.10	4.11	4.13
43	3.72	3.77	3.82	3.85	3.89	3.92	3.95	3.98	4.00	4.03	4.05	4.07	4.09	4.10	4.12
44	3.71	3.76	3.81	3.85	3.88	3.91	3.94	3.97	3.99	4.02	4.04	4.06	4.08	4.09	4.11
45	3.70	3.75	3.80	3.84	3.87	3.91	3.93	3.96	3.98	4.01	4.03	4.05	4.07	4.08	4.10
46	3.70	3.75	3.79	3.83	3.87	3.90	3.93	3.95	3.98	4.00	4.02	4.04	4.06	4.08	4.09
47	3.69	3.74	3.78	3.82	3.80	3.89	3.92	3.94	3.97	3.99	4.01	4.03	4.05	4.07	4.08
48	3.68	3.73	3.78	3.82	3.86	3.88	3.91	3.94	3.96	3.98	4.00	4.02	4.04	4.06	4.07
49	3.68	3.73	3.77	3.81	3.84	3.88	3.90	3.93	3.95	3.98	4.00	4.02	4.03	4.05	4.07
50	3.67	3.72	3.76	3.80	5.84	3.87	3.90	3.92	3.95	3.97	3.99	4.01	4.03	4.04	4.06
60	3.62	3.67	3.71	3.75	3.78	3.81	3.84	3.87	3.89	3.91	3.93	3.95	3.97	3.98	4.00
70	3.59	3.64	3.68	3.72	3.75	3.78	3.80	3.83	3.85	3.87	3.89	3.91	3.93	3.94	3.96
80	3.57	3.61	3.65	3.69	3.72	3.76	3.78	3.80	3.82	3.84	3.86	3.88	3.89	3.91	3.93
90	3.55	3.59	3.63	3.67	5.70	3.73	3.75	3.78	3.80	3.82	3.84	3.85	3.87	3.89	3.90
100	3.53	3.58	3.02	3.65	3.68	3.71	3.74	3.76	3.78	3.80	3.82	3.84	3.85	3.87	3.88

$$\text{Factor} = t_{(n-1,1-\alpha/k)}\sqrt{1 + 1/n}$$

Attachment B-6, Table 1
CID-RDF Area 4 Landfill
Silurian Dolomite
Intrawell Background Values (ug/L)
December 2019
Illinois EPA Log No. B-27R-M-91

List G2	Concentration Limit	G02D	R06D	R08D	G10D	G16D	G18D	G20D	R04D	G05D
Toluene	1000	6	6	6	6	6	6	6	1	8
Benzene	5	5	5	5	5	5	5	5	1	5
Ethylbenzene	700	7.2	7.2	7.2	7.2	7.2	7.2	7.2	1	7.2
Xylene (total)	10000	5	5	5	5	5	5	5	2	5
BTEX (total)	11705	23.2	23.2	23.2	23.2	23.2	23.2	23.2	3	23.2
1,4-dioxane	77	5	5	5	5	5	5	5	2	5
List G3										
Naphthalene	140	10	10	10	10	10	10	10	5	10
Acetone	6300	100	100	100	100	100	100	100	10	100
bis(2-ethylhexyl)phthalate	6	6	6	6	6	6	6	6	5	6
chlorobenzene	100	6	6	6	6	6	6	6	1	6
methylene chloride	5	5	5	5	5	5	5	5	1	5
List G5										
Barium, dissolved (ug/L)	--	84.8	43	53	346	36.8	26.4	216	316	1330
Chloride, dissolved (mg/L)	--	72.6	51.4	32.8	193	36.1	35.7	73.7	473.0	162.0
Chromium, dissolved (ug/L)	--	PQL	PQL	PQL	PQL	PQL	PQL	PQL	4	19
Cobalt, dissolved (ug/L)	--	PQL	PQL	PQL	PQL	PQL	PQL	PQL	4	7
Lead, dissolved (ug/L)	--	PQL	PQL	PQL	PQL	PQL	PQL	PQL	10	PQL
Nickel, dissolved (ug/L)	--	PQL	PQL	PQL	PQL	PQL	PQL	PQL	10	151
Zinc, dissolved (ug/L)	--	PQL	PQL	PQL	PQL	PQL	PQL	PQL	10	PQL

Shaded value shall be evaluated in accordance with Condition II.I.4 of the Permit

Attachment B-6, Table 2
CID-RDF Area 3 Landfill
Silurian Dolomite
Intrawell Background Values (ug/L)
December 2019
Illinois EPA Log No. B-27R-M-91

List G2	Concentration Limit	A12D	R15D	G21D	R107	AW01	R16D	R26D	R27D
Toluene	1000	6	6	6	6	6	6	6	6
Benzene	5	5	5	5	5	5	5	5	5
Ethylbenzene	700	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
Xylene (total)	10000	5	5	5	5	5	5	5	5
BTEX (total)	11705	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2
1,4-dioxane	7.7	5	5	5	5	3.6	5	5	5
List G3									
Naphthalene	140	10	10	10	10	10	10	10	10
Acetone	6300	100	100	100	100	100	100	100	100
bis(2-ethylhexyl)phthalate	6	6	6	6	6	6	6	6	6
chlorobenzene	100	6	6	6	6	6	6	6	6
methylene chloride	5	5	5	5	5	5	5	5	5
1,4-dichlorobenzene	75	2	2	2	2	2	2	2	2
vinyl chloride	2	2	2	2	2	2	2	2	2
List G5									
Chloride, dissolved (mg/L)	--	32.4	57.8	41.2	43.7	53	123.3	41.3	44.1

Shaded value shall be evaluated in accordance with Condition III.J.9 of the Permit.

Attachment B-6, Table 3
CID-RDF Area 4 Landfill
Dolton Sand
Intrawell Background Values (ug/L)
December 2019
Illinois EPA Log No. B-27R-M-91

List G2	Concentration Limit	G01S	G04S	G05S	G07S	G09S	G13S	R15S	R17S	G19S	G21S
Toluene	2500	6	6	6	6	6	6	6	6	6	6
Benzene	25	5	5	5	5	5	5	5	5	5	5
Ethylbenzene	1000	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
Xylene (total)	10000	5	5	5	5	5	5	5	5	5	5
BTEX (total)	13525	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2
1,4-dioxane	7.7	5	5	5	PQL	5	498	5	10.3	4.9	3588
List G6											
Arsenic, dissolved(ug/L)		PQL	PQL	PQL	NA	NA	PQL	PQL	NA	NA	84
Chromium, dissolved (ug/L)	--	PQL	20.90	PQL	NA	NA	PQL	PQL	NA	NA	11.7
Cobalt, dissolved (ug/L)	--	PQL	PQL	PQL	NA	NA	PQL	PQL	NA	NA	15.99
Vanadium,dissolved(ug/L)	--	PQL	PQL	PQL	NA	NA	PQL	PQL	NA	NA	16.4

Shaded value shall be evaluated in accordance with Condition II.I.4 of the Permit.

Attachment B-6, Table 4
CID-RDF Area 3 Landfill
Dolton Sand
Intrawell Background Values (ug/L)
December 2019
Illinois EPA Log No. B-27-M-91

List G2	Concentration Limit	G12S	R13S	G14S	G15S	G16S
Toluene	2500	6	6	6	6	6
Benzene	25	5	5	5	5	5
Ethylbenzene	1000	7.2	7.2	7.2	7.2	7.2
Xylene (total)	10000	5	5	5	5	5
BTEX (total)	13525	23.2	23.2	23.2	23.2	23.2
1,4-dioxane	7.7	5	5	5	5	5

ATTACHMENT C

POST CLOSURE AND CORRECTIVE ACTION COST ESTIMATES

STATE ID # 0310390001

ILD010284248

POST-CLOSURE PERMIT LOG NO. B-27R2

POST-CLOSURE AND CORRECTIVE ACTION

COST ESTIMATE SUMMARY

CID RDF

These estimates are based on using 2021 dollars and include the cost of: (1) activities carried out each year (i.e., annual costs); and (2) one-time or non-annual costs. Post-closure care for Area 3 began on May 30, 2008. Post-closure care for Area 4 began on February 18, 2010.

COST ESTIMATES

ACTIVITY	Area 1 & Area 2 landfills (SWMUs)	Area 3 landfill (HWMU)	Area 4 landfill (HWMU)	Total
Corrective Action	$10,303,004			**$10,303,004**
Post Closure Care		$12,585,185	$2,901,051	**$15,486,236**

Notes:
Post-closure care shall continue for a minimum of 30 years from the start dates listed above for Area 3 and Area 4.

ATTACHMENT D

POST CLOSURE INSPECTION SCHEDULE

&

POST CLOSURE MAINTENANCE

STATE ID # 0310390001

ILD010284248

POST-CLOSURE PERMIT LOG NO. B-27R2

ATTACHMENT D

Area 3 and Area 4 Post-Closure Inspections

Inspection Schedule

Post-closure inspections will be conducted quarterly during the first two years following closure certification, and semi-annually thereafter. Findings made during each inspection will be recorded on the post-closure inspection log. Copies of all inspection logs will be kept at CID RDF or a local Waste Management, Inc., office or storage facility. Documentation of all repairs performed, or replacements required to properly maintain the site will be kept with the inspection logs. General post-closure inspection procedures will include the following:

1. Visually inspect the perimeter fence and all gates. Check for fence integrity and note any areas of damage. Note the working condition of each gate and check to ensure that all locks and other security systems are in place and functioning.

2. Visually inspect each benchmark. Report any missing benchmarks and note any damage to the benchmarks.

3. Visually inspect the landfill cover, drainage system, and surrounding areas. Note any evidence of cover erosion, settling, or vegetative stress. Also note any unusual conditions such as odors, ponded water, or bubbling. Report any areas requiring further inspection or repairs so arrangements can be made to efficiently make all necessary repairs.

4. Visually inspect each leachate collection riser and note any damage. Check and record the liquid level in each riser. If the liquid level is found to be approaching or above the maximum acceptable level, make arrangements for leachate removal.

5. Check the secondary leachate detection system in Area 4 for the presence of liquids. Make arrangements for leachate removal if liquid is detected. Record the amount withdrawn, if applicable.

6. Visually inspect each groundwater well protective casing for damage. Check the protective casing and lock to ensure they are functioning and have not been tampered with. Note area around wells for erosion, settling or negative stress.

7. Visually inspect any required safety and emergency equipment. Report missing and/or damaged equipment.

8. Visually inspect the run-on and run-off control measures. Note any erosion, missing riprap or other disrepair.

Following each inspection, a copy of the inspection log will be sent to the appropriate WMI personnel for review. Arrangements will also be made to repair or replace any items in order to maintain the site at a condition equal to that in the application.

Area 3 and Area 4 Post-Closure Maintenance

Post-Closure Maintenance

Maintenance activities will respond to the needs determined from the inspections. Items that may require repair include:

- Inoperative security control devices;
- slopes damaged by erosion;
- areas of differential settlement, subsidence, and displacement;
- run-on and run-off control structures; and
- leachate and gas collection and removal systems.

Groundwater monitoring wells will be repaired or replaced as needed and will be decommissioned upon Agency approval.

The final cover system will be mowed at least annually and fertilized as needed (except for areas where shrubbery or other structures are present).

Corrective action for the cover materials will be taken if the following problems occur:

- ponding;
- cracks greater than one inch wide;
- gas problems;
- odor problems;
- larger areas of dead or stressed vegetation (areas greater than 50 square feet);
- vegetation with taproots growing in areas not designed to accommodate such;
- vector problems; or
- leachate popouts or seeps.

Corrective action measures for these types of problems could include regrading, addition of soils to repair cracks or to eliminate ponding, or re-seeding to re-establish vegetation.

ATTACHMENT E

APPROVED PERMIT APPLICATION IDENTIFICATION

STATE ID # 0310390001

ILD010284248

POST-CLOSURE PERMIT LOG NO. B-27R2

ATTACHMENT E
IDENTIFICATION OF APPROVED PERMIT APPLICATION

1. RCRA Post-Closure Renewal Application dated May 3, 2019 (completely replaced January 17, 2018 application)
2. Additional Information dated July 9, 2019
3. Additional Information dated August 15, 2019
4. Additional Information dated February 3, 2020
5. Additional Information dated June 30, 2020
6. Additional Information dated August 6, 2020

ATTACHMENT F

STATISTICAL PROCEDURES FLOW CHART

ILD010284248

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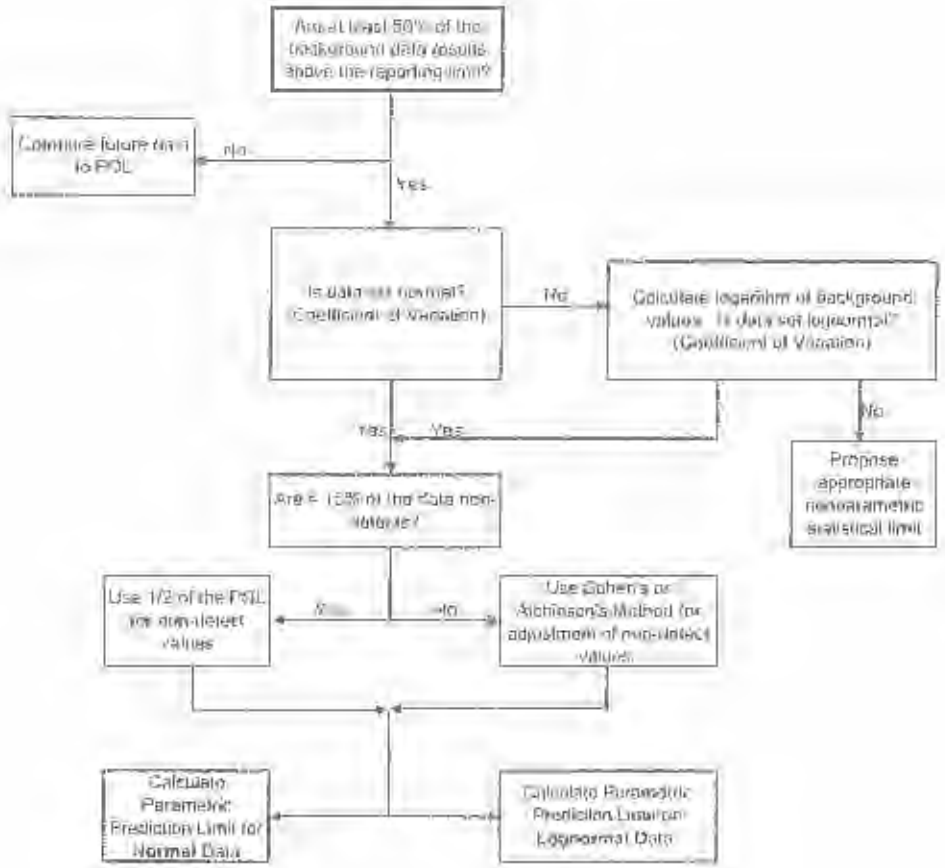
CID Recycling and Disposal Facility
Background Statistical Calculations
Flow Chart



ATTACHMENT G

CORRECTIVE MEASURES PROGRAM REQUIREMENTS

STATE ID # 0310390001

ILD010284248

POST-CLOSURE PERMIT LOG NO. B-27R2

Attachment G
Corrective Measures Program Requirements

1.0 INTRODUCTION/PURPOSE

RCRA Corrective Action projects typically consist of two phases: (1) A RCRA Facility Investigation (RFI) where an investigation is conducted at the SWMU's of concern at a facility; and (2) implementation of corrective measures needed to properly address any contaminant encountered during the RFI. This document has been developed to outline the procedures to be carried out to implement a corrective measure program.

2.0 BRIEF OVERVIEW OF A RCRA CORRECTIVE MEASURES PROGRAM

Typically, at the end of an RFI, the concentration of contaminants present in the soil/sediments/groundwater/surface waters at a SWMU or other area of concern is compared to remediation objectives developed in accordance with 35 Ill. Adm. Code 742. If the contaminant levels are above these objectives, then some type of corrective measure must be completed to achieve these objectives. In addition, certain corrective measures may need to be carried out to support the established remediation objectives (i.e., the establishment of engineered barriers and/or institutional controls). However, at a unit where waste or high levels of contamination remains, a decision may be made to close the unit as a landfill and then provide post-closure rather than removing the material and/or achieving remediation objectives developed in accordance with 35 Ill. Adm. Code 742.

To allow for a logical and orderly progression in developing and implementing necessary corrective measures, the Corrective Measures Program (CMP) being carried out in accordance with this RCRA permit should be carried out in five phases which build on each other. It is not necessary for a corrective measures program at a given SWMU or other areas of concern to follow these five phases step-by-step; rather, phases can be combined and/or skipped, depending on the actual remedial measure selected. The overall CMP implemented must set forth a logical path for its implementation and allow for Illinois EPA oversight and approval throughout the entire process.

A brief discussion of the five phases of a CMP is as follows:

1. Phase I is the conceptual design of the selected corrective measure(s).

2. Phase II is the development of final design plans for the corrective measure, including installation and operation/maintenance plans.

3. Phase III is the actual construction/installation of the selected corrective measure.

4. Phase IV is the operation, maintenance, and monitoring of the selected corrective measure to ensure it is properly protecting human health and the environment.

5. Phase V is the final demonstration/verification that the implemented corrective measure achieved the approved remedial objectives.

Sections 3.0 through 7.0 which follow provide a more detailed discussion of each of these five phases. Section 8.0 has been developed to describe the corrective measures program which may be used in lieu of the afore-mentioned five phase procedure when soil removal is the selected remedy. It must be noted that work plans, reports, etc. must be developed to document how the Permittee carries out the required corrective measures program at each SWMU or other areas of concern. All such documents must be reviewed and approved by Illinois EPA prior to their implementation.

3.0 PHASE I OF THE CMP

Phase I of the CMP includes selection of the corrective measure to be taken and developing a basis for completing the final design of the measure. This effort should be documented in a Conceptual Design Report which describes the proposed corrective measure for each SWMU and other areas of concern and provides a conceptual design for these measures. The main criteria for Illinois EPA review is whether the proposed corrective measures are able to achieve the final cleanup objectives previously established by the Permittee and the Illinois EPA and/or provide the necessary institutional controls to prevent the migration of contaminants from the SWMU of concern. Based upon a review of the Conceptual Design Report, the Illinois EPA may approve the corrective measures, require revisions to the proposed corrective measures, or require that a totally new corrective measures proposal be submitted to the Illinois EPA.

The Conceptual Design Report should contain the following sections:

1. Introduction/Purpose. This section should contain: (1) general background information regarding the project; (2) the purpose and goals of the submittal; and (3) the scope of the project.

2. Existing Site Conditions. This section should contain a summary of the investigative activities conducted for each of the units of concern. Investigation analytical results should be provided in tabular form, and maps depicting both the horizontal and vertical extent of contamination at the site should be provided.

3. Evaluation for Potential Future Migration. Based on the existing site conditions, a conceptual model of the site should be developed and presented in this section. The potential for additional future migration of contamination for each of the units of concern must then be evaluated, especially those units which have been determined to have released hazardous waste/hazardous constituents to the groundwater. It may be helpful to develop conceptual models for contaminant

migration. Of special concern in this evaluation are (1) the physical properties of the contaminants (solubility, volatility, mobility, etc.); and (2) existing site conditions (types of soil present, location of contamination, hydrology, geology, etc.).

4. Corrective Measures Objectives. This section should discuss the general objectives of the proposed corrective measure to be constructed/installed, and the ability of the proposed corrective measure to achieve the established remediation objectives (unless the selected corrective measure is closure as a landfill which will require proper establishment of a final cover and proper post-closure care of the closed unit.

5. Identification of Options Available. This section should contain a brief discussion of the various options available to achieve the corrective measures objectives for each unit. This discussion should identify: (1) a general overview of each option available, including how the option will achieve the stated objective; (2) the advantages associated with each option; (3) the disadvantages associated with each option and (4) an estimate of the cost associated with choosing each remedial option.

6. Description of Selected Corrective Measure. This section should contain a qualitative discussion of the corrective measure chosen, along with the rationale which was used to select this measure from all those identified initially. This discussion should include documentation that the selected corrective measure will be effective.

7. Identification of Design Criteria. This section should identify what information must be available to design the selected corrective measure.

8. Review of Available Information. This section should contain an evaluation of the existing information to ensure that it is sufficient to complete the design of the selected corrective measure. If insufficient information is available, then the report should contain procedures for collecting the required additional information.

9. Procedures for Completing the Design. This section should contain a description of the procedures which will be followed to complete the design of the corrective measure. This should include as appropriate:

   a. Identification of the references and established guidance which will be used in designing the selected corrective measure. Justification for the selection of this procedure should also be provided.

b. A description of the procedures which will be used to complete the design of the corrective measure.

c. Identification of assumptions to be used in the design, and the impact these assumptions have on the overall corrective measure;

d. Significant data to be used in the design effort;

e. Identification and discussion of the major equations to be used in the design effort (including a reference to the source of the equations);

f. Sample calculations to be used in the design effort;

g. Conceptual process/schematic diagrams;

h. A site plan showing a preliminary layout of the selected corrective measure;

i. Tables giving preliminary mass balances;

j. Site safety and security provisions.

This information will form the technical basis for the detailed design of the remedial measure and the preparation of construction plans/specifications.

10. Identification of Required Permits. This section should identify and describe any necessary permits associated with the selected corrective measure, as well as the procedures which will be used to obtain these permits.

11. Long-lead Procurement Considerations. This section should identify any elements/components of the selected corrective measure which will require a large amount of time to obtain/install. The following issues should also be discussed: (1) the reason why it will take a large amount of time to obtain/install the item; (2) the length of time necessary for procurement and (3) recognized sources of such items.

12. Project Management. This section should contain information regarding the procedures and personnel which will be involved in completing the design of the selected corrective measure. A schedule for completing the design should also be provided.

4.0 PHASE II OF THE CMP

Once the Illinois EPA approves the Conceptual Design Report, the facility should complete the design of the approved corrective action (Phase II of the CMP). Upon final completion of the design, a Final Design Report, consisting of final plans, specifications, construction work plan, etc., must be submitted to the Illinois EPA for review and approval.

Several documents must be submitted to the Illinois EPA as part of Phase II of the CMP. The following text describes the expected contents of the various documents which should be developed and submitted to the Illinois EPA as part of Phase II of the CMP.

I. Final Design Report and Construction Work Plan. The Final Design Report and Construction Work Plan must contain the detailed plans, specifications and drawings needed to construct the corrective measure. In addition, this document must contain (1) calculations, data etc., in support of the final design; and (2) a detailed description of the overall management strategy, construction quality assurance procedures and schedule for constructing the corrective measure. It must be noted that the approved Conceptual Design Report forms the basis for this final report. The information which should be provided in this document includes

a. Introduction/Purpose. This portion of the document should: (1) provide background information regarding the project, (2) describe the purpose and goals of the project, and (3) describe the scope of the project.

b. Detailed Plans of the Design System, including the following:

1. Plan views;

2. Section and supplementary views which, together with the specifications and general layouts, facilitate construction of the designed system;

3. Dimensions and relative elevations of structures;

4. Location and outline form of the equipment;

5. Ground elevations; and

6. Descriptive notations, as necessary, for clarity.

c. Technical Specifications. Complete technical specifications for the construction of the system, including, but are not limited to, the following:

1. All construction information, not shown in the drawings, which is necessary to inform the contractor in detail as to the required quality of materials, workmanship, and fabrication of the project;

2. The type, size, strength, and operating characteristics of the equipment;

3. The complete requirements for all mechanical and electrical equipment, including machinery, valves, piping and jointing of pipe;

4. Electrical apparatus, wiring and meters;

5. Construction materials;

6. Chemicals, when used;

7. Miscellaneous appurtenances;

8. Instruction for testing materials and equipment as necessary; and

9. Availability of soil boring information.

d. Project Management. A description of the construction management approach, including the levels of authority and responsibility, lines of communication and qualifications if key personnel who will direct corrective measures construction/installation must be provided in the work plan.

e. Construction Quality Assurance/Quality Control. A construction quality assurance/quality control plan describing the procedures which will be followed to ensure the corrective measure is constructed/installed in accordance with the approved plans and specifications.

f. Schedule. The work plan must contain a schedule for completion of all major activities associated with construction/installation of the selected corrective measures. All major points of the construction/installation should be highlighted.

g. Waste Management Practices. This portion of the document should identify the wastes anticipated to be generated during the construction/installation of the corrective measures, and provide a

description of the procedures for appropriate characterization and management of these wastes.

h. Required Permits. Copies of permit applications submitted to other Bureaus of the Illinois EPA for the selected corrective measure must be provided in the report. If it is determined that no permit is required for construction/installation and implementation of the corrective measures, rationale and justification must be provided to support this contention.

i. Cleanup Verification. The report must contain the procedures which will be followed that the approved remediation objectives have been achieved when operation of the system is completed.

2. Operation and Maintenance Plan. An Operation and Maintenance Plan must be developed and submitted as part of Phase II of the CMP. This plan should outline the procedures for performing operations, long term maintenance, and monitoring of the corrective measure.

a. Introduction and Purpose. This portion of the document should provide a brief description of the facility operations, scope of the corrective measures project, and summary of the project objectives.

b. System Description. This portion of the document should provide a description of the corrective measure and significant equipment, including manufacturer's specifications. This portion of the permit should also include a narrative of how the selected system equipment is capable of complying with the final engineered design of the corrective measure.

c. Operation and Maintenance Procedures. This portion of the document should provide a description of the normal operation and maintenance procedures for the corrective measures system, including:

1. Description of tasks for operation;

2. Description of tasks for maintenance;

3. Description of prescribed treatment or operation conditions; and

4. Schedule showing the frequency of each operation and maintenance task.

d. Inspection Schedule. This portion of the document should provide a description of the procedures for inspection of the corrective measures system, including problems to look for during the inspection procedure, specific inspection items, and frequency of the inspections.

e. Waste Management Practices. This portion of the document should provide a description of the wastes generated by the corrective measure, and the appropriate procedures for proper characterization/management of these wastes.

f. Contingency Procedures. This portion of the document should provide a description of the procedures which will address the following items:

1. System breakdowns and operational problems including a list of redundant and emergency backup equipment and procedures;

2. Alternative procedures (i.e., stabilization) which are to be implemented in the event that the corrective measure fails. The alternative procedures must be able to prevent release or threatened releases of hazardous wastes/hazardous constituents which may endanger human health and the environment, or exceed cleanup standards.

3. Notification of facility and regulatory personnel in the event of a breakdown in the corrective measures, including written notification identifying what occurred, what response action is being taken and any potential impacts on human health and the environment.

5.0 PHASE III OF THE CMP

Once the final design report is approved by the Illinois EPA, construction/installation of the approved corrective measure must commence. During this period, quarterly reports should be submitted which contain the following information:

1. Summary of activities completed during the reporting period;

2. An estimate of the percentage of the work completed;

3. Summaries of all actual or proposed changes to the approved plans and specifications or its implementation;

4. Summaries of all actual or potential problems encountered during the reporting period;

5. Proposal for correcting any problems; and

6. Projected work for the next reporting period.

Upon completion of construction/installation of the approved corrective measure, a Construction Completion Report must be submitted to the Illinois EPA documenting that these efforts were carried out in accordance with the Illinois EPA approved plans and specifications. This report should contain a thorough description of the efforts that went into constructing/installing the corrective measure and demonstrate that the procedures in the Illinois EPA-approved Final Design Report were followed during this effort. Such a report should be formatted in a logical and orderly manner and contain the following information:

1. An introduction discussing the background of the project and the purpose and scope of the corrective measure described in the report.

2. Identification of the plans, technical specifications and drawings which were used in constructing/installing the corrective measure. These specifications and drawings should have been approved by the Illinois EPA during Phase II.

3. Identification of any variations from the Illinois EPA approved plans, technical specifications and drawings used in construction/installing the corrective measure. Justification regarding the need to vary from the approved plans and specifications must also be provided.

4. A description of the procedures used to construct/install the corrective measure, including the procedures used for quality assurance and quality control.

5. As-built drawings, including identification of any variations from the approved plans, technical specifications and drawings.

6. A summary of all test results from the construction/installation effort, including quality assurance/quality control testing.

7. Actual test results, including quality assurance/quality control test results. These results should be located in an attachment/appendix and be well organized.

8. Identification of any test results which did not meet the specified value and a description of the action taken in response to this failure, including re-testing efforts.

9. Photographs documenting the various phases of construction.

10. A detailed discussion of how the construction/installation effort met the requirements of the approved Final Design Report.

11. A certification meeting the requirements of 35 Ill. Adm. Code 702.126 by an independent qualified, licensed professional engineer and by an authorized representative of the owner/operator.

6.0 PHASE IV OF THE CMP

Once the corrective measure has been constructed/installed, it must be operated, maintained and monitored in accordance with the approved plans and specifications (this is Phase IV of the CMP). During this period, quarterly reports must be submitted to the Illinois EPA documenting the results of these efforts. These reports include the following:

1. Introduction. -- A brief description of the facility operations, scope of the corrective measures project, and summary of the project objectives.

2. System Description. -- A description of the corrective measures constructed/installed at the site, and identify significant equipment. Describe the corrective measure and identify significant equipment.

3. Monitoring Results. -- A description of the monitoring and inspection procedures to be performed on the corrective measures. A summary of the monitoring results for the corrective measures, including copies of any laboratory analyses which document system effectiveness, provide a description of the monitoring procedures and inspections performed, and include a summary of the monitoring results for the corrective measure. Copies of all laboratory analytical results which document system monitoring must be provided.

4. Effectiveness Determination. -- Calculations and other relevant documentation which demonstrates the effectiveness of the selected corrective measure in remediating/stabilizing contamination to the extent anticipated by the corrective measures final design. Copies of relevant analytical data should be provided to substantiate this determination.

5. System Effectiveness Recommendation. -- Based upon the results of the effectiveness determination required under Item 4 above, recommendations on continued operation of the corrective measure must be provided. If the corrective measure is not performing in accordance with the final design, a recommendation on revisions or expansion of the system should be provided.

7.0 PHASE V OF THE CMP

Once all corrective measures have been completed, a report must be developed documenting all the efforts which were carried out as part of implementing the corrective measure and demonstrating, as appropriate, that the approved remediation objectives have been achieved. This report should contain a compilation of all previous reports and also contain sufficient information to demonstrate that the approved remediation objectives have been achieved. It must be noted that such a report will not be developed for a unit closed as a landfill until the post-closure care period has been completed.

8.0 PROCEDURES WHICH SHOULD BE FOLLOWED WHEN SOIL REMOVAL IS THE SELECTED CORRECTIVE MEASURE

Sections 2.0 through 6.0 above describe the procedures which should be followed when it is necessary to design some type of physical corrective measure (e.g., a final cover system, some type of treatment system, etc.). However such detail is not necessary if excavation/removal is selected as the remedial action for the contaminated soil encountered at the site. In general, a work plan should be developed for this effort (for Illinois EPA review and approval) which fully describes each step to be used in removing the contaminated soil from the property. This includes a description of (1) the equipment utilized in the removal effort, (2) the pattern followed in removing the soil; (3) the depth to which the soil will be removed; (4) management of the soil on-site after it is removed from the ground; (5) loading areas; (6) the ultimate destination of the soil; and (7) any other steps critical to the removal effort.

One way to conduct a soil removal effort is to collect and analyze a sufficient number of soil samples to clearly determine the horizontal and vertical extent of soil contamination prior to conducting the soil removal effort. The boundaries of soil which must be removed are defined by the Illinois EPA established cleanup objectives for the project. Soil excavation must extend to sample locations where soil test results indicate that the remediation objectives are met. Closure verification sampling is not necessary in such cases, if a registered professional engineer oversees the soil removal effort and certifies that the remediation limits extend to these boundaries.

Another way to conduct a soil removal effort is to collect and analyze a limited number of soil samples prior to the soil removal effort and to rely mainly on field observation to

determine the extent of the soil removal. In such cases closure verification sampling is necessary. Soil samples must be collected for analysis from the bottom and sidewalls of the final excavation. The following sampling/analysis effort is necessary to demonstrate that the remaining soil meets the established cleanup objectives:

1. A grid system should be established over the excavation.

2. Samples should be collected from the floor of the excavation at each grid intersection, including intersections along the perimeter of the excavation.

3. Samples should be collected at 6"-12" below the ground surface (bgs) along the excavation sidewalls at each grid intersection around the excavation perimeter. Samples must also be collected at the midpoint of the excavation wall at each grid intersection along the excavation perimeter.

4. Collection/analysis of all required samples must be in accordance with the procedures set forth in the approved plan.

5. Soil samples which must be analyzed for volatile organic compounds (VOCs) must be collected in accordance with the procedures set forth in Method 5035 of SW-846. In addition, such samples must be collected 6"-12" beneath the floor/sidewalls of the excavation to minimize the possibility of volatilization of the contaminants prior to the collection of the samples.

6. No random sampling may be conducted to verify achievement of cleanup objectives have been met.

7. Additional soil must be removed, as necessary, until it can be demonstrated that the remaining soil in and around the area of concern meets the established cleanup objectives. Additional samples must be collected and analyzed in accordance with the procedures described above from areas where additional soil has been removed.

ATTACHMENT H

CERTIFICATION OF COMPLETION OF POST-CLOSURE CARE

STATE ID # 0310390001

ILD010284248

POST-CLOSURE PERMIT LOG NO. B-27R2

CERTIFICATION OF COMPLETION OF POST-CLOSURE CARE
CID Recycling and Disposal Facility (0310390001) – Cook County
USEPA ID: ILD010284248
RCRA Permit Log No. B-27R2

To meet the requirements of 35 Ill. Adm. Code 724.220, this statement is to be completed by both a responsible officer of the owner/operator (as defined in 35 Ill. Adm. Code 702.126) and by a qualified professional engineer upon completion of post-closure care of the UNIT NAME. Submit one copy of the certification with original signatures and two additional copies.

The hazardous waste management unit closed as a landfill, known as the UNIT NAME, has been closed in accordance with the specifications in the approved closure plan. Post-Closure care required for the UNIT NAME has been provided and completed in accordance with the RCRA Permit. A report documenting that required post-closure care have been carried out and completed in accordance with the approved post-closure care plan is attached.

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

A person who knowingly makes a false, fictitious, or fraudulent material statement, orally or in writing, to the Illinois EPA commits a Class 4 felony. A second or subsequent offense after conviction is a Class 3 felony. (415 ILCS5/44(h))

Facility Name

Printed Name of Responsible Officer

Signature of Owner/Operator Responsible Officer **Date**

Printed Title of Responsible Officer

Signature of Licensed P.E. **Date**

Printed Name of Licensed P.E. and Illinois License Number

Mailing Address of P.E.:

Licensed P.E.'s Seal:

ATTACHMENT 1

APPROVED REDUCED LISTS FOR APPENDIX I PARAMETERS

LEACHATE SAMPLING POINTS

L311, L312, L313, L331

STATE ID # 0310390001

ILD010284248

POST-CLOSURE PERMIT LOG NO. B-27R2

Reduced Appendix I Sampling List (LEACHATE) for Calendar Year 2019, 2020, and 2021

L311	
Storet	Parameter
00720	Cyanide
00745	Sulfide
01002	Arsenic
01007	Barium
01027	Cadmium
01034	Chromium
01037	Cobalt
01042	Copper
01067	Nickel
01087	Vanadium
01092	Zinc
01097	Antimony
01102	Tin
34010	Toluene
34030	Benzene
34205	Acenaphthene
34220	Anthracene
34301	Chlorobenzene
34381	Fluorene
34408	Isophorone
34423	Methylene Chloride
34461	Phenanthrene
34571	1,4-Dichlorobenzene
34606	2,4-Dimethylphenol
34626	2,6-Dinitrotoluene
34671	Aroclor 1016
34694	Phenol
34696	Naphthalene
39300	4,4'-DDT
39310	4,4'-DDD
39337	Alpha-BHC
39480	Methoxychlor
39492	Aroclor 1232
39496	Aroclor 1242
39760	2,4,5-TP (Silvex)
39782	gamma-BHC (Lindane)
46323	Delta-BHC
77033	Isobutyl alcohol
77041	Carbon disulfide
77089	ANILINE
77146	4-Methylphenol (p-cresol)
77147	Benzyl alcohol
77151	3-Methylphenol (m-cresol)
77152	2-Methylphenol (o-cresol)
77416	2-Methylnaphthalene

L311 Continued	
Storet	Parameter
78113	Ethylbenzene
78133	4-Methyl-2-pentanone
81302	Dibenzofuran
81551	Xylenes (total)
81552	Acetone
81582	1,4-Dioxane
81595	2-Butanone (MEK)

L312	
01007	Barium
01034	Chromium
01037	Cobalt
01042	Copper
01067	Nickel
01087	Vanadium
01092	Zinc
39310	4,4'-DDD
39782	gamma-BHC(Lindane)
81582	1,4-Dioxane

L313	
00720	Cyanide
00745	Sulfide
01002	Arsenic
01007	Barium
01027	Cadmium
01034	Chromium
01037	Cobalt
01042	Copper
01051	Lead
01067	Nickel
01087	Vanadium
01092	Zinc
01102	Tin
34010	Toluene
34030	Benzene
34220	Anthracene
34301	Chlorobenzene
34606	2,4-Dimethylphenol
39782	Gamma-BHC(Lindane)
46323	Delta-BHC
77089	ANILINE
78113	Ethylbenzene
81551	Xylenes (total)
81582	1,4-Dioxane

L331	
Storet	Parameter
00720	Cyanide
00745	Sulfide
01002	Arsenic
01007	Barium
01027	Cadmium
01034	Chromium
01037	Cobalt
01042	Copper
01051	Lead
01067	Nickel
01087	Vanadium
01092	Zinc
01147	Selenium
34010	Toluene
34030	Benzene
34301	Chlorobenzene
34408	Isophorone
34423	Methylene Chloride
34496	1,1-Dichloroethane
34586	2-Chlorophenol
34591	2-Nitrophenol
34601	2,4-Dichlorophenol
34606	2,4-Dimethylphenol
34621	2,4,6-Trichlorophenol
34646	4-Nitrophenol
34694	Phenol
34696	Naphthalene
39310	4,4'-DDD
39730	2,4-D
39782	gamma-BHC(Lindane)
46323	Delta-BHC
73501	2-Acetylaminofluorene
77033	Isobutyl alcohol
77041	Carbon disulfide
77045	Pyridine
77089	ANILINE
77146	4-Methylphenol (p-cresol)
77147	Benzyl alcohol
77151	3-Methylphenol (m-cresol)
77152	2-Methylphenol (o-cresol)
78133	4-Methyl-2-pentanone
81551	Xylenes (total)
81552	Acetone
81553	Acetophenone
81582	1,4-Dioxane
81595	2-Butanone (MEK)

ATTACHMENT J

SITE LAYOUT MAP

STATE ID # 0310390001

ILD010284248

POST-CLOSURE PERMIT LOG NO. B-27R2

0310390001-CID RDF
B-27R2
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