



# 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

217/524-3301

MAR 23 2022

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

7020 0090 0000 7718 5699

7020 0090 0000 7718 5736

**OWNER**

Estate of Janet Baize, Bank of Herrin Exec.  
Attn: Ms. Barbara Jacobs  
101 South Park Avenue  
Herrin, Illinois 62948

**OPERATOR**

City of Herrin  
Attn: Tom Somers  
300 North Park Ave.  
Herrin, Illinois 62948

Re: 1998580001 – Williamson County  
Herrin Municipal Landfill  
Permit No. 1975-62-DE  
Supplemental Permit No. 2021-425-SP  
Log No. 2021-425  
Permit File

Dear Ms. Jacobs and Mr. Somers:

Supplemental permit is hereby granted to Ms. Barbara Jacobs of the Bank of Herrin, Executor of the estate of Janet Baize, as owner and the City of Herrin as the operator, to modify the post-closure care of the landfill described above, pursuant to 35 Illinois Administrative Code (hereinafter Ill. Adm. Code) Subtitle G, Part 807, all in accordance with the application prepared by Thomas E. Somers, P.E., Director of Public Works, City of Herrin and signed and sealed by James D. Martin, P.E. dated November 23, 2021. The application is identified in the Illinois EPA records as Log No. 2021-425. Final plans, specifications, application and supporting documents as submitted and approved shall constitute part of this permit and are identified on the records of the Illinois Environmental Protection Agency, Bureau of Land by the permit number(s) and log number(s) designated in the heading above.

The application, Illinois EPA Log No. 2021-425, consists of the following documents:

<u>DOCUMENT</u>	<u>DATED</u>	<u>DATE RECEIVED</u>
Original application	November 22, 2021	November 24, 2021
Additional Information	November 30, 2021	December 1, 2021
Waiver	February 14, 2022	February 16, 2022

Supplemental Permit No. 2021-425-SP approves the following:

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

- A. The proposal to submit a Groundwater Assessment Report evaluating wells R02S, G02D, and G04D.
- B. The request to revise the groundwater resample timeframe from 45 days to 90 days.

Pursuant to Section 39(a) of the Illinois Environmental Protection Act (Act) this permit is issued subject to the development, operating and reporting requirements for Solid Waste Facilities in 35 Ill. Adm. Code, Part 807, the standard conditions attached hereto, and the following special conditions. In case of conflict between the permit application and these conditions (both standard and special), the conditions of this permit shall govern.

1. The groundwater monitoring program is hereby approved in this Supplemental Permit No. 2021-425-SP with Attachments described below and is subject to the conditions contained therein. This groundwater monitoring program supersedes and replaces all past monitoring programs. Changes to the permit:
  - a. Attachment A, Conditions 7 has been revised; and
  - b. Attachment A, Condition 25 has been added.
2. The post-closure care cost estimate approved by Supplemental Permit No. 2017-005-SP total \$2,084,110.
3. Except for annual inspection of closed landfill approved in Supplemental Permit No. 2019-434-SP, the post-closure care plan dated September 24, 2012 and approved in Supplemental Permit No. 2012-289-SP remains in effect.
4. If necessary, the soil over the entire planting area shall be amended with lime, fertilizer and/or organic matter. On sideslopes, mulch or some other form of stabilizing material is to be provided to hold seed in place and conserve moisture.
5. This site is subject to a minimum post-closure care period of fifteen years. The post-closure care period began June 30, 1996.
6. During the post-closure care period, corrective action shall be taken if problems, including but not limited to the following, occur:
  - ponding
  - cracks in final cover greater than one inch wide
  - gas problems
  - odor problems
  - dead or stressed vegetation
  - vegetation with taproots growing in areas not so designed
  - vector problems
  - leachate popouts or seeps
7. Inspections of the closed landfill shall be conducted on an annual basis. Records of field investigations, inspections, sampling and corrective action taken are to be maintained at the site and made available to IEPA personnel or their designee through an intergovernmental Agreement. During the post-closure care period, these records are to

be maintained at the office of the site operator.

8. During the post-closure period, for areas in excess of one hundred (100) square feet that have dead or stressed vegetation due to landfill gas migration, a gas vent shall be installed to minimize the effects of that landfill gas migration on the final cap system.
9. When the post-closure care period has been completed, the operator shall notify the Illinois EPA utilizing the Illinois EPA's "Affidavit for Certification of Completion of Post-Closure Care for Non-Hazardous Waste Facilities."
10. The Illinois EPA reserves the right to require installation of additional monitoring devices, to alter the selection of parameters to be analyzed and to alter monitoring frequencies as may be necessary to fulfill the intent of the Environmental Protection Act.
11. This permit is subject to review and modification by the Illinois EPA as deemed necessary to fulfill the intent and purpose of the Environmental Protection Act, and all applicable environmental rules and regulations.
12. The permittee shall submit current 39(i) certifications and supporting documentation with all applications for a permit.

Except as modified in the above documents, the site shall be operated in accordance with the terms and conditions of Permit No. 1975-62-DE, dated September 10, 1975, and with other permits issued for this site.

The original and two (2) copies of all certifications, logs, reports, and groundwater monitoring chemical analysis forms which are required to be submitted to the Illinois EPA by the permittee should be mailed to the following address:

Illinois Environmental Protection Agency  
Permit Section  
Bureau of Land -- #33  
1021 North Grand Avenue East  
Post Office Box 19276  
Springfield, Illinois 62794-9276

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:

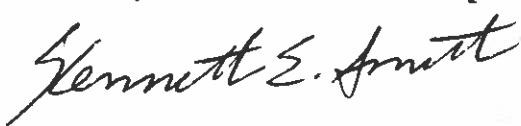
Illinois Environmental Protection Agency  
Division of Legal Counsel  
1021 North Grand Avenue East  
Post Office Box 19276  
Springfield, IL 62794-9276  
217/782-5544

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

Work required by this permit, your application 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 permit 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.

Sincerely,



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

KES:PHL:1998580001-807LF-2021425SP-2021425-Approval.docx

Attachments: Standard Conditions  
Attachment A: Monitoring Program  
Attachment B: Statistical Methods  
Attachment C: Intrawell Values  
Attachment D: Interwell Values  
Attachment E: Groundwater Monitoring List

cc: James D. Martin, P.E.

bcc: Bureau File  
Marion Region  
Daniel Britton  
Joshua Rhoades

STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS  
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY  
BUREAU OF LAND

August 22, 2001

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) grants the Environmental Protection Agency authority to impose conditions on permits which it issues.

These standard conditions shall apply to all permits which the Agency issues for construction or development projects which require permits under the Bureau of Land. Special conditions may also be imposed in addition to these standard conditions.

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire two years after date of issuance unless construction or development on this project has started on or prior to that date.
2. The construction or development of facilities covered by this permit shall be done in compliance with applicable provisions of Federal laws and regulations, the Illinois Environmental Protection Act, and Rules and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification of the project, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The permittee shall allow any agent duly authorized by the Agency upon the presentation of credentials:
  - a. to enter at reasonable times the permittee's premises where actual or potential effluent, emissions or noise sources are located or where any activity is to be conducted pursuant to this permit.
  - b. to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit.
  - c. to inspect at reasonable times, including during any hours of operation of equipment constructed or operated under this permit, such equipment or monitoring methodology or equipment required to be kept, used, operated, calibrated and maintained under this permit.
  - d. to obtain and remove at reasonable times samples of any discharge or emission of pollutants.

- e. to enter at reasonable times and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
- a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located;
  - b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities;
  - c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations;
  - d. does not take into consideration or attest to the structural stability of any units or parts of the project;
  - e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. Unless a joint construction/operation permit has been issued, a permit for operating shall be obtained from the Agency before the facility or equipment covered by this permit is placed into operation.
7. These standard conditions shall prevail unless modified by special conditions.
8. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed; or
  - b. upon finding that any standard or special conditions have been violated; or
  - c. upon any violation of the Environmental Protection Act or any Rule or Regulation effective there under as a result of the construction or development authorized by this permit.

Re: Site No. 1998580001 -- Williamson County  
Herrin Municipal Landfill  
Supplemental Permit No. 2021425SP  
Log No. 2021-425  
ATTACHMENT A

### Monitoring Program

To identify any releases from the facility and demonstrate compliance with the applicable groundwater quality standards, the groundwater monitoring program is approved as follows:

1. The monitoring program must be capable of determining background groundwater quality hydraulically upgradient of and unaffected by the units and to detect any discharge of contaminants from any part of a potential source of discharge from the units. The Illinois EPA reserves the right to require installation of additional monitoring wells as may be necessary to satisfy the requirements of this permit.
2. The groundwater monitoring program shall include consistent sampling and analysis procedures to assure that monitoring results will provide a reliable indication of groundwater quality in the zone being monitored.
3. The permittee shall sample all groundwater monitoring points for all potential sources of contamination on a quarterly basis in accordance with item No. 21 including a minimum of fifteen (15) years after certification of closure.
4. The permittee shall use the methods in Attachment B or propose for Illinois EPA approval, a more appropriate method to statistically evaluate the groundwater monitoring data. The selected method must provide for statistical comparisons between upgradient and downgradient groundwater quality data and a reasonable balance between the probability of obtaining Type I (false positive) and Type II (false negative) errors. The Type I error rate must be no less than 5% percent. The proposal must consider the gathering of a background data set (from upgradient wells), sufficient to provide an accurate representation of the variability in the quality of groundwater that is unaffected by operations at the facility, and to assure that the selected test has a reasonable chance of detecting releases should they occur.
5. For each sampling event, using the methods in item No. 4 above, the permittee must determine if a significant change in groundwater quality has occurred by:
  - a. Comparing sample results from each downgradient well to the pooled background data (interwell values) and established intrawell values as approved in Application Log Nos. 2001-150 and 2018-150. This comparison requires at least four (4) background values for each parameter. This comparison must be performed for each parameter for each well; AND

- b. Comparing the most recent sample result from each well to the background established for that well. This comparison must be performed for each parameter for each well.
6. The permittee shall conclude that a significant change in groundwater quality has occurred if the results of the evaluation in item No. 5 above indicate that the value for any parameter exceeds:
  - a. The background value established for that parameter at the 95% confidence level; or
  - b. The Class IV groundwater quality standards listed in Subpart D of 35 Ill. Adm. Code 620 Standards; or
  - c. For organic parameters two (2) times the Practical Quantitation Limit (PQL) for a single parameter or any two (2) or more parameters exceed the PQL in the same well.
  - d. The established intrawell values as approved in Application Log Nos. 2001-150, 2018-150 and 2019-430 and presented in Attachment C to the Permit.
7. Within ninety (90) days of the original sample date, the permittee may resample and test the determination made in item No. 6 above. If the evaluation of the resample result confirms the determination made in item No. 6 above, the permittee must conclude that a significant change in groundwater quality has occurred.
8. In the event a significant change in groundwater quality has occurred or has been confirmed, the permittee shall:
  - a. Notify the Illinois EPA, Division of Land Pollution Control, Permit Section, in writing, within ten (10) days of the change in groundwater quality, identifying each well and each parameter;
  - b. Submit an assessment monitoring plan within thirty (30) days of the significant change as determined in item No. 6 or item No. 7 above in the form of a supplemental permit application. The assessment monitoring plan shall include appropriate methods for determining the source of the increase, the potential threat to human health and the environment and the concentration and extent of the contaminants if any. The assessment monitoring plan shall, at a minimum, include expanded sampling requirements for the affected well(s) and shall be implemented within thirty (30) days of approval from the Illinois EPA.
  - c. Submit assessment report, based on and including the data and information generated from the completion of item No. 8b above to the Illinois EPA within ninety (90) days of approval of the assessment monitoring plan.
  - d. Propose a corrective action plan if assessment monitoring indicates that the facility has impacted groundwater. The corrective action plan shall be submitted within thirty (30) days of approval of the assessment report required by item 8c above in the form of a



supplemental permit application and include appropriate response action to address any impact of the facility. The plan shall be implemented within thirty (30) days of Illinois EPA approval.

9. All monitoring wells shall be constructed in a manner that maintains the integrity of the bore hole and prevents contamination of the samples and groundwater. The casing material shall be inert so as not to affect the water sample.
10. A padlocked protective cover must be installed over the portion of the well casing extending above the ground surface to protect against damage.
11. Wells shall be easily visible and identified with the Illinois EPA monitoring point designation.
12. 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 constructed in accordance with the current Illinois EPA groundwater monitor 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 or which does not monitor the same geologic zone must be approved via a Supplemental Permit and designated as a new well.
13. Within sixty (60) days of installation of any groundwater and/or leachate monitoring well, boring logs compiled by a qualified geologist, well development data and as-built diagrams shall be submitted to the Illinois EPA utilizing the enclosed "Well Completion Report" form. For each well installed pursuant to this permit one form must be completed. As-built diagrams, for each monitoring point installed, shall include the horizontal location to the nearest 0.1 foot (grid coordinates), the type and inner diameter of casing material used, type and length of screen packing material used, type and length of seals used, type of backfill used, finishing details, groundwater levels, elevation of stick-up (top of casing), ground surface elevation, bottom elevation, interval screened and screen slot size and depth. All elevations or levels are to be measured and reported to the nearest 0.01 foot MSL.
14. All borings/wells not used as monitoring points shall be backfilled in accordance with the attached Illinois EPA monitor well plugging procedures.
15. The Illinois EPA shall be notified in writing at least fifteen (15) days prior to the installation of all new and replacement monitoring wells. All newly required monitoring wells should be installed within sixty (60) days of the issuance of this permit.
16. Surveyed elevation of stick-up is to be reported when the well is installed (with as-built diagrams) and every two (2) years, or whenever the elevation changes.
17. The following monitoring points are to be used in the groundwater monitoring program for the facility:

### Herrin Coal Wells

#### Applicant Designation

#### Illinois EPA Designation

MW-1A	+G01M
MW-9A	+G09M
MW-6A	G06M
MW-7A	G07M
MW-8A	G08M

### Springfield Coal Wells

#### Applicant Designation

#### Illinois EPA Designation

MW-1B	+G01D
MW-9B	+G09D
MW-2B	G02D
MW-3B	G03D
MW-4B	G04D
MW-5B	G05D
MW-6B	G06D
MW-7B	G07D
MW-8B	G08D

### Mine Spoil

#### Applicant Designation

#### Illinois EPA Designation

MW-2A	G02S
MW-3A	G03S
MW-4A	G04S
MW-5A	G05S
MW-6C	*G06S

+ represents upgradient monitoring point(s)

# represents monitoring point(s) added to the monitoring program

\* represents monitoring point(s) deleted from the monitoring program

18. The concentration or values for the parameters contained in Lists 1, 2, and 3 of Attachment E shall be determined for samples collected from the groundwater monitoring points and reported according to the schedule in item No. 21 and evaluated in accordance with item No. 5.

LIST 1	STORET	Herrin	Springfield
<u>FIELD PARAMETERS</u>	<u>NUMBER</u>	<u>Coal</u>	<u>Coal</u>
*Bottom of Well Elevation (ft. ref MSL)	72020		
Depth to Water (ft. below land surface)	72019		
Depth to Water (ft. from measuring point)	72109		
Elevation of Groundwater Surface (ft. ref MSL)	71993		
pH (units, unfiltered)	00400	3.68 – 8.64	4.94 – 9.70
Specific Conductance (umhos/cm, unfiltered)	00094		
Temperature of Water Sample (deg F)	00011		
(* = Reported Annually)			

LIST 2

<u>ROUTINE INDICATOR PARAMETERS</u>	<u>STORET NUMBER</u>	<u>PQL (ug/L unless otherwise noted)</u>	
<u>FILTERED</u>		<u>Herrin</u>	<u>Springfield</u>
		<u>Coal</u>	<u>Coal</u>
Ammonia as (N) Diss (mg/L)	00608	1.7	3.6
Arsenic As, Diss (ug/L)	01000	10	1
Cadmium Cd, Diss (ug/L)	01025	3	1
Chloride Cl, Diss (mg/L)	00941	16	84
Iron Fe, Diss (ug/L)	01046	93,472	4,948
Lead Pb, Diss (ug/L)	01049	1	1
Manganese Mn, Diss (ug/L)	01056	34,771	507
Mercury Hg, Diss (ug/L)	71890	0.2	0.2
Sulfate SO <sub>4</sub> , Diss (mg/L)	00946	1,574	2,871
Total Dissolved Solids (TDS, mg/L)	70300	2,335	3,929
*Boron (Total)	01022	1,729	1,923
<u>UNFILTERED</u>			
Cyanide CN, Total (mg/L)	00720	0.005	0.005
Phenols (Total Recoverable) (ug/L)	32730	15	15
Total Organic Carbon (TOC) (mg/L)	00680	9.9	7.2
Total Organic Halogens (TOX) (ug/L)	78115	51.5	27.5
(* = Sampled Quarterly only at Monitoring Well G05S)			

LIST 3 -- INORGANIC AND ORGANIC ANNUAL PARAMETERS [SOURCE: 35 Ill. Adm. Code 620.410]

INORGANIC PARAMETERS

Constituent (Unfiltered, ug/L unless otherwise noted)	<u>STORET</u>	PQL (ug/L unless otherwise noted)	
		Herrin Coal	Springfield Coal
Antimony	01097	3.0	3.0
Arsenic	01002	11.0	1.0
Barium	01007	181	619
Beryllium	01012	1.0	1.0
Boron	01022	1,729	1,923
Cadmium	01027	5.0	3.0
Chloride (mg/L)	00940	16	87
Chromium	01034	16	17
Cobalt	01037	331	2
Copper	01042	24	11
Cyanide (mg/L)	00720	0.005	0.005
Fluoride (mg/L)	00951	2.19	2.08
Iron	01045	123,810	5,999
Lead	01051	27.7	5.0
Manganese	01055	40,665	575
Mercury	71900	0.2	0.2
Nickel	01067	252	27
Nitrate as N (mg/L)	00620	0.092	0.052
Selenium	01147	8	11
Sulfate (mg/L)	00945	1,834	2,816
Thallium	01059	1.0	1.0
Total Dissolved Solids	70300	2,335	3,929
Zinc	01092	546	169

ORGANIC PARAMETERS

Parameters (unfiltered, ug/L)	<u>STORET</u>	<u>PQL (ug/L)</u>
Alachlor*	77825	2.0
Aldicarb	39053	2.0
Atrazine	39033	0.05
Benzene*	34030	0.6
Benzo(a)pyrene	34247	0.2
Carbofuran	81405	10.0
Carbon Tetrachloride*	32102	1.0
Chlordane*	39350	0.14

# ORGANIC PARAMETERS (cont.)

<u>Parameters</u> <u>(unfiltered, ug/L)</u>	<u>STORET</u>	<u>PQL (ug/L)</u>
Dalapon	38432	1.3
Dichloromethane	34423	0.2
Di(2-ethylhexyl)phthalate	39100	6.0
1,2-Dibromo-3-chloropropane	38760	0.2
Dinoseb (DNBP)	81287	0.7
Endothall	38926	10.0
Endrin	39390	0.06
Ethylene Dibromide (EDB)	77651	0.05
Heptachlor*	39410	0.04
Heptachlor Epoxide*	39420	0.2
Hexachlorocyclopentadiene	34386	4.0
Lindane (Gamma-Hexachlor cyclohexane)	39782	0.04
2,4-D	39730	12.0
ortho-Dichlorobenzene	34536	5.0
para-Dichlorobenzene	34571	5.0
1,2-Dichloroethane*	34531	5.0
1,1-Dichloroethylene	34501	5.0
cis-1,2-Dichloroethylene	77093	5.0
trans-1,2-Dichloroethylene	34546	5.0
1,2-Dichloropropane*	34541	5.0
Ethylbenzene	78113	5.0
Methoxychlor	39480	0.5
Monochlorobenzene (Chlorobenzene)	34301	5.0
Pentachlorophenol*	39032	0.1
Phenols	32730	15.0
Picloram	39720	0.2
Polychlorinated Biphenyls (PCBs) (as decachloro-biphenyl)*	39516	0.5
Simazine	39055	4.0
Styrene	77128	5.0
2,4,5-TP (Silvex)	39760	5.0
Tetrachloroethylene*	34475	0.7
Toluene	34010	5.0
Toxaphene*	39400	2.4
1,2,4-Trichlorobenzene	34551	10.0
1,1,1-Trichloroethane	34506	5.0

### ORGANIC PARAMETERS (cont.)

<u>Parameters</u> <u>(unfiltered, ug/L)</u>	<u>STORET</u>	<u>PQL (ug/L)</u>
1,1,2-Trichloroethane	34511	0.5
Trichloroethylene*	39180	1.0
Vinyl Chloride*	39175	1.0
Xylenes	81551	5.0

\*Denotes a carcinogen

+Practical Quantitation Limits (PQLs) as based on GC/MS Methods listed in 35 Ill. Adm. Code Subtitle G Part 724 Appendix I

19. All monitoring points shall be maintained in accordance with the approved permit application such that the required samples and measurements may be obtained.
20. Sampling should commence concurrently with issuance of the permit. Statistical evaluations should be performed for all parameters that have an established background. The parameter list included with this permit supersedes any previous list. The first quarterly statistical evaluations shall be performed on samples taken during the months of April - May 1991 and the results submitted to the Illinois EPA by July 15, 1991.
21. The schedule for sample collection and submission of quarterly monitoring results is as follows:

<u>Sampling Quarter</u>	<u>Sampling Due</u>	<u>Report Due Date</u>
Jan-Feb (1st)	List 1 and 2	April 15
April-May (2nd)	List 1, 2, and 3	July 15
July-Aug (3rd)	List 1 and 2	October 15
Oct-Nov (4th)	List 1 and 2	January 15

- 1 - Field Parameters
- 2 - Indicator Parameters
- 3 - Annual Parameters

Groundwater monitoring wells are subject to annual monitoring according to Application Log No. 2018-150. The schedule for sample collection and submission of annual monitoring results is as follows:

<u>Sampling Quarter</u>	<u>Sampling Due</u>	<u>Report Due Date</u>
April-May (2nd)	List 1, 2, and 3	July 15

22. In the event of a confirmed significant change in groundwater quality due to the facility has occurred, the groundwater monitoring at the affected monitoring well(s) will immediately return to quarterly monitoring in accordance with the schedule provided in Condition 21 of Attachment A until such time that the Illinois EPA approves the return to annual monitoring.
23. Annually, the operator shall prepare an assessment of the monitoring program which shall include an evaluation of the groundwater flow direction and the hydraulic gradients at the facility. This assessment shall be submitted with the monitoring results due on July 15.
24. Information required by Conditions 18 and 21 must be submitted in an electronic format. The information is to be submitted, as fixed-width text files formatted as found in <http://www.epa.state.il.us/land/waste-mgmt/groundwater-monitoring.html>.
25. As approved in Supplemental Permit Application Log No. 2021-425, the operator shall conduct quarterly sampling pursuant to the schedule in Condition 21 of Attachment A at wells R02S, G02D, and G04D. Quarterly sampling for List 1 and 2 constituents, in addition to annual sampling for List 3 constituents, shall continue at the aforementioned wells until approved otherwise. In addition, quarterly sampling shall be conducted for the following constituents/wells: total arsenic, total barium, total chloride, total iron, and total nickel at well R02S; total chloride at well G02D; and total arsenic, total barium, total cobalt, total nickel, and total iron at well G04D. In addition to the expanded sampling requirements for wells R02S, G02D, and G04D, additional well development should be conducted at wells R02S and G04D.

Evaluation of the results of the quarterly groundwater monitoring at wells R02S, G02D, and G04D should be submitted along with the results of the annual monitoring event (second quarter 2022). The evaluation should include trend analysis, a summary of the additional well development activities, and conclusion/proposals. The Groundwater Assessment Report shall be submitted to Illinois EPA as a supplemental permit application no later than March 15, 2023.

KES:PHL:1998580001-807LF-2021425SP-2021425-Approval.docx





## ATTACHMENT B

A. This method should be used to predict the confidence limit when single groundwater samples are taken from each monitoring (test) well.

1. Determine the arithmetic mean ( $\overline{X}_b$ ) of each indicator parameter for the background sampling period. If more than one background (upgradient) well is used, an equal

$$\overline{X}_b = [X_1 + X_2 + \dots + X_n]/n$$

number of samples must be taken from each well.

Where:

$\overline{X}_b$  = Average background value for a given chemical parameter

$\overline{X}_n$  = Background values for each upgradient sample

n = the number of background samples taken

2. Calculate the background variance ( $S_b^2$ ) and standard deviation ( $S_b$ ) for each parameter using the values ( $\overline{X}_n$ ) from each background sample of the upgradient

$$S_b^2 = [(X_1 - \overline{X}_b)^2 + (X_2 - \overline{X}_b)^2 + \dots + (X_{SUBn} - \overline{X}_b)^2]/n - 1$$

well(s) as follows:

$$CL = \overline{X}_b + (t\sqrt{1 + 1/n})(S_b)$$

$$S_b = \sqrt{S_b^2}$$

3. Calculate the upper confidence limit using the following formula:  
Where:

CL = upper confidence limit prediction

(upper and lower limits should be calculated for pH)

t = one-tailed t value at the required significance

level and at n-1 degrees of freedom from Table 1

(a two-tailed t value should be used for pH)

4. If the values of any routine parameter for any monitoring well exceeds the upper confidence limit for that parameter, the permittee shall conclude that a statistically significant change has occurred at that well.

5. When some of the background (upgradient) values are less than the Method Detection Limit (MDL), a value of one-half ( $\frac{1}{2}$ ) the MDL shall be substituted for each background value that is reported as less than the MDL. All other computations shall be calculated as given above.
- B. If all the background (upgradient) values are less than the MDL for a given parameter, the Practical Quantitation Limit (PQL), as given in 35 Ill. Adm. Code Part 724 Appendix I shall be used to evaluate data from monitoring wells. If the analytical results from any monitoring well exceeds two (2) times the PQL for any single parameter, or if they exceed the PQLs for two or more parameters, the permittee shall conclude that a statistically significant change has occurred.

Table 1  
Standard T-Tables Level of Significance

Degrees of freedom	t-values		t-values	
	(one-tail)		(two-tail)*	
	99%	95%	99%	95%
3	4.541	2.353	5.841	3.182
4	3.747	2.132	4.604	2.776
5	3.365	2.015	4.032	2.571
6	3.143	1.943	3.707	2.447
7	2.998	1.895	3.499	2.365
8	2.896	1.860	3.355	2.306
9	2.821	1.833	3.250	2.262
10	2.764	1.812	3.169	2.228
11	2.718	1.796	3.106	2.201
12	2.681	1.782	3.055	2.179
13	2.650	1.771	3.012	2.160
14	2.624	1.761	2.977	2.145
15	2.602	1.753	2.947	2.131
16	2.583	1.746	2.921	2.120
17	2.567	1.740	2.898	2.110
18	2.552	1.734	2.878	2.101
19	2.539	1.729	2.861	2.093
20	2.528	1.725	2.845	2.086
21	2.518	1.721	2.831	2.080
22	2.508	1.717	2.819	2.074
23	2.500	1.714	2.807	2.069
24	2.492	1.711	2.797	2.064
25	2.485	1.708	2.787	2.060
30	2.457	1.697	2.750	2.042
40	2.423	1.684	2.704	2.021

Adopted from Table III of "Statistical Tables for Biological Agricultural and Medical Research" (1947. R.A. Fisher and F. Yates).

\* For pH only when required

Site No. 1998580001  
Herrin Municipal  
Permit No. 1975-62-DE  
Supplemental Permit No. 2021-425-SP

Intrawell AGQS Values (Lists 1 and 2)

Constituent	Storet	Well												
		G01M	G06M	G07M	G09M	G06D	G07D	G08D	G09D	G02S	G03S	G03D	G04S	G05S
pH (unfiltered)	00400													
Ammonia as N (dissolved) mg/L	00608												5.92-8.33	
Arsenic (dissolved) ug/L	01000	23.6				7.3	6.1	6.4	4.41					
Cadmium (dissolved) ug/L	01025													
Chloride (dissolved) mg/L	00941													4.9
Total Organic Halogens (TOX) ug/L	78115	88.7	24.2	62.7										
Total Organic Carbon (TOC) ug/L	00680	23.8			14.6		73			139.9	294.6	509.6		

Intrawell AGQS Values (List 3)

Constituent	Storet	Well												
		G01M	G06M	G07M	G09M	G06D	G07D	G08D	G09D	G02S	G03S	G03D	G04S	G05S
Arsenic (total) ug/L	01002	89.5												
Barium (total) ug/L	01007		736			6.5	13.3	12.2		19.4			2.3	
Beryllium (total) ug/L	01012		8.9							338			385	
Cadmium (total) ug/L	01027													
Chloride (total) mg/L	00940		23.1	70.3					22.2					2.8
Chromium (total) ug/L	01034		90.8											
Cobalt (total) ug/L	01037													
Fluoride (total) mg/L	00951									200			1.064	
Iron (total) ug/L	01045												4486	
Lead (total) ug/L	01051		134										2.2	
Nitrate-N (total) mg/L	00620									1.3				1.3
Selenium (total) ug/L	01147								2.15		1			



**Attachment D**  
**Interwell Values**

Parameter	Units	Storet	Herrin Coal	Springfield Coal
pH, Field	S.U.	00400		6.29-11.3
Ammonia, dissolved	mg/L	00608		4.26
Arsenic, dissolved	ug/L	01000		1.0
Chloride, dissolved	mg/L	00941	14.0	
Arsenic, total	ug/L	01002	88.2	1.5
Barium, total	ug/L	01007	173	
Beryllium, total	ug/L	01012	1.5	
Cadmium, total	ug/L	01027	9.5	9.1
Cadmium, dissolved	ug/L	01025	5.8	
Chloride, total	mg/L	00940	12.5	
Chromium, total	ug/L	01034	37.8	
Lead, total	ug/L	01051	34.8	
Nitrate-N, total	mg/L	00620		0.58
Total Organic Halogens (TOX)	ug/L	78115	95.8	
Total Organic Carbon (TOC)	Ug/L	00680	23.5	

KES:PHL:1998580001-807LF-2021425SP-2021425-Att D.docx



## ATTACHMENT E

### Parameters to be Monitored as Part of the Post-Closure Care Monitoring

(Approved in Supplemental Permit Application Log No. 2018-150-SP)

#### List 1

Bottom of Well Elevation (ft. ref MSL)	pH (units, unfiltered)
Depth to Water (ft. below land surface)	Spec Conductance (umhos/cm, unfiltered)
Depth to Water (ft. from measuring point)	Temperature of Water Sample (deg F)
Elevation of Groundwater (ft. ref MSL)	

#### List 2

Ammonia-N(d) – mg/L	Phenolics(t) – ug/L
Arsenic(d) – ug/L	Total Organic Carbon – mg/L
Chloride(d) – mg/L	

#### List 3

1,4-Dichlorobenzene – ug/L	Heptachlor – ug/L
Alachlor – ug/L	Heptachlor epoxide – ug/L
Aldicarb – ug/L	Hexachlorocyclopentadiene – ug/L
Arsenic(t) – ug/L	Iron(t) – ug/L
Atrazine – ug/L	Lindane – ug/L
Barium(t) – ug/L	Methoxychlor – ug/L
Benzene – ug/L	Methylene chloride – ug/L
Bis(2-ethylhexyl)phthalate – ug/L	Nickel(t) – ug/L
Boron(t) – ug/L	Nitrate nitrogen(t) – mg/L
Carbofuran – ug/L	PCBs(t) – ug/L
Chlordane – ug/L	Pentachlorophenol – ug/L
Chloride(t) – mg/L	Picloram – ug/L
Cobalt(t) – ug/L	Toxaphene – ug/L
Dalapon – ug/L	Xylenes(t) – ug/L
Dinoseb – ug/L	
Endrin – ug/L	
Ethylbenzene – ug/L	
Fluoride(t) – mg/L	

#### 35 IAC 620.410

1,4-Dioxane – ug/L	Benzo(k)fluoranthene – ug/L
Alpha-BHC – ug/L	Dibenzo(a,h)anthracene – ug/L
Benzo(a)anthracene – ug/L	Indeno(1,2,3-cd)pyrene – ug/L
Benzo(a)pyrene – ug/L	
Benzo(b)fluoranthene – ug/L	

