PRELIMINARY DETERMINATION

PERMIT MINOR MODIFICATION & VARIANCE

Georgia-Pacific Naheola LLC
7530 Highway 114
Pennington, Alabama 36916

Georgia-Pacific Naheola Landfill #1
Permit No. 12-02

September 10, 2025

Georgia-Pacific Naheola LLC has submitted to the Alabama Department of Environmental Management (ADEM) a modification and variance request for the Solid Waste Disposal Facility Permit for the Georgia-Pacific Naheola Landfill #1 (Permit No.12-02). The modification will update the Explosive Gas Monitoring and Reporting Plan and revises the groundwater monitoring plan for the installation of replacement monitoring well W-24. Furthermore, the Permittee has requested a variance from ADEM Admin. Code r. 335-13-4-.23(1)(a)1, to allow waste to be covered with alternate cover material approved by ADEM at the conclusion of each week's operation. All other permit conditions remain unchanged.

The Land Division has determined that the permit application meets the requirements of ADEM's Administrative Code 335-13 regulations.

Technical Contact:
Mr. Hunter Baker
Solid Waste Branch
Land Division

SOLID WASTE DISPOSAL FACILITY *PERMIT*

PERMITTEE:	**Georgia-Pacific Naheola LLC**
FACILITY NAME:	**Georgia-Pacific Naheola Landfill #1**
FACILITY LOCATION:	**Southeast ¼ of Section 31, Township 15 North, Range 1 East in Choctaw County, Alabama. The total permitted area is approximately 38.55 acres with all acres approved for disposal.**
PERMIT NUMBER:	**12-02**
PERMIT TYPE:	**Industrial Landfill**
WASTE APPROVED FOR DISPOSAL:	**Non-hazardous industrial wastes such as wood waste (bark, woodchips, waste wood), recausticizing waste (lime mud, slaker grits, green liquor dregs, powder lime), pulp mill waste (knots, pulp), general trash, construction and demolition debris (concrete, lumber, metal), boiler ash, wastewater treatment sludge and special waste approved by the Department.**
APPROVED WASTE VOLUME:	**Maximum Average Daily Volume of waste is 3000 cubic yards per day**
APPROVED SERVICE AREA:	**Georgia-Pacific Naheola LLC Naheola pulp and paper mill located near Pennington, Alabama**

In accordance with and subject to the provisions of the Alabama Solid Wastes and Recyclable Materials Management Act, as amended, Code of Alabama 1975, SS 22-27-1 to 22-27-27 ("SWRMMA"), the Alabama Environmental Management Act, as amended, Code of Alabama 1975, SS 22-22A-1 to 22-22A-15, and rules and regulations adopted thereunder, and subject further to the conditions set forth in this permit, the Permittee is hereby authorized to dispose of the above-described solid wastes at the above-described facility location.

ISSUANCE DATE:	**August 25, 2021**
EFFECTIVE DATE:	**August 25, 2021**
MODIFICATION DATEs:	**August 9, 2022, XXXXXXXXXXX**
EXPIRATION DATE:	**August 24, 2031**

Alabama Department of Environmental Management

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
SOLID WASTE PERMIT

Permittee:	Georgia-Pacific Naheola LLC 7530 Highway 114 Pennington, Alabama 36916
Landfill Name:	Georgia-Pacific Naheola Landfill #1
Landfill Location:	Section 31, Township 15 North, Range 1 East, and in Choctaw County, Alabama
Permit Number:	12-02
Landfill Type:	Industrial Landfill

Pursuant to the Alabama Solid Wastes & Recyclable Materials Management Act, as amended, Code of Alabama 1975, §§22-27-1, *et seq*., as amended, and attendant regulations promulgated thereunder by the Alabama Department of Environmental Management (ADEM), this permit is issued to Georgia-Pacific Naheola LLC (hereinafter called the Permittee), to operate a solid waste disposal facility, known as the Georgia-Pacific Naheola Landfill #1.

The Permittee must comply with all terms and conditions of this permit. This permit consists of the conditions set forth herein (including those in any attachments), and the applicable regulations contained in Chapters 335-13-1 through 335-13-16 of the ADEM Administrative Code (hereinafter referred to as the "ADEM Admin. Code"). Rules cited are set forth in this document for the purpose of Permittee reference. Any Rule that is cited incorrectly in this document does not constitute grounds for noncompliance on the part of the Permittee. Applicable ADEM Administrative Codes are those that are in effect on the date of issuance of this permit or any revisions approved after permit issuance.

This permit is based on the information submitted to the Department on June 23, 2020, for permit renewal and name change, on November 30, 2021, for permit transfer, on March 8, 2022, for variance request, and on Aprill 11, 2024, for modification, known as the Permit Application, and as amended (hereby incorporated by reference and hereinafter referred to as the Application). Any inaccuracies found in this information could lead to the termination or modification of this permit and potential enforcement action. The Permittee must inform the Department of any deviation from or changes in the information in the Application that would affect the Permittee's ability to comply with the applicable ADEM Admin. Code or permit conditions.

This permit is effective as of August 25, 2021, modified on XXXXXXXXXXX, and shall remain in effect until August 24, 2031, unless suspended or revoked.

Alabama Department of Environmental Management _____ Date Signed

SECTION I. STANDARD CONDITIONS

A. Effect of Permit

The Permittee is allowed to dispose of nonhazardous solid waste in accordance with the conditions of this permit and ADEM Admin. Code 335-13. Issuance of this permit does not convey property rights of any sort or any exclusive privilege, nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of state or local laws or regulations. Except for actions brought under Code of Alabama 1975, Section 22-27-1, *et seq*., as amended, compliance with the conditions of this permit shall be deemed to be compliance with applicable requirements in effect as of the date of issuance of this permit and any future revisions.

B. Permit Actions

This permit may be suspended, revoked or modified for cause. The filing of a request for a permit modification or the notification of planned changes or anticipated noncompliance on the part of the Permittee, and the suspension or revocation does not stay the applicability or enforceability of any permit condition.

C. 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.

D. Definitions

For the purpose of this permit, terms used herein shall have the same meaning as those in ADEM Admin. Code 335-13, unless this permit specifically provides otherwise; where terms are not otherwise defined, the meaning associated with such terms shall be as defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

1. "EPA" for purposes of this permit means the United States Environmental Protection Agency.

2. "Permit Application" for the purposes of this permit, means all permit application forms, design plans, operational plans, closure plans, technical data, reports, specifications, plats, geological and hydrological reports, and other materials which are submitted to the Department in pursuit of a solid waste disposal permit.

E. Duties and Requirements

1. Duty to Comply

The Permittee must comply with all conditions of this permit except to the extent and for the duration such noncompliance is authorized by a variance granted by the Department. Any permit noncompliance constitutes a violation of Code of Alabama 1975, Section 22-27-1 *et seq*., as amended, and is grounds for enforcement action, permit suspension, revocation, modification, and/or denial of a permit renewal application.

2. Duty to Reapply

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit. The renewal application must be submitted to the Department at least 180 days before this permit expires.

3. Permit Expiration

This permit and all conditions therein will remain in effect beyond the permit's expiration date if the Permittee has submitted a timely, complete application as required by Section I.,E.,2., and, through no fault of the Permittee, the Department has not made a final decision regarding the renewal application.

4. 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 to maintain compliance with the conditions of this permit.

5. Duty to Mitigate

In the event of noncompliance with this 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.

6. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of control (and related appurtenances) that are installed or used by the Permittee to achieve compliance with the conditions of this permit.

7. Duty to Provide Information

If requested, the Permittee shall furnish to the Department, within a reasonable time, any information that the Department may reasonably need to determine whether cause exists for denying, suspending, revoking, or modifying this permit, or to determine compliance with this permit. If requested, the Permittee shall also furnish the Department with copies of records kept as a requirement of this permit.

8. Inspection and Entry

Upon presentation of credentials and other documents as may be required by law, the Permittee shall allow the employees of the Department or their authorized representative to:

a. Enter at reasonable times the Permittee's premises where the 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.

d. Sample or monitor, at reasonable times, any substances or parameters at any location for the purposes of assuring permit compliance or as otherwise authorized by Code of Alabama 1975, Section 22-27-1 *et seq*.

9. Monitoring, Corrective Actions, and Records

a. Samples and measurements taken for the purpose of monitoring or corrective action shall be representative of the monitored activity. The methods used to obtain representative samples to be analyzed must be the appropriate method from ADEM Admin. Code 335-13-4 or the methods as specified in the Application attached hereto and incorporated by reference. Laboratory methods must be those specified in Standard Methods for the Examination of Water and Wastewater (American Public Health Association, latest edition), Methods for Chemical Analysis of Water

and Wastes (EPA-600/4-79-020), Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA Publication SW-846, latest edition), other appropriate EPA methods, or as specified in the Application. All field tests must be conducted using approved EPA test kits and procedures.

b. The Permittee shall retain records, at the location specified in Section I.I., of all monitoring, or corrective action information, including all calibration and maintenance records, 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 three years from the date of the sample, measurement, report or record or for periods elsewhere specified in this permit. These periods may be extended by the request of the Department at any time and are automatically extended during the course of any unresolved enforcement action regarding this facility.

c. Records of monitoring and corrective action information shall include.

   i. The exact place, date, and time of sampling or measurement.

   ii. The individual(s) and company who performed the sampling or measurements.

   iii. The date(s) analyses were performed.

   iv. The individual(s) and company who performed the analyses.

   v. The analytical techniques or methods used.

   vi. The results of such analyses.

d. The Permittee shall submit all monitoring and corrective action results at the interval specified elsewhere in this permit.

10. Reporting Planned Changes

The Permittee shall notify the Department, in the form of a request for permit modification, at least 120 days prior to any change in the permitted service area, increase in the waste received, or change in the design or operating procedure as described in this permit, including any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

11. Transfer of Permit

This permit may be transferred to a new owner or operator. All requests for transfer of permits shall be in writing and shall be submitted on forms provided by the Department. Before transferring ownership or operation of the facility during its operating life, the Permittee shall notify the new owner or operator in writing of the requirements of this permit.

12. Certification of Construction

Before the Permittee may commence disposal of waste in any new cell or phase:

a. The Permittee must submit a letter to the Department signed by both the Permittee and a professional engineer stating that the facility has been constructed in compliance with the permit.

b. The Department must inspect the new cells or phases unless the Permittee is notified that the Department will waive the inspection.

c. The Permittee may not commence disposal activities in any new cells or phases until approval of the new cells or phases is granted by the Department.

13. Noncompliance

The Permittee shall report all instances of noncompliance with the permit at the time noncompliance is discovered.

14. Other Information

If the Permittee becomes aware that information required by the Application was not submitted or was incorrect in the Application or in any report to the Department, the Permittee shall promptly submit such facts or information. In addition, upon request, the Permittee shall furnish to the Department, within a reasonable time, information related to compliance with the permit.

F. Design and Operation of Facility

The Permittee shall maintain and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of contaminants to air, soil, groundwater, or surface water, which could threaten human health or the environment.

G. Inspection Requirements

1. The Permittee shall comply with all requirements of ADEM Admin. Code r. 335-13-4-.21(1)(b).

2. The Permittee shall conduct random inspections of incoming loads.

3. Records of all inspections shall be included in the operating record.

H. Recordkeeping and Reporting

1. The Permittee shall maintain a written operating record at the location specified in Section I.I. The operating record shall include:

a. Documentation of inspection and maintenance activities.

b. Daily Volume reports.

c. Personnel training documents and records.

d. Solid/Hazardous Waste Determination Forms for Industrial Wastes, and the associated Department disposal approval correspondence for industrial waste and special waste.

e. Groundwater monitoring records.

f. Explosive gas monitoring records if required.

g. Surface water and leachate monitoring records. Monitoring is subject to applicable conditions of Section VI. of the permit.

h. Copies of this Permit and the Application.

i. Copies of all variances granted by the Department, including copies of all approvals of special operating conditions.

2. Quarterly Volume Report

Beginning with the effective date of this permit, the Permittee shall submit, within thirty (30) days after the end of each calendar quarter, a report summarizing the daily waste receipts for the previous

(just ended) quarter. Copies of the quarterly reports shall be maintained in the operating record.

3. Monitoring and Corrective Action Reports

The Permittee shall submit reports on all monitoring and corrective action activities conducted pursuant to the requirements of this permit, including, but not limited to, groundwater and explosive gas, The groundwater monitoring shall be conducted in March and September of each year, or as directed by the Department, and the reports shall be submitted at least semi-annually, or as directed by the Department. The reports should contain all monitoring results and conclusions from samples and measurements conducted during the sampling period. The explosive gas monitoring should be conducted on an annual basis and the reports should be submitted within 30 days of the monitoring event. The reports should contain all monitoring results and conclusions from samples and measurements conducted during the sampling period and placed in the operating record within 30 days of the monitoring event.

4. Availability, Retention, and Disposition of Records

a. All records, including plans, required under this permit or ADEM Admin. Code 335-13 must be furnished upon request, and made available at reasonable times for inspection by any officer, employee, or representative of the Department.

b. All records, including plans, required under this permit or ADEM Admin. Code 335-13 shall be retained by the Permittee for a period of at least three years. The retention period for all records is extended automatically during the course of any unresolved enforcement action regarding the facility, or as requested by the Department.

c. A copy of records of waste disposal locations and quantities must be submitted to the Department and local land authority upon closure of the facility.

I. Documents to be Maintained by the Permittee

The Permittee shall maintain, at the Georgia-Pacific Naheola Landfill #1 office, the following documents and amendments, revisions and modifications to these documents until an engineer certifies closure of the permitted landfill.

1. Operating record.

2. Closure Plan.

J. Mailing Location

All reports, notifications, or other submissions which are required by this permit should be sent via signed mail (i.e. certified mail, express mail delivery service, etc.) or hand delivered to:

Mailing Address
Chief, Solid Waste Branch
Alabama Department of Environmental Management
P.O. Box 301463
Montgomery, AL 36130-1463

Physical Address
Chief, Solid Waste Branch
Alabama Department of Environmental Management
1400 Coliseum Blvd.
Montgomery, Alabama 36110-2400

K. Signatory Requirement

All applications, reports or information required by this permit, or otherwise submitted to the Department, shall be signed and certified by the owner as follows:

1. If an individual, by the applicant.

2. If a city, county, or other municipality or governmental entity, by the ranking elected official, or by a duly authorized representative of that person.

3. If a corporation, organization, or other legal entity, by a principal executive officer, of at least the level of Vice President, or by a duly authorized representative of that person.

L. Confidential Information

The Permittee may claim information submitted as confidential pursuant to ADEM Admin. Code 335-1-1-.06.

M. State Laws and Regulations

Nothing in this permit shall be construed to preclude the initiation of any legal action or to relieve the Permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation.

SECTION II. GENERAL OPERATING CONDITIONS

A. Operation of Facility

The Permittee shall operate and maintain the disposal facility consistent with the Application, this permit, and ADEM Admin. Code 335-13.

B. Open Burning

The Permittee shall not allow open burning without prior written approval from the Department and other appropriate agencies. A burn request should be submitted in writing to the Department outlining why that burn request should be granted. This request should include, but not be limited to, specifically what areas will be utilized, types of waste to be burned, the projected starting and completion dates for the project, and the projected days and hours of operation. The approval, if granted, shall be included in the operating record.

C. Prevention of Unauthorized Disposal

The Permittee shall follow the approved procedures, as provided in the Application, for the detecting and preventing the disposal of free liquids, regulated hazardous waste, PCB's, regulated medical waste, and other unauthorized waste streams at the facility.

D. Unauthorized Discharge

The Permittee shall operate the disposal facility in such a manner that there will be no water pollution or unauthorized discharge. Any discharge from the disposal facility or practice thereof may require a National Pollutant Discharge Elimination System permit under the Alabama Water Pollution Control Act.

E. Industrial Waste Disposal

The Permittee shall dispose of industrial waste as required by ADEM Admin. Code 335-13, and as specified

in the Application.

F. Boundary Markers

The Permittee shall ensure that the facility is identified with a sufficient number of permanent boundary markers that are at least visible from one marker to the next.

SECTION III. SPECIFIC REQUIREMENTS FOR INDUSTRIAL WASTE LANDFILLS

A. Waste Identification and Management

1. Subject to the terms of this permit, the Permittee may accept for disposal the nonhazardous solid wastes listed in III.B. Disposal of any other wastes is prohibited, except waste granted a temporary or one time waiver by the Director.

2. The total permitted facility for the Georgia-Pacific Naheola Landfill #1 is approximately 38.55 acres and all of it is approved for disposal operations.

3. The maximum average daily volume of waste disposed at the facility shall not exceed 3000 cubic yards per day, except as provided under ADEM Admin. Code r. 335-13-5-.06(2)(b)2. The average daily volume shall be computed as specified by ADEM Admin. Code r. 335-13-4-.23(2)(f).

B. Waste Streams

The Permittee may accept for disposal non-hazardous industrial wastes such as wood waste (bark, woodchips, waste wood), recausticizing waste (lime mud, slaker grits, green liquor dregs, powder lime), pulp mill waste (knots, pulp), general trash, construction and demolition debris (concrete, lumber, metal), boiler ash, wastewater treatment sludge and special waste approved by the Department.

C. Service Area

The Permittee is allowed to receive for disposal waste from Georgia-Pacific Naheola LLC Naheola pulp and paper mill located near Pennington, Alabama.

D. Waste Placement, Compaction, and Cover

All waste shall be confined to an area as small as possible within a single working face (except as described in Section VIII.5) and spread to a depth not exceeding five feet or less in thickness and compacted weekly with a bulldozer or equivalent equipment prior to placing additional layers of waste or placing cover. (See Section VIII.3). The Permittee has been granted a variance from ADEM Admin. Code 335-13-4-.23(1)(c) requiring waste to be placed onto an appropriate slope not to exceed 4 to 1 (25%). The Permittee has been approved to maintain the working face at a maximum slope of 3 to 1 (33%) (See Section VIII.2.). A minimum of six inches of compacted earth or other alternative cover material approved by ADEM and listed in Section VIII. shall be added at the conclusion of each week's operation.

E. Liner Requirements

The Permittee is not required to install a composite liner system at this time. If the facility decides to expand laterally into new disposal areas the Permittee must submit a major modification application indicating the installation of a composite liner and leachate collection system that meets the requirements of the Department. The base of the proposed cell or composite liner system shall be a minimum of five (5) feet above the highest measured groundwater level as determined by ADEM Admin. Code r. 335-13-4-.11(2)(a).

F. Security

The Permittee shall provide artificial and/or natural barriers, which prevent entry of unauthorized vehicular traffic to the facility.

G. All Weather Access Roads

The Permittee shall provide an all-weather access road to the dumping face that is wide enough to allow passage of collection vehicles.

H. Adverse Weather Disposal

The Permittee shall provide for disposal activities in adverse weather conditions.

I. Personnel

The Permittee shall maintain adequate personnel to ensure continued and smooth operation of the facility.

J. Environmental Monitoring and Treatment Structures

The Permittee shall provide protection and proper maintenance of environmental monitoring and treatment structures.

K. Vector Control

The Permittee shall provide for vector control as required by ADEM Admin. Code 335-13.

L. Bulk or Noncontainerized Liquid Waste

The Permittee shall not dispose of bulk or noncontainerized liquid waste, or containers capable of holding liquids, unless the conditions of ADEM Admin. Code r. 335-13-4-.23(1)(j) are met.

M. Empty Containers

Empty containers larger than 10 gallons in size must be rendered unsuitable for holding liquids prior to disposal in the landfill unless otherwise approved by the Department.

N. Other Requirements

The Department may enhance or reduce any requirements for operating and maintaining the landfill as deemed necessary by the Land Division.

O. Other Permits

The Permittee shall operate the landfill according to this and any other applicable permits.

P. Scavenging and Salvaging Operations

The Permittee shall prevent scavenging and salvaging operations, except as part of a controlled recycling effort. Any recycling operation must be in accordance with plans submitted and approved by the Department. The Permittee is permitted to stage, recover and recycle some of the lime by-product materials as part of beneficial re-use of waste materials in such a manner that the material is required to be staged on the inactive portion of the landfill cell # 4 and removed from a level surface at the top of the staging mound, with a front-end loader placing the material into dump trucks. (See Section VIII.5.)

Q. Signs

If the landfill is available to the public or commercial haulers, the Permittee shall provide a sign outlining instructions for use of the site. The sign shall be posted and have the information required by ADEM Admin. Code r. 335-13-4-.23(1)(f).

R. Litter Control

The Permittee shall control litter.

S. Fire Control

The Permittee shall provide fire control measures.

SECTION IV. GROUNDWATER MONITORING REQUIREMENTS

A. The Permittee shall install and/or maintain a groundwater monitoring system, as specified below.

1. The permittee shall maintain the groundwater monitoring wells and piezometers identified in Table IV.1. at the locations specified in the Application, and any other groundwater monitoring wells which are added (Section IV.A.3.) during the active life and the post closure care period.

2. The Permittee shall maintain groundwater-monitoring wells MW-21 and MW-22 as the background groundwater monitoring wells for the entire facility.

3. The Permittee shall install and maintain additional groundwater monitoring wells as necessary to assess changes in the rate and extent of any plume of contamination or as otherwise deemed necessary to maintain compliance with the ADEM Admin. Code.

4. Prior to installing any additional groundwater monitoring wells, the Permittee shall submit a plan to the Department with a permit modification request specifying the design, location and installation of any additional monitoring wells. This plan shall be submitted within 120 days prior to the installation which, at a minimum, shall include.

    a. Well construction techniques including proposed casing depths, proposed total depth, and proposed screened interval of well(s);

    b. Well development method(s);

    c. A complete analysis of well construction materials;

    d. A schedule of implementation for construction; and

    e. Provisions for determining the lithologic characteristics, hydraulic conductivity and grain-size distribution for the applicable aquifer unit(s) at the location of the new well(s).

5. The Permittee is approved for inter-well method for statistical analysis.

B. Groundwater Monitoring Requirements

1. The Permittee shall determine the groundwater surface elevation at each monitoring well and piezometer identified in Table IV.1. each time the well or piezometer is sampled and at least annually throughout the active life and post-closure care period.

2. The Permittee shall determine the groundwater flow rate and direction in the first zone of saturation

at least semi- annually or each time groundwater is sampled and submit as required by ADEM Admin. Code 335-13.

3. The Permittee shall sample and analyze all monitoring wells identified in Table IV.1. for the parameters listed in Appendix I of ADEM Admin. Code r. 335-13-4-.27(3), and/or any other parameters specified by the Department in Table IV.3, on a semi- annual basis throughout the active life of the facility and the post-closure care period in accordance with ADEM Admin. Code r. 335-13-4-.27(3). Sampling shall be conducted during March and September of each year, beginning with the effective date of this permit. The records and results of this sampling and analysis activity shall be submitted to the Department, within ninety (90) days of the date of sampling. Groundwater monitoring shall be conducted according to the groundwater monitoring plan submitted March 15, 2021.

4. In addition to the requirements of Section IV.B.1., B.2., and B.3., the Permittee shall record water levels, mean sea level elevation measuring point, depth to water, and the results of field tests for pH and specific conductance at the time of sampling for each well.

C. Sampling and Analysis Procedures

The Permittee shall use the following techniques and procedures when obtaining and analyzing samples from the groundwater monitoring wells described in Section IV.A. to provide a reliable indication of the quality of the groundwater.

1. Samples shall be collected, preserved, and shipped (when shipped off-site for analysis) in accordance with the procedures specified in the Application. Monitoring wells shall be bailed or pumped following low-flow protocols.

2. Samples shall be analyzed according to the procedures specified of the Application, Standard Methods for the Examination of Water and Wastewater (American Public Health Association, latest edition), Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020), Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA Publication SW-846, latest edition), or other appropriate methods approved by this Department. All field tests must be conducted using approved EPA test kits and procedures.

3. Samples shall be tracked and controlled using the chain-of-custody and QA/QC procedures specified in the Application.

D. Recordkeeping and Reporting Requirements

1. Recording of Results

For each sample and/or measurement taken pursuant to the requirements of this permit, the Permittee shall record the information required by Section I.E.9.c.

2. Recordkeeping

Records and results of all groundwater monitoring, sampling, and analysis activities conducted pursuant to the requirements of this permit shall be included in the operating record required by Section I.I.1.

E. Permit Modification

If at any time the Permittee or the Department determines that the groundwater monitoring system no longer satisfies the requirements of ADEM Admin. Code r. 335-13-4-.14 or Section IV.A. of this permit, the Permittee must, within 120 days, submit an application for a permit modification to make any necessary and/or appropriate changes to the system.

TABLE IV.1.
GROUNDWATER MONITORING WELLS

Monitoring Well Number	Top of Casing (feet msl)	Part Monitored
	UPGRADIENT/BACKGROUND MONITORING WELLS	
MW-21	82.44	Entire Landfill
MW-22	86.24	Entire Landfill
	DOWNGRADIENT MONITORING WELLS	
MW-23	70.82	Entire Landfill
MW-24	68.89	Entire Landfill
MW-19	81.18	Entire Landfill
MW-20	83.79	Entire Landfill

TABLE IV.2.
BACKGROUND AND SEMI-ANNUAL GROUNDWATER MONITORING PARAMETERS

The parameters in this Table are those listed in Appendix I of ADEM Admin. Code 335-13-4.

TABLE IV.3.
SEMI-ANNUAL GROUNDWATER MONITORING PARAMETERS

NOTE: The parameters to be monitored for in this Table are those listed in Appendix I of ADEM Admin. Code 335-13-4, and/or any other waste stream specific parameters.

SECTION V. GAS MONITORING REQUIREMENTS

The Permittee must install and maintain an explosive gas monitoring system in accordance with ADEM Admin. Code 335-13.

SECTION VI. LEACHATE AND SURFACE WATER MANAGEMENT REQUIREMENTS

The Permittee must collect and dispose of the leachate that is generated at the facility. The Permittee shall install a leachate collection system designed to maintain less than 12 inches (30 cm) depth of leachate over the liner. Prior to initial disposal, the permittee shall provide the Department with a letter from the receiving publicly or privately owned treatment works, approving the acceptance of the leachate. Discharges to publicly or privately owned treatment works may be subject to the requirements of the ADEM Water Division's State Indirect Discharge (SID) Program. The permittee shall construct and maintain run-on and run-off control structures. Surface water discharges from drainage control structures shall be permitted through the ADEM Water Division's National Pollutant Discharge Elimination System (NPDES) Program.

SECTION VII. CLOSURE AND POST-CLOSURE REQUIREMENTS

The Permittee shall close the landfill and perform post-closure care of the landfill in accordance with ADEM Admin. Code 335-13.

A. Final Cover

The Permittee shall grade final soil cover such that surface water does not pond over the permitted area as specified in the Application. The final cover system shall comply with ADEM Admin. Code 335-13. The final cover system shall consist of either 36 inches of dewatered wastewater treatment solids or 18 inches of soil compacted to 1 x 10^{-5} cm/sec as the barrier layer, six inches of topsoil, and vegetative cover. (See Section VIII.6.) The final slopes shall not exceed 3:1 (33%). (See Section VIII.8.)

B. Vegetative Cover

The Permittee shall establish a vegetative or other appropriate cover within 90 days after completion of final grading requirements in the Application. Preparation of a vegetative cover shall include, but not be limited to, the placement of seed, fertilizer, mulch, and water.

C. Notice of Intent

The Permittee shall place in the operating record and notify the Department of their intent to close the landfill prior to beginning closure.

D. Completion of Closure Activities

The Permittee must complete closure activities of each landfill unit in accordance with the Closure Plan within 180 days of the last known receipt of waste.

E. Certification of Closure

Following closure of each unit, the Permittee must submit to the Department a certification, signed by a registered professional engineer, verifying the closure has been completed according to the Closure Plan.

F. Post-Closure Care Period

Post-closure care activities shall be conducted after closure of each unit throughout the life of this permit and continuing for a period of a minimum of thirty (30) years following closure of the facility. The Department may shorten or extend the post-closure care period applicable to the solid waste disposal facility.

G. Post-Closure Maintenance

The Permittee shall provide post closure maintenance of the facility to include regularly scheduled inspections. This shall include maintenance of the cover, vegetation, monitoring devices and pollution control equipment and correction of other deficiencies that may be observed by the Department. Monitoring requirements shall continue throughout the post closure period as determined by the Department unless all waste is removed and no unpermitted discharge to waters of the State has occurred.

H. Post-Closure Use of Property

The Permittee shall ensure that post closure use of the property never be allowed to disturb the integrity of the final cover, liner, or any other component of the containment system. This shall preclude the growing of deep-rooted vegetation on the closed area.

I. Certification of Post-Closure

Following post-closure of each unit, the Permittee must submit to the Department a certification, signed by an independent registered professional engineer, verifying the post-closure has been completed according to the Post-Closure Plan.

J. Recording Instrument

The Permittee must provide documentation of compliance with the requirements of the Uniform Environmental Covenants Program in ADEM Admin. Code 335-5 and shall execute the following:

1. Record a notation onto the land deed within 90 days from the certification of closure. This notation shall state that the land has been used as a solid waste disposal facility, the name of the Permittee, type of disposal activity, location of the disposal facility, and beginning and closure dates of the disposal activity.

2. File the covenant at the courthouse where the land deed is held within thirty (30) days of receipt of the covenant signed by ADEM's Land Division Chief.

3. The Permittee shall submit a certified copy of the recording instrument to the Department within 120 days after permit expiration, revocation, or as directed by the Department as described in the Application.

K. Removal of Waste

If the Permittee, or any other person(s), wishes to remove waste, waste residues, or any liner or contaminated soils, the owner must request and receive prior approval from the Department.

SECTION VIII. VARIANCES AND SPECIAL CONDITIONS

There following are granted for the Georgia-Pacific Naheola Landfill #1.

1. The Permittee is granted a variance from ADEM Admin. Code r. 335-13.4-.12(2)(f) requiring a 100-foot buffer zone.

2. The Permittee is granted a variance from ADEM Admin. Code r. 335-13-4-.23(1)(c) requiring 4 to 1 working slopes. The slopes on the working face shall not exceed 3:1 (33%). (See Section III. D.)

3. The Permittee is granted a variance from ADEM Admin. Code r. 335-13-4-.23(1)(b) which requires compaction in lifts no greater than two feet. The Permittee shall spread waste in layers of five feet or less in thickness and compacted with a bulldozer or equivalent equipment prior to placing additional layers of waste or placing cover. (See Section III.D.)

4. The Permittee has been approved to utilize soil-like waste material (wastewater treatment sludge, green liquor dregs, ash, lime, wood chips, sawdust, bark, and pulp mill knots) as alternative cover material. The Permittee shall not be required to cover waste with a minimum of six inches of compacted earth until final elevations are reached (See Section III.D.).

5. The Permittee is granted a variance in accordance with ADEM Admin. Code r. 335-13-4-.23(2)(a) which requires the permittee to prevent scavenging and salvaging operations, except as part of a controlled recycling effort approved by the Department. The Permittee is allowed to stage, recover and recycle some of the lime by-product materials as part of beneficial re-use of waste materials in such a manner that the material is required to be staged on inactive portions of the landfill cell # 4 and removed from a level surface at the top of the staging mound, with a front-end loader placing the material into dump trucks. (See Section III.P.)

6. The Permittee is granted a variance in accordance with ADEM Admin. Code r. 335-13-4-.20(3) to incorporate a final cover consisting of 36 inches of dewatered wastewater treatment solids or 18 inches of soil compacted to 1 x 10^{-5} cm/sec as the barrier layer, six inches of topsoil, and vegetative cover on the landfill. (See Section VII.A.)

7. The Permittee is granted a variance from ADEM Admin. Code r. 335-13-4-.20(2)(c)2 requiring 4 to 1 final slopes. The final slopes shall not exceed 3 to1 (33%). (See Section VII.A.)

Any variance granted by the Department may be terminated by the Department whenever the Department finds, after notice and opportunity for hearing, that the petitioner is in violation of any requirement, condition, schedule, limitation or any other provision of the variance, or that operation under the variance does not meet the minimum requirements established by state and federal laws and regulations or is unreasonably threatening the public health.

Permit Application

Georgia-Pacific

Georgia-Pacific
Naheola LLC

7530 Highway 114
Naheola Mill
Pennington, Alabama 36916
(205)459-1900
Thomas.Blaylock@gapac.com

Tommy Blaylock
Vice President, Manufacturing

September 13, 2024

Mr. Blake Holden
Solid Waste Branch
Alabama Department of Environmental Management
1400 Coliseum Blvd.
Montgomery, AL 36130

RE: Minor Permit Mod – Revised Monitoring well W-24 Installation/Variance requests
Georgia-Pacific Naheola LLC, Landfill #1
Permit No. 12-02

Dear Mr. Holden,

Georgia-Pacific Naheola LLC is submitting a revised updated ground water monitoring plan, and previously submitted monitoring well W-24 installation plan, ADEM Form 439 and associated supporting letters for the proposed variances. Please disregard the previous submittal from August 30, 2024.

Should you have any questions or require any additional information, please contact Shawn Williams at (205) 459-1568.

Sincerely,

Tommy Blaylock
VP – Manufacturing

Enclosure: Labella Monitoring Well Abandonment & Installation Plan – W-24
ADEM Form 439, Groundwater Monitoring Plan, Variance Letter 2-14-24

LaBella
Powered by partnership.

GROUNDWATER MONITORING PLAN

GEORGIA-PACIFIC NAHEOLA LANDFILL #1
2530 HIGHWAY 114
PENNINGTON, ALABAMA
CHOCTAW COUNTY, ALABAMA
PERMIT NO.: 12-02
PROJECT NO.: 2241222.00

PREPARED FOR:

GEORGIA-PACIFIC NAHEOLA LLC
7530 HIGHWAY 114
PENNINGTON, ALABAMA 36916

AUGUST 22, 2024

PREPARED BY:

LABELLA ASSOCIATES, D.P.C.
528 MINERAL TRACE
BIRMINGHAM, ALABAMA 35244
PHONE: (205) 985-4874

William W. Cooch, P.G.
Principal Geologist

Lori K. Norton, P.G.
Senior Project Geologist

OWNER CERTIFICATION

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..

8-30-24

Date

Mr. Thomas Blaylock
V.P. Manufacturing
Georgia-Pacific Naheola LLC

GEOLOGIST CERTIFICATION

I certify under penalty of law that I am a Registered Professional Geologist, licensed to practice in the State of Alabama and experienced in conducting hydro-geological investigations. The information submitted herein, to the best of my knowledge and belief is true, accurate and complete.

Lori K. Norton

Lori K. Norton, P.G.
Senior Project Geologist
LaBella Associates, D.P.C.

August 22, 2024
Date

TABLE OF CONTENTS

FIGURES

APPENDICES

1.0 PURPOSE AND SCOPE

Georgia-Pacific Naheola LLC has prepared this *Groundwater Monitoring Plan* (GWMP) for the Georgia-Pacific Naheola Landfill #1 located in Pennington, Choctaw County, Alabama, Solid Waste Facility Disposal Permit Number 12-02. This GWMP has been prepared in accordance with the Alabama Department of Environmental Management (ADEM) Administrative Code 335-13. Included in this GWMP is a discussion of the environmental setting, description of the monitoring requirements, and activities to be conducted over the life of the permitted facility.

2.0 SITE LOCATION AND STATUS

The Georgia-Pacific Naheola Landfill #1 is described as being located in the Southeast ¼ of Section 31, Township 15 North, Range 1 East in Choctaw County, Alabama. The landfill permitted area is approximately 38.55 acres with all acres permitted for disposal. The landfill is permitted as an industrial landfill. The site location is shown in Figure 1.

3.0 ENVIRONMENTAL SETTING

3.1 SITE GEOLOGY AND HYDROGEOLOGY

According to geologic information published by the Geological Survey of Alabama, the subject facility is located within the Pleistocene and Holocene series alluvial, coastal, and low terrace deposits. This formation typically consists of varicolored fine to coarse quartz sand containing clay lenses and gravel in places. A geologic map is provided as Figure 2.

According to the *Hydrogeology and Vulnerability to Contamination of Major Aquifers in Alabama; Area 10*, 2000 prepared by the Geological Survey of Alabama, the site is located in the Alluvial-Deltaic Plain Physiographic District. The major aquifer in the study area is identified as the watercourse aquifer with an approximate thickness of 0-60 feet. Alluvial deposits overlie the major aquifers along the flood plains of the Tombigbee River which is located along the eastern boundary of the property.

3.2 SURFACE WATER

Surface water from the landfill generally flows to the east from the property toward the Tombigbee River which is located adjacent to the landfill property boundary.

4.0 MONITORING WELL NETWORK AND GROUNDWATER FLOW

4.1 MONITORING WELL NETWORK

The facility will utilize six groundwater monitoring wells (W-19, W-20, W-21, W-22, W-23, and W-24) for monitoring shallow groundwater beneath the site. A Monitoring Well Installation Plan dated June 6, 2024 was submitted to the ADEM for review and approval. The Plan was submitted for the installation of one groundwater monitoring well (to be designated as W-24) in the vicinity of W-23 at the approximate location shown in Figure 3. This well is being installed in close proximity to W-23 in order to determine if W-23 has been compromised and to verify the metal concentrations in historical groundwater samples collected from this area. A copy of this Plan is provided as Appendix H.

As such, the facility will utilize six groundwater monitoring wells for monitoring shallow groundwater beneath the site. Monitoring W-21 and W-22 will be designated as the upgradient (background) wells for groundwater quality comparisons. Monitoring wells W-19, W-20, W-23, and W-24 will be designated as compliance wells. Once monitoring well W-24 has been installed, this GWMP will be revised to include the monitoring well construction details for the new well. The available well construction details for monitoring wells at the site are included in Table 4.1 below.

TABLE 4.1 – MONITORING WELL CONSTRUCTION DETAILS

WELL ID	WELL DESIGNATION	MEASURING POINT ELEVATION (FT-AMSL)	MEASURED TOTAL DEPTH (FT-BTOC)	CASING DIAMETER	SCREENED LENGTH (FEET)
W-19	COMPLIANCE	81.18	54.07	2-inch	41.0-51.0
W-20	COMPLIANCE	83.79	55.63	2-inch	42.0-52.0
W-21	BACKGROUND	82.44	31.66	2-inch	18.0-28.0
W-22	BACKGROUND	86.24	36.06	2-inch	23.0-33.0
W-23	COMPLIANCE	70.82	20.45	2-inch	7.5-17.5
W-24	COMPLIANCE	To Be Constructed			

ft-amsl – feet above mean sea level
ft-btoc – feet below top of casing

4.2 GROUNDWATER FLOW

During each semi-annual monitoring event, static water level depth will be measured in each of the monitoring wells prior to purging. For reference, groundwater elevations measured during the March 2024 semi-annual groundwater monitoring event ranged from 48.29 to 73.41 feet above mean sea level (ft-amsl). Groundwater elevation data is included in Table 4.2 on the following page and includes elevation data from wells MW-01 through MW-05 which are used to monitor groundwater quality for

the Lime Mud Impoundments Area. A map depicting the potentiometric surface and flow direction for shallow groundwater beneath the site at the time of the March 2024 event is provided as Figure 4.

TABLE 4.2 – GROUNDWATER MEASUREMENTS AND ELEVATIONS – MARCH 2024

WELL ID	MEASURING POINT ELEVATION (FT-AMSL)	MEASURED TOTAL DEPTH (FT-BTOC)	MEASURED DEPTH TO GW (FT-BTOC)	GROUNDWATER ELEVATION (FT-AMSL)
W-19	81.18	54.04	32.89	48.29
W-20	83.79	55.60	31.21	52.58
W-21	82.44	31.71	9.03	73.41
W-22	86.24	31.98	15.55	70.69
W-23	70.82	20.44	11.72	59.10
MW-01	81.43	39.75	13.63	67.80
MW-02	83.74	40.30	17.14	66.60
MW-03	84.72	37.86	17.22	67.50
MW-04	87.28	34.75	15.29	71.99
MW-05	80.50	20.45	15.55	64.95

ft-btoc = feet below top of casing
ft-amsl = feet above mean sea level
GW = groundwater

During each semi-annual monitoring event, static water level depth will be measured in each of the monitoring wells prior to purging. In addition to the wells associated with the Georgia-Pacific Naheola Landfill #1 well network, water level measurements will be collected from the groundwater monitoring well network for the Lime Mud Impoundments Area (MW-01, MW-02, MW-03, MW-04, and MW-05) to aid in the creation of the potentiometric map. The locations of the above-mentioned wells are shown on Figure 4.

As illustrated by the potentiometric surface map, the direction of groundwater flow beneath the landfill at the time of the March 2024 groundwater monitoring event was generally to the north-northeast from the central and eastern portions of the property and to the northwest from the southwestern portion of the property with a calculated hydraulic gradient (dh/dl) of approximately 0.0164 feet per foot (ft/ft). Groundwater flow velocity in the subsurface materials underlying the landfill was calculated using the formula V = (K) (dh/dl)/ne, where K is hydraulic conductivity and ne is effective porosity. Using a site specific hydraulic conductivity of 39.9 feet per day (ft/day), an effective porosity of 20% (Freeze, p. 29), and the calculated hydraulic gradient of 0.0164 ft/ft, the groundwater flow rate is estimated to be approximately 1,197.17 feet per year (ft/year). An example of the groundwater flow rate calculations (March 2024) is provided in Appendix A.

Since the calculated gradient and flow rate are derived under the assumption that groundwater flow occurs through a homogeneous, isotropic, porous medium, these calculations should only be considered a rough estimate of actual groundwater flow. This seepage velocity does not take into account the effects of vertical flow gradients, flow along secondary fracture pathways, or other conditions caused by lateral heterogeneity.

It should be noted that the potentiometric surface elevation map (Figure 4) is a model of the groundwater potentiometric surface based upon available measured groundwater levels and should be considered only a general depiction of groundwater flow direction for the local area of the Landfill. While the potentiometric surface typically parallels surface topography, the accuracy of the potentiometric surface map is limited to available data from the control points and may conflict with surface topography and/or the actual groundwater potentiometric surface at certain locations.

4.3 Monitoring Well Inspection

During each semi-annual monitoring event the monitoring wells will be inspected for damage. If it is determined that a well should be replaced for any reason, a *Monitoring Well Abandonment and Installation Plan* will be prepared for submittal to ADEM within 60 days of making the determination. The *Monitoring Well Abandonment and Installation Plan* will be accompanied by a request for a Minor Permit Modification to update the facility Permit, a revised *Groundwater Monitoring Plan* to include the proposed new well into the Permit compliance well network, and payment of the appropriate ADEM fee. The Plan will include, at a minimum, consideration of the following:

- The appropriate method for abandonment.
- The need for relocation to protect the replacement well from future damage.
- The anticipated replacement well type, depth, screened interval, casing diameter and surface completion in accordance with ADEM Admin Code 335-13-4-.27(2)(c).
- The need for background sample collection and, if required, the number of background samples and a schedule for completing sample collection.

Upon approval of the *Monitoring Well Abandonment and Installation Plan*, and the subsequent replacement of the new well, a report documenting the abandonment and replacement activities will be prepared and submitted to the ADEM along with a revised *Groundwater Monitoring Plan* which will include monitoring well construction details for the newly installed wells. Background sampling and

analysis will be conducted in accordance with Section 4.4 of this GWMP to determine if pooling data from the abandoned well with the new well is appropriate. Once this analysis is complete, the results will be submitted to the ADEM in the semi-annual report following completion of the background sampling activities.

4.4 BACKGROUND SAMPLING

Four background sampling events will be conducted for newly installed background wells and compliance wells on a quarterly basis. An additional four background samples will be collected on a semi-annual basis. Samples collected will be analyzed for Appendix I VOCs and Appendix I metals, as required by the Permit. Statistical analysis will be conducted for the newly installed monitoring wells as follows:

- For replacement wells installed in close proximity to an original well, an Analysis of Variance (ANOVA) test will be conducted in order to determine if pooling data from the abandoned well with the replacement well is appropriate following the collection and analysis of a minimum of eight background groundwater samples for Appendix I parameters. Either a parametric or non-parametric ANOVA test will be conducted, depending on normality. The results from these tests will be submitted to the ADEM in the semi-annual report following the completion of the background sampling activities, along with the groundwater analytical data and field sampling logs from each of the sampling events.

- For a newly installed monitoring well, or a replacement well that was not installed in close proximity to an original well that it is replacing, at least eight background sampling events will be conducted for Appendix I parameters prior to the initiation of statistical analysis. Groundwater analytical data and field sampling logs from each of the sampling events will be submitted to the ADEM in the semi-annual report following completion of the background sampling activities.

5.0 GROUNDWATER SAMPLING AND ANALYSIS

Groundwater samples will be collected on a semi-annual basis throughout the active life of the facility and the post-closure care period in accordance with ADEM Administrative Rule 335-13-4-.27. Unless otherwise specified by the ADEM, groundwater sampling will be conducted during March and September of each year.

During the semi-annual groundwater monitoring events, and prior to sample collection, static water level measurements will be taken in each monitoring well using an electronic water-level indicator to determine the depth of water and the measured water level as it relates to the screened interval of the well.

All groundwater samples will be collected using either a peristaltic or bladder pump following low-flow sampling protocols. In order to collect water in the screened interval, low-flow purging will be conducted by situating the pump-intake in the middle or slightly above the middle of the screened interval of the well. The intake velocity of the pump will then be set to a flow rate that minimizes draw-down inside the well casing, thereby reducing turbidity and agitation of the water column in the well in order to prevent volatilization of VOCs, if present, and the introduction of suspended sediment into the water column. The pumping rate will be maintained between 200 to 500 milliliters per minute and the water level will be monitored every three to five minutes to determine steady-state flow. An attempt will be made to maintain a draw-down of one foot or less during purging.

Prior to sample collection, groundwater will be purged from each well at a rate approximately equal to the well recharge rate. The turbidity, temperature, specific conductance, dissolved oxygen (DO), oxidation-reduction (redox) potential, and pH of groundwater will be monitored and recorded every three to five minutes as the wells are purged. Samples will be collected when stabilization of these indicator parameters is recorded in three consecutive readings. The three successive readings should be within ± 0.1 for pH, ± 3% for conductivity, ± 10 mv for redox potential, and ± 10% for turbidity and DO. DO and turbidity usually require the longest time for stabilization. Conductivity, DO, and turbidity are the most sensitive parameters. The above stabilization guidelines are provided as estimates and may not always be achieved. Samples will be collected after field indicator parameters have stabilized and will be placed directly into the laboratory containers with minimal agitation to minimize volatilization of chemicals of concern (COCs), if present. The field indicator parameters will be recorded for each well on a field sampling log. An example field sampling log is included as Appendix B and an example of a monitoring well sampling record is provided as Appendix C.

Groundwater samples will be obtained by filling appropriate laboratory-prepared sample containers directly from the discharge tubing connected to the pump or from disposable polyethylene bailers. New tubing will be used for each sample and the pump will be decontaminated prior to use at each sample location. Subsequent to sample collection, the containers will be labeled and placed in a cooler with ice in an effort to achieve and maintain a sample temperature of ≤ 6°Celcius (C). In the event one or more wells is purged dry, those wells will be allowed to recharge sufficiently prior to sampling. Once recharged, samples from those wells will be collected using a disposal bailer.

The samples will be delivered to a National Environmental Laboratory Accreditation Program (NELAP) certified laboratory, along with proper chain of custody documentation including project name and number; sampler's name and signature; sample identification numbers; sample date, time, and location; requested analyses; and sample container type and quantity.

The samples collected from the site monitoring well network will be analyzed for Appendix I metals and Appendix I VOCs using the EPA Methods shown in Table 5.0 below.

TABLE 5.0 – LABORATORY ANALYTICAL METHODS

PARAMETER	SAMPLE MATRIX	EPA METHOD
Appendix I Metals	Water	6010B or 6020
Mercury	Water	7470
Appendix I VOCs	Water	8260

The laboratory analysis will follow the protocols provided in the *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods SW-846* (SW-846), *Standard Methods for the Examination of Water and Wastewater (latest edition)*, or other appropriate methods approved by the ADEM.

5.1 GROUNDWATER SAMPLE MANAGEMENT

In accordance with this GWMP, each groundwater sample will be tracked from the time of collection by completing sample custody documentation. The sample custody documentation will include the field documentation and the chain of custody report. All samples will be placed in laboratory provided containers and preserved in a manner appropriate to the analytical method requested. Sample containers will be stored in a clean, secure area prior to use. Containerized samples will be labeled

as they are collected and placed in a cooler with ice to maintain a sample temperature of ≤ 6 °C until delivered to the analytical laboratory. Sample criteria are summarized in the Table 5.1 below.

TABLE 5.1 – GROUNDWATER SAMPLING CRITERIA

ANALYSIS	SAMPLE MATRIX	BOTTLE TYPE	PRESERVATIVE	HOLDING TIMES
Appendix I Metals	Water	(1) 250 ml Plastic	6 °C / HNO_3	180 Days Mercury 28 Days
Appendix I VOCs	Water	(2) 40 ml Vials	6 °C / HCL	14 Days

ml – Milliliter
C – Celsius
HNO_3 – Nitric Acid
HCL – Hydrochloric Acid

Sample labels will be filled out and affixed to appropriate containers immediately prior to or following sample collection, as appropriate. The label will be filled out in indelible ink and will include the following information on the portion affixed to the sample container: sample ID number; analyses requested; project name; the person's name collecting the sample; and, sample location number.

The field data recorded at the time of sample collection provides an unambiguous identification of each sample. These field data will be recorded on groundwater monitoring well field logs. Field notes will include the date and time of sampling; name(s) of field personnel conducting sampling; name(s) of any observers at the sampling site; purpose of sampling; description of sample point; number and size(s) of sample(s) taken; field sample identification number(s); deviation from sampling plan, if any; field observations; references (such as maps) of sampling site; and sample handling and shipping information.

Sample handling and shipping procedures will assure that samples are properly preserved, protected, and secured until delivered to the analytical laboratory. After sample containers are labeled, they will be sealed in plastic air cushion bags and wrapped in clear plastic bags to protect sample bottles and labels from potential moisture damage. Ice packs will be sealed in plastic bags and placed on top of samples in order to maintain an optimum temperature of ≤ 6 °C until the samples are delivered to the laboratory. Any remaining void space in the ice chest will be filled with appropriate bubble-wrap packing material.

Samples will be hand delivered or shipped via overnight delivery service to the laboratory. Shipped samples will be accompanied by an appropriate freight (shipment) bill of lading form with the completed freight bill number recorded on the Chain of Custody accompanying each cooler shipment. The Chain of Custody will be sealed in a plastic bag and taped to the underside of the cooler lid.

Coolers will be sealed with tape and a custody seal that will be initialed and dated to prevent any tampering during shipping and handling. The laboratory will be notified prior to shipment of samples that would arrive at the laboratory on a weekend or holiday to assure that the samples are properly received.

Sample custody documentation procedures will be maintained throughout initial sample collection; transportation from sample collection site to analytical laboratory; receipt and preparation of laboratory sample extracts and digestives; storage at laboratory until an evaluation of analytical results determines that re-analysis is not required; and final sample disposition.

At the time of sample collection, samples will be labeled and a record of the sampling activity will be recorded in the daily field log. Sample labeling procedures were discussed previously. Information required to identify sample custody and to request sample analyses are then entered on the Chain of Custody. The information recorded on the Chain of Custody will include the project name and number; sampler's name and signature; sample identification numbers; sample date, time, and location; requested analyses; sample container type and quantity; requested analytical turnaround time; and person to receive results and a contact telephone number to call in case problems arise.

A Sample Chain of Custody is included as Appendix D.

6.0 DECONTAMINATION OF EQUIPMENT

All non-disposable equipment and tools will be decontaminated in accordance with the most recent edition of the *Alabama Environmental Investigation and Remediation Guidance* (AEIRG). Personnel decontamination will be performed on an as-needed basis only. Sampling equipment will be either disposable or decontaminated prior to use and between sampling locations. New disposable nitrile gloves will be used during the collection each groundwater sample. Disposable polyethylene tubing will be used with the purge-pump during well purging. The water level indicator and bladder pump will be decontaminated by washing with distilled water and laboratory grade detergent wash, followed by rinsing with distilled water.

7.0 SEMI-ANNUAL REPORTING

Upon receipt of the laboratory analytical results, and within ninety (90) days of the date of sampling, a semi-annual report will be submitted to the ADEM discussing groundwater quality beneath the subject facility. The report will include a statistical analysis of groundwater in accordance with ADEM Administrative Code R. 335-13-4-.27(2)(l) and the Environmental Protection Agency (EPA) standards referenced in the *Statistical Analysis of Groundwater Monitoring Data at Resource Conservation Recovery Act (RCRA) Facilities Unified Guidance*, U.S. EPA, 2009 (Unified Guidance).

7.1 STATISTICAL PROCEDURES

In the application of statistics to groundwater monitoring data from this site, all data will be treated as independent and representative of the quality of groundwater at the site. Statistical methods used, and their application to data from this site, will be in general accordance with the EPA standards referenced in the Unified Guidance. The groundwater monitoring data will be analyzed statistically using the Sanitas statistical software or comparable statistical software.

Upon receipt of the laboratory analytical results, the results will be reviewed to assess the potential for SSIs of metals in groundwater samples collected from the monitoring well network. Statistical analysis will only be conducted for parameters that were reported in groundwater samples collected during each groundwater monitoring event.

Monitoring wells W-21 and W-22 will be designated as the background groundwater quality monitoring locations used for statistical evaluations. Monitoring wells W-19, W-20, W-23, and W-24 will be used as compliance wells.

7.2 TARGET CHEMICALS OF CONCERN

Target COCs will include each of the Appendix I VOCs and metals.

7.2.1 Double Quantification Rule

Historically, three (3) of the forty-seven (47) Appendix I VOCs have been detected in background well W-22 (acetone, benzene, and chlorobenzene). Appendix I VOCs have not been detected in samples collected from background well W-21 or compliance wells W-19, W-20, and W-23. The detected constituents, as well as the date of their last detection, are provided in Appendix E (Data Screening). Pursuant to the Unified Guidance, when background sample data consists entirely of non-detects for a specific constituent, but there are detections above the laboratory detection limit in samples collected from compliance wells, then the Double Quantification Rule (DQR) can be applied. The DQR

states that an SSI is declared when a constituent/compliance well pair displays consecutive quantified detections above the detection limit and the background contains only non-detects. Therefore, when the DQR is applied, further analysis to determine a SSI is not warranted. If there are no consecutive detects (either from scheduled events and/or sampling following a detection), then the constituent/compliance well pair is not subjected to statistical analysis.

In the event an Appendix I VOC is detected in a compliance monitoring well that has a history of non-detects, the DQR will be applied. If the constituent is detected during a retesting event, to be completed within two months of the original event, then that constituent/well pair will be subjected to statistical analysis as discussed in Section 7.3.2.

7.3 STATISTICAL ANALYSIS

7.3.1 Statistical Method for Detection Monitoring

An inter-well statistical analysis will be completed for the determination of SSIs in constituent concentrations in groundwater samples collected from the compliance wells during each semi-annual event. Based on an analysis of variance (ANOVA) that was conducted for background wells W-21 and W-22, only historical data from background well W-22 will be used in the statistical analysis for arsenic. The ANOVA results dated March 5, 2021 were submitted to the ADEM under separate cover. A copy is provided as Appendix F. Historical data for the remaining Appendix I metals from W-21 and W-22 will be pooled when conducting statistical analysis.

The type of statistical method that will be used for evaluating groundwater data will be the Parametric or Non-Parametric Prediction Limit analysis in accordance with ADEM Administrative Code R. 335-13-4-.27(2)(i)3. As discussed in Section 7.3.3, the decision to use Parametric or Non-Parametric analysis will depend on the percentage of non-detects for each constituent, and if required, the results of tests for normality for constituents with a non-detect rate of less than 50%.

7.3.2 Sen's Slope/Mann-Kendall Statistical Evaluation

According to the Unified Guidance, the Sen's Non-Parametric Estimator of Slope is a method of estimating the true slope (change over time) of analytical data. If the data shows an upward slope, there is evidence of an upward trend or increase in a constituent concentration. No identifiable trend would indicate no significant increase or decrease in a particular constituent concentration over time. A decreasing trend would indicate decreasing constituent concentrations over time. Since this method is non-parametric, it is considered suitable for a high percentage of non-detects and is not significantly affected by outliers.

During each semi-annual groundwater monitoring event, samples are collected from the monitoring well network for analysis of Appendix I VOCs. In the event there is an initial exceedance, the procedures discussed in Section 7.4 of this Plan will be initiated and will include a notification to the ADEM, as well as, retesting of the well to confirm the presence of the constituent, if needed.

A Sen's Slope/Mann-Kendall statistical evaluation will be performed for each detected constituent/well pair that has been designated as an SSI to determine if there is an identifiable trend in the target constituent concentration over time. Confidence intervals will also be generated in compliance wells as discussed in Section 7.4.2 of this Plan.

7.3.3 Test For Normality

In accordance with the EPA Unified Guidance, a test for normality should be conducted to determine the appropriate statistical method to be used to evaluate groundwater analytical data as it relates to the distribution of the data. A test for normality will be completed for the appropriate constituents and will satisfy the performance standards required for the selection of the statistical procedures to be used at a facility in accordance with ADEM Administrative Code R. 335-13-4-.27(2)(m)1.

Typically, groundwater analytical data is subjected to a distribution analysis to determine if the data is normally distributed or can be transformed to a normal distribution using either log-normal or ladder of powers data transformations. If data is normally distributed, or can be transformed to create a normal distribution, a parametric statistical analysis is recommended. However, when the data contains a large percentage of non-detects (greater than 50%), the validity of distribution tests are questionable, suggesting that a non-parametric statistical analysis be used.

In order to determine if a parametric or non-parametric statistical analysis should be conducted, a test for normality will be completed for the detected constituent(s) with less than 50% non-detects in an effort to determine if the data set for the detected constituent(s) is normally distributed or can be transformed to a normal distribution. The Shapiro-Wilks Test for Normality will be used for constituents with less than 50 measurements and the Shapiro-Francia Test for Normality will be used for constituents with greater than 50 measurements, as discussed in Chapter 10 of the Unified Guidance.

If data is normally distributed, or can be transformed to create a normal distribution, a parametric statistical method will be used. When the data is not normally distributed, or cannot be transformed to create a normal distribution, a non-parametric statistical method will be used. Additionally, when

the data contains a large percentage of non-detects (greater than 50%), the validity of distribution tests are questionable and it is suggested that a non-parametric method be used. The results for the tests for normality will be submitted in each semi-annual groundwater monitoring report.

7.3.4 Tests for Outliers

Tests for outliers will be conducted in accordance with the Unified Guidance. In order to screen for outliers a Tukey's Outlier Screening, or either a Dixon's Test or a Rosner's Test will be conducted. In the event a outlier is identified, an attempt will be made to determine the cause of the outlier, i.e. lab error, field error, etc., if possible. If outliers are identified within a constituent's dataset, a determination will be made as to whether the outlier(s) should remain in, or be removed, from the dataset prior to completing the statistical analysis. Outliers removed will be identified with an (o) on the historical analytical summary pages in each semi-annual report.

7.3.5 Updating Background Datasets

Background screening will be conducted in accordance with the Unified Guidance. Updating background datasets will be completed after four new compliance observations have been collected (every 2 years for sites undergoing semi-annual groundwater monitoring). Following receipt of the results of the fourth monitoring event, either a t-test (non-detects $\leq$ 75%) or Wilcoxon rank-sum comparison (non-detects $\geq$ 75%) will be conducted.

Since Appendix I metals are evaluated using inter-well analysis, historical data in the background well(s) will be evaluated. Should the comparison indicate no significant difference between the newer data and the existing background data, the newer data will be re-classified as background measurements and added to background. Should the comparison indicate a significant difference between the newer data and the existing background data, either background will not be updated or further investigation, which may include trend tests, will be conducted to determine if there has been a natural shift in background groundwater quality. Should an investigation indicate that there has been a natural shift in background quality, the newer data will not be re-classified as background measurements and added to background without prior ADEM approval.

Results of the background screening will be submitted to the ADEM for review with the semi-annual groundwater report following the results of the fourth monitoring event.

7.4 IDENTIFICATION OF AN SSI (OR INITIAL EXCEEDANCE)

Should the statistical analysis confirm the presence of an initial exceedance for one or more target constituents over background groundwater quality, the landfill will comply with the requirements of ADEM Admin. Code 335-13-4-.27(2)(n)3 and notify the Department within 14 days of the finding, and a retesting plan will be initiated in accordance with the Unified Guidance and this GWMP as discussed in Section 7.4.1 below, if needed.

7.4.1 Retesting Plan

In the event there is an initial exceedance over background, the results will be verified by conducting one retesting event (1 of 2). The retesting event will be completed for each of the constituents in each of the monitoring wells that returned an initial exceedance, if needed, and will be completed within 30-90 days of the initial groundwater sampling event.

In order to determine the retesting schedule for detected COCs with initial exceedances within the compliance wells, power curves were generated to determine the proper number of retesting events that would be needed in order to meet the EPA recommended power requirements for determining if a release has occurred at the facility. Power curves are provided in Appendix G and indicate that in the event there is an initial exceedance over background, the results will be verified by conducting one retesting event (1 of 2).

The results of the retesting events will be submitted to the ADEM as part of the semi-annual report or as an addendum to the semi-annual report. If the results of the retesting event indicate an SSI for a constituent/well pair, statistical analysis using confidence intervals will be conducted for those constituent/well pairs as discussed in Section 7.4.2.

7.4.2 Confidence Intervals

Confidence intervals will be generated for each constituent in each well that has been identified as an SSI. The compliance limits (Groundwater Protection Standards [GWPS]) will be set at the EPA Maximum Contaminant Level (MCL), the EPA Regional Screening Level (RSL) for tap water if an MCL is not available, or at an alternate background concentration with the approval of ADEM. If the constituent is in assessment monitoring, the lower confidence limit (LCL) will be compared to the GWPS.

If the results of the confidence intervals indicate an LCL above the GWPS, an assessment of corrective measures (ACM) will be initiated within 90 days unless a determination can be made that a source

other than the landfill unit caused the exceedance, or there was an error in sampling, analytical testing, or statistical analysis. When conducting the ACM, the upper confidence limit (UCL) will be compared to the GWPS. In the event there is a determination of an alternate source, a report will be submitted to the ADEM for approval and placed in the operating record.

7.5 REPORTING

In addition to statistical analysis discussed above, the semi-annual report will also include, at a minimum, the following information:

- A discussion of the environmental setting of the facility.
- Summary tables of the laboratory analysis.
- Monitoring well sampling records.
- A table of historic groundwater elevations.
- Historical groundwater analytical results.
- Copies of the laboratory reports.
- Potentiometric surface map(s) illustrating groundwater elevation and flow direction.
- Time versus Concentration Graphs for each detected constituent.
- Other supporting figures, such as site and well location maps.

8.0 REFERENCES

Alabama Department of Environmental Management, Administrative Code R. 335-13-x-xx.

Alabama Department of Environmental Management, Georgia-Pacific Naheola Landfill #1, Solid Waste Disposal Permit No. 12-02.

Alabama Department of Environmental Management, Alabama Environmental Investigation and Remediation Guidance (AEIRG), February 2017.

Freeze, R. Allan and Cherry, John A., Groundwater, 1979.

Geological Survey of Alabama, Special Map 220, Geologic Map of Alabama, 1988.

LaBella Associates, D.P.C., Georgia-Pacific Naheola Landfill #1, Landfill Permit No. 12-02, March 2024 Semi-Annual Groundwater Monitoring Report, June 10, 2024.

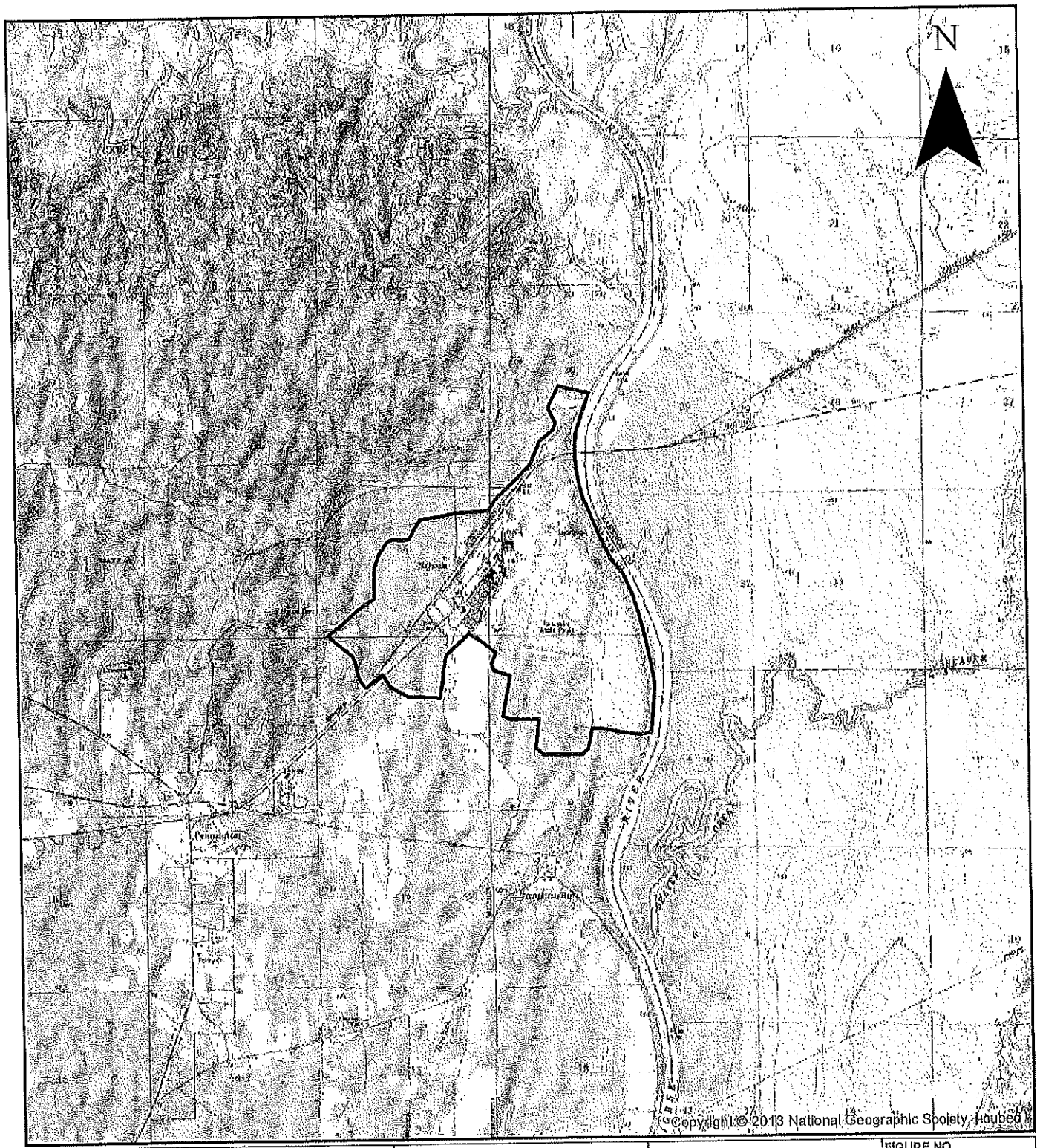
Raymond, Dorothy, E., Gillett, Blakeney, and Moore, James D., Hydrogeology and Vulnerability to Contamination of Major Aquifers in Alabama: Area 10, Geological Survey of Alabama, Tuscaloosa, Alabama 2000

Synterra, Analysis of Variance In Upgradient Monitoring Well Groundwater Data, Georgia-Pacific Consumer Operations LLC, Naheola Mill Landfill No.1, March 5, 2021.

US EPA Region II, Ground Water Sampling Procedure Low Stress (Low Flow) Purging and Sampling, September 2001.

US EPA, Office of Solid Waste, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, March 2009.

FIGURES



Legend

Approximate Site Boundary

USGS Quad ID: 32088-B1
USGS Quad Name: Pennington, Alabama

LaBella
Powered by partnership

528 MINERAL TRACE
HOOVER, AL 35244
(205) 985-4874

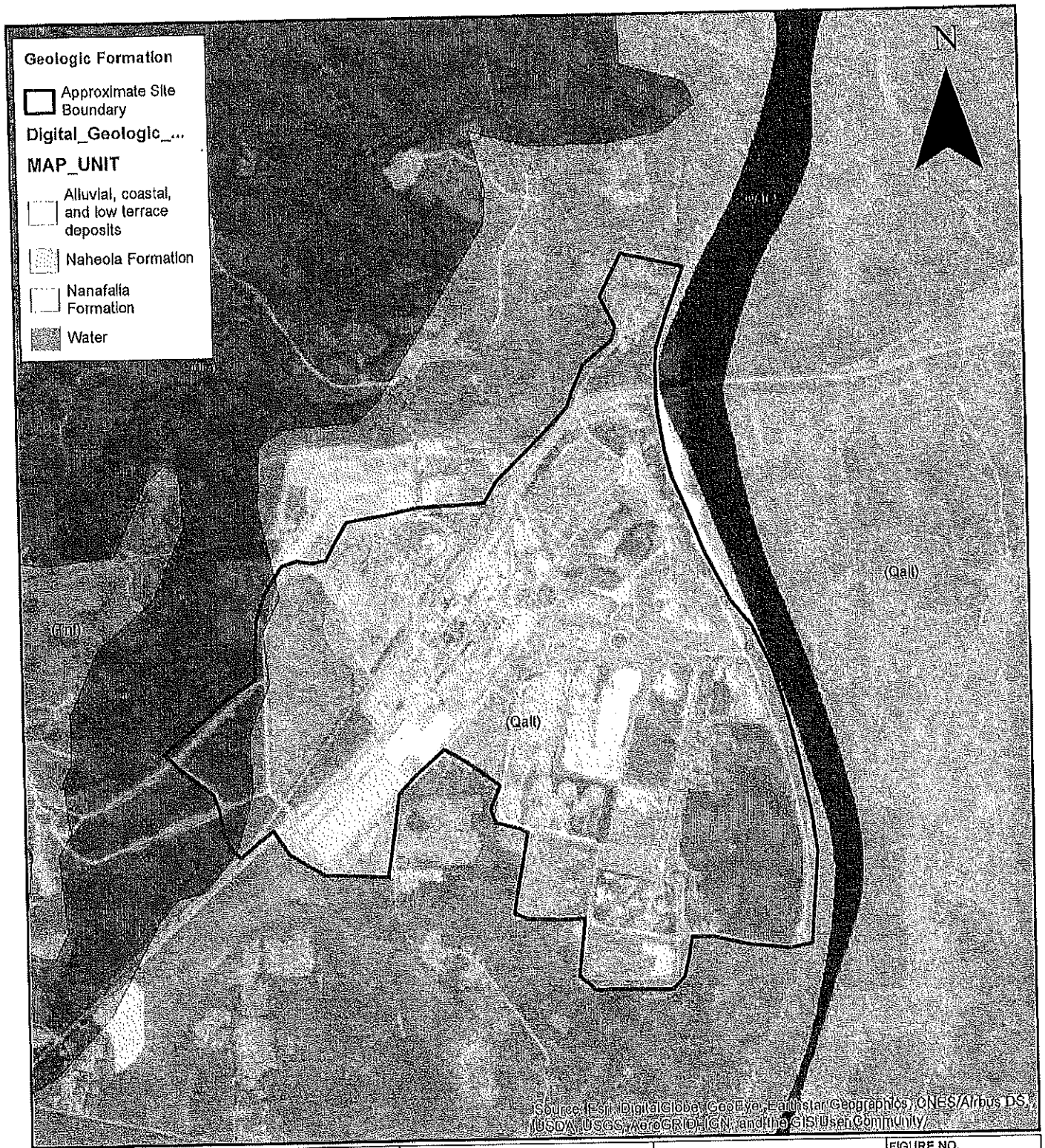
TITLE:
Site Location Map

Georgia-Pacific
Naheola Plant

Pennington, Alabama

SCALE: 0 2,000 4,000
1 inch = 4,000 feet

FIGURE NO.	1
PROJECT NO.	GENERAL
DRAWN BY	AJH
DATE DRAWN	03-21-2022



Legend

Approximate Site Boundary

LaBella
Engineered by people design

528 MINERAL TRACE
HOOVER, AL 35244
(205) 985-4874

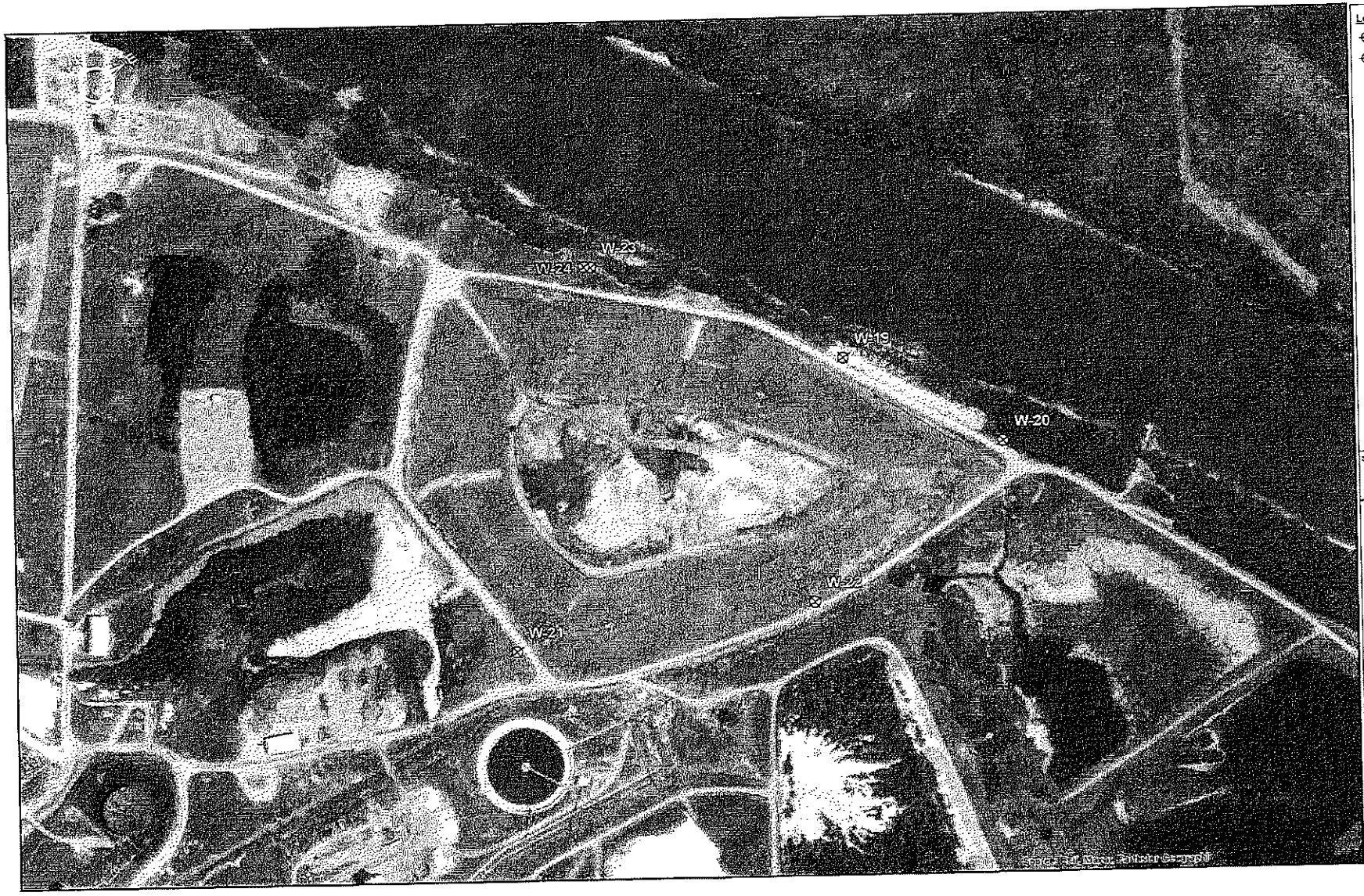
TITLE:
Geologic Map

Georgia-Pacific
Naheola Plant

Pennington, Alabama

SCALE: 0 1,000 2,000
1 Inch = 2,000 feet

FIGURE NO.	2
PROJECT NO.	GENERAL
DRAWN BY	AJH
DATE DRAWN	03-21-2022



Legend

- Proposed Monitoring Well
- Landfill Monitoring Well

SCALE (FT):
0 150 300
1 inch = 300 feet

TITLE:

Site Plan & Monitoring Well Location Map

Georgia-Pacific Naheola Landfill #1

Pennington, Alabama

FIGURE NO.	PROJECT NO.
3	2241222.00
DRAWN BY:	DRAWN DATE:
LKN	06-04-2024

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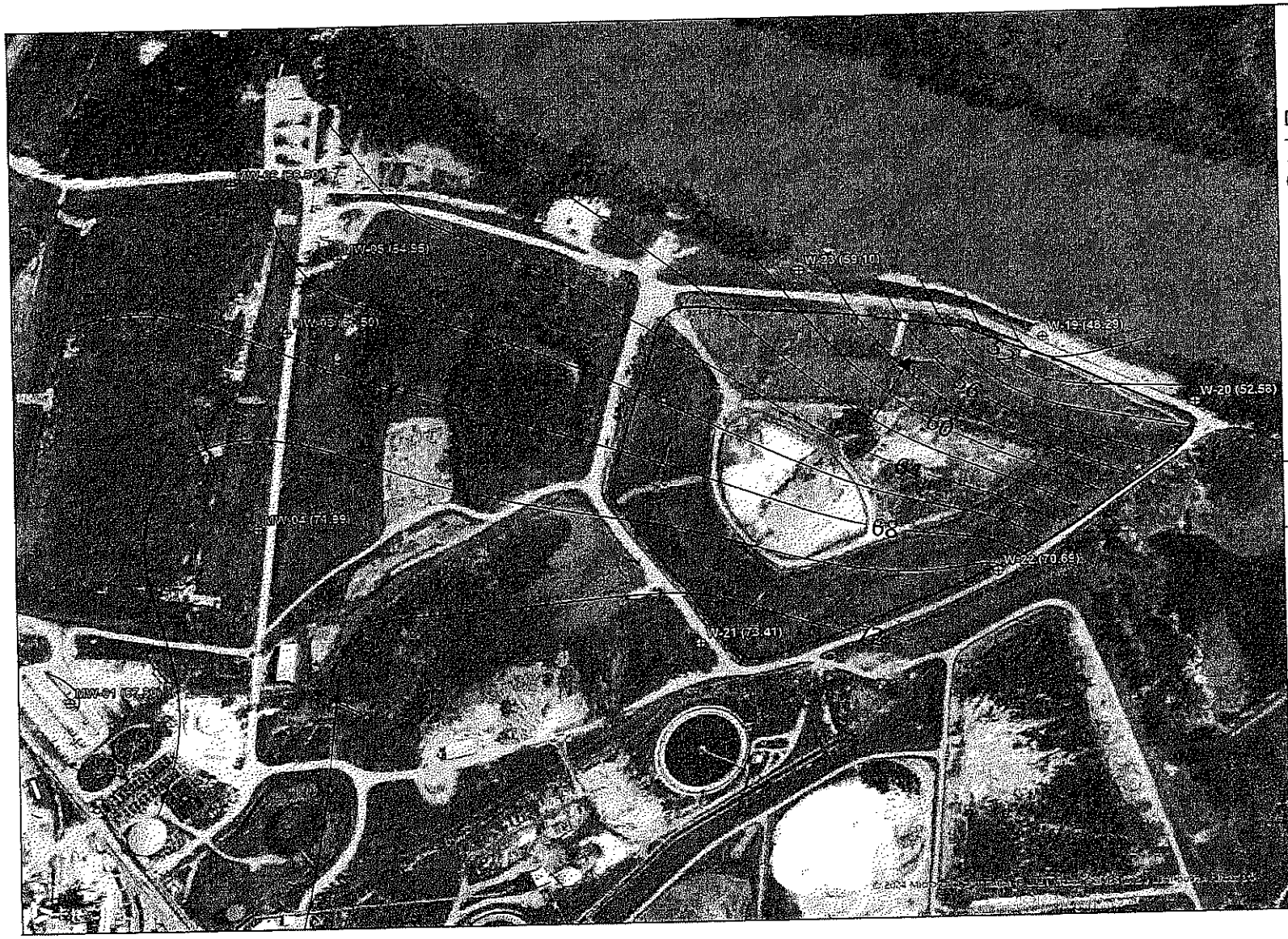
HOOVER, AL 35244
(205) 995-4374



Legend

- Landfill Monitoring Well
- Monitoring Wells
- Landfill Boundary
- Potentiometric Contour Line
- Groundwater Flow Direction
- (93.39) Groundwater Elevation (AMSL)

0 175 350

1 inch equals 350 feet

TITLE:
Potentiometric Surface Map

March 2024

Georgia-Pacific
Naheola Plant
Pennington, Alabama

FIGURE NO.	PROJECT NO.
4	2241076
DRAWN BY:	DATE DRAWN:
MAT	06/07/2024

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APPENDIX A

Appendix A
Calculated Groundwater Flow Velocities
March 2024

Monitoring Well	Groundwater Elevation (ft-amsl)	Distance from up- to down-gradient well (feet)	Gradient (i)	Hydraulic Conductivity (feet/day)	Effective Porosity (ne)	Estimated Flow Velocity (feet/year)
W-21	73.41	1320.00	0.0108	39.9	0.20	789.41
W-23	59.10					
W-21	73.41	1435.00	0.0175	39.9	0.20	1274.69
W-19	48.29					
W-21	73.41	1720.00	0.0121	39.9	0.20	881.85
W-20	52.58					
W-22	70.69	1380.00	0.0084	39.9	0.20	611.56
W-23	59.10					
W-22	70.69	825.00	0.0272	39.9	0.20	1977.11
W-19	48.29					
W-22	70.69	800.00	0.0226	39.9	0.20	1648.41
W-20	52.58					
		average gradient	0.0164		average flow velocity	1197.17

Notes:

1. Effective porosity values from Freeze & Cherry (1979) Table 2.4.
2. Hydraulic conductivity values were obtained from five pump tests performed on wells screened in alluvial soils at the Naheola Mill, reported in Table 5, Geohydrologic Summary Report, 1995, prepared by Hall, deGraffenried & Associates.

ft-amsl - feet above mean sea level

APPENDIX B

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SITE NAME: Georgia-Pacific Naheola Landfill #1	PROJECT:	PROJECT:
FIELD PERSONNEL/SAMPLER:	WEATHER CONDITIONS:	DATE:
WELL NO:	WELL DIAMETER (In):	PURGE PUMP TYPE OR BAILER:
TOTAL WELL DEPTH (feet):	SCREEN (FT-BGS):	
STATIC WATER LEVEL (feet):	TIME:	
DEPTH TO FREE PRODUCT (feet):		
LENGTH OF WATER COLUMN:		
WELL VOLUME (gallons):	WELL VOLUME X 4 (gallons):	
Calculation: 1 well volume = (total well depth - static water level) x well capacity (0.16 for 2" well)		

PURGING DATA

INITAIL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	
PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	DEPTH TO WATER (feet)	Volume Purged (gallons)	Cumulative Volume Purged (gallons)	pH (standard units)	COND. (mS/cm)	TURBIDITY (NTUs)	DISSOLVED OXYGEN (mg/L)	TEMP. (°C)	REDOX (ORP) (mV)	COLOR	ODOR

REMARKS:

SAMPLING DATA

SAMPLE DATE:	SAMPLE TIME:	SAMPLE METHOD:

ANALYSIS AND/OR METHOD	VOLUME	#CONTAINERS	PRESERVATIVE USED:	COMMENTS:

REMARKS:

Verify Well Cap Secured and Locked*	**Yes:**		

CALIBRATION INFORMATION:

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:

LaBella Associates, D.P.C.
528 Mineral Trace
Hoover, Alabama 35244
Phone (205) 985-4874 Fax (205) 987-6080

APPENDIX C

MONITORING WELL SAMPLING RECORD

PROJECT NO:
PROJECT NAME: Georgia-Pacific Naheola Landfill #1
SITE LOCATION: Pennington, Choctaw County, Alabama
RECORDED BY:

WELL NUMBER	W-19	W-20	W-21	W-22	W-23
GENERAL WELL DATA					
Top of Casing (TOC) Elevation (ft)	81.18	83.79	82.44	86.24	70.82
Original Total Depth (ft below TOC)	54.07	55.63	31.66	36.06	20.45
TOC Height (ft above/below grade)	2.35	3.42	2.70	1.48	2.88
Screened Interval (ft)	41.0-51.0	42.0-52.0	18.0-28.0	23.0-33.0	7.5-17.5
Well Diameter (in)/Material	2" PVC	2" PVC	2" PVC	2" PVC	2" PVC
Current Well Condition					
WATER LEVEL DATA					
Date (mm/dd/yyyy)					
Time (military)					
Measured Total Depth (ft below TOC)					
Static Water Level (ft below TOC)					
Static Elevation (ft - AMSL)					
WELL PURGE DATA					
Purge Date (mm/dd/yyyy)					
Purge Time (military)					
Minimum Purge Volume (gal)					
Actual Purge Volume (gal)					
Equipment Used					
WELL SAMPLING DATA					
Sampling Date (mm/dd/yyyy)					
Sampling Time (military)					
Weather Conditions					
Equipment Used					
Groundwater pH (std units)					
Specific Conductance (mS/cm)					
Turbidity (NTU)					
Dissolved Oxygen (mg/L)					
Groundwater Temperature (degrees C)					
Oxidation-Reduction Potential (mV)					
Number of Containers Filled					
Water Clarity					
Parameters to be Analyzed					

I certify that all water level measurement devices, purging equipment, and sampling equipment were properly cleaned prior to use in each well. Signature

REMARKS
NA = Not Applicable/Not Available
NS = Not Sampled
NR = Not Recorded

LABELLA ASSOCIATES, D.P.C.
525 MINERAL TRACE
HOOVER, ALABAMA 35244

APPENDIX D

LaBella
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LaBella Associates, D.P.C.
528 Mineral Trace
Birmingham, Alabama 35244
Phone: (205) 985-4874
Fax: (205) 987-6080
Email:

Page _1_ of ___

Collected By:	Project Name:	Laboratory Name:
Signature:	Project No.:	Laboratory Address:

Sample ID	Lab ID	Comp/ Grab	Sample Matrix	Sample Date	Sample Time	Sample Preservative

Analysis Required

Remarks:

Matrix: **SS** – Soil/Solid **GW** – Groundwater **WW** – Waste Water
DW – Drinking Water **SW** – Stormwater **OT** - Other

Special Instructions:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Samples Shipped Via:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Lab Remarks:
Relinquished By:	Date:	Time:	Received for Lab By:	Date:	Time:	

APPENDIX E

Data Screening

Analysis Run 8/8/2024 9:27 AM View: Statistics Data

GP Naheola Landfill No. 1 Client: Georgia-Pacific Data: GA-Pacific Statistics Data

A listing of detects and trace values for 47 constituents in 5 wells on 114 dates:

Acetone, W-22 (bg), 3/6/2003: 17 ug/l
Acetone, W-22 (bg), 3/17/2004: 13 ug/l
Benzene, W-22 (bg), 3/28/2001: 8.4 ug/l
Chlorobenzene, W-22 (bg), 3/30/2000: 9.1 ug/l
Chlorobenzene, W-22 (bg), 3/28/2001: 77.2 ug/l
Chlorobenzene, W-22 (bg), 3/24/2021: 1.4 ug/l
Chlorobenzene, W-22 (bg), 9/23/2021: 1.54 ug/l
Chlorobenzene, W-22 (bg), 3/18/2022: 2.35 ug/l
Chlorobenzene, W-22 (bg), 9/14/2022: 2.28 ug/l
Chlorobenzene, W-22 (bg), 3/6/2023: 1.47 ug/l
Chlorobenzene, W-22 (bg), 9/5/2023: 1.39 ug/l
Chlorobenzene, W-22 (bg), 3/15/2024: 1.35 ug/l

APPENDIX F

synTerra

Science & Engineering Consultants
148 River St., Suite 220, Greenville, SC 29601 | 864.421.9999

PROJECT MEMORANDUM

Date: March 5, 2021

To: Shawn Williams

From: Paige Coleman, Pauline Burdette

cc: Jeff Lunceford, P.G.
Mark McDade

Subject: Georgia-Pacific Consumer Products LP – Naheola Mill Landfill No. 1
Analysis of Variance in Upgradient Monitoring Well Groundwater Data

Groundwater sample data from upgradient monitoring wells W-21 and W-22 at the Georgia-Pacific (GP) Naheola Mill Landfill No. 1 have been pooled to calculate the prediction interval statistic (interwell) for prior semiannual statistical evaluations. An analysis of variance was performed by SynTerra to confirm the validity of pooling the two data sets. The following analysis confirms the statistical similarity or lack of spatial variance between the upgradient monitoring well data sets.

Analysis of Variance: Box Plot Comparison

Box plots (or box and whisker plots) provide a visual representation of the distribution of a data set. The data are divided into four quartiles that each contain 25% of the data. The central box represents the interquartile range (IQR) and contains the inner 50% of the data, or the second and third quartiles. The median is shown as a line within the box. The outer lines (or whiskers) extending from each side of the box depict the data ranges within the first and fourth quartiles. The maximum and minimum values are the endpoints of the exterior lines. Outliers in the data set are shown as points beyond the whiskers. Outliers are determined by multiplying the IQR by 1.5 and adding to the 75th percentile or subtracting from the 25th percentile.

A comparison of box plots provides a visual impression of the spatial variance between data sets. Box plots that are staggered are assumed to have greater variability than box plots that overlap, or are plotted in the same concentration range. For this analysis, the box plots for upgradient wells W-21 and W-22 data were placed side-by-side for each constituent of interest (COI, **Attachment A**). The non-detect values in each data set were reported as half the method detection limit, in accordance with United States Environmental Protection Agency (US EPA) guidance. When compared, the box plots for all COIs except arsenic had significant visual overlap, demonstrating the lack of spatial variability between the well W-21 and W-22 data. The

box plots for arsenic were staggered, indicating a difference in spatial variability between the data.

Analysis of Variance: t-Test

Welsh's *t*-test, an adaptation of Student's *t*-test, was also used to evaluate the variance of the data sets. Welch's *t*-test is the parametric test for comparing means between two independent groups without assuming equal population variances. Unlike Student's *t*-test, Welsh's *t*-test takes into account the variance of each data set in the denominator, allowing for the possibility that the samples may have been drawn from populations with unequal variances. Welch's *t*-test assumes the following characteristics about the data:

- Statistically independent data sets
- No significant outliers in the two groups
- Approximately normal distribution
    - *t*-tests are robust enough to handle some non-normality

Welch's *t*-test defines the *t*-statistic by the following formula:

$$t = \frac{(\bar{x}_1 - \bar{x}_2)}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

Where: $\bar{x}_1, \bar{x}_2$ = mean of groups (samples) 1 and 2,
S_1^2, S_2^2 = variance of groups 1 and 2,
n_1, n_2 = sample size of groups 1 and 2

The degrees of freedom, *df* associated with this variance estimate is approximated from the sample data using the Welch-Satterthwaite equation, where:

$$df = \frac{(\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2})}{\frac{\frac{S_1^2}{n_1}^2}{n_1 - 1} + \frac{\frac{S_{12}^2}{n_2}^2}{n_2 - 1}}$$

The null hypothesis of equal population mean is rejected when *p*-value $\leq \alpha$, where α is the significance value. An α value of 0.05 was used for this analysis. The two-tailed *p*-value is calculated by the following formula:

$$p = 2P(t > t_0 \mid t \sim t_{\alpha,df})$$

Where: P = Probability
t = test statistic

t_o = observed test statistic

Welsh's *t*-test results for each individual COI are presented on **Table 1**. The non-detect values in each data set were reported as half the method detection limit, in accordance with US EPA guidance.

The variance between the two data sets for a given COI are statistically similar when the *p*-value is greater than the α value (**Table 1**). The Welsh's *t*-test results indicate 94 percent (or 15 of 16) of the COIs **do not** exhibit a statistically significant difference in spatial variability. Arsenic is the only COI with a statistically significant difference in spatial variability. Based on these findings, the spatial variance between the data sets is statistically similar to a very high degree, and the pooling of the upgradient well data is a valid statistical approach for evaluating site groundwater. Therefore, it is recommended that the pooled upgradient well data approach be continued for the semiannual statistical evaluation of groundwater data.

Table 1. *t*-Test Results

COI	*t*-value	*df*	*p*-value	Mean W21	Mean W22	Conclusion
Antimony	-0.200	103	8.42E-01	0.0014	0.0015	Variance is statistically similar
Arsenic	-6.451	115	2.73E-09	0.0109	0.0292	Variance is not statistically similar
Barium	-1.833	115	6.94E-02	0.1887	0.2520	Variance is statistically similar
Beryllium	-0.153	103	8.79E-01	0.0006	0.0006	Variance is statistically similar
Cadmium	-0.712	115	4.78E-01	0.0006	0.0007	Variance is statistically similar
Chromium	0.659	115	5.11E-01	0.0207	0.0165	Variance is statistically similar
Cobalt	-0.429	103	6.69E-01	0.0080	0.0089	Variance is statistically similar
Copper	0.143	115	8.87E-01	0.0127	0.0123	Variance is statistically similar
Lead	-0.115	115	9.08E-01	0.0023	0.0023	Variance is statistically similar
Mercury	-0.120	115	9.05E-01	0.0002	0.0002	Variance is statistically similar
Nickel	-0.060	103	9.52E-01	0.0113	0.0115	Variance is statistically similar
Selenium	0.205	115	8.38E-01	0.0036	0.0034	Variance is statistically similar
Silver	-0.156	103	8.76E-01	0.0075	0.0079	Variance is statistically similar
Thallium	-0.967	103	3.36E-01	0.0004	0.0006	Variance is statistically similar
Vanadium	0.377	103	7.07E-01	0.0397	0.0353	Variance is statistically similar
Zinc	0.559	115	5.77E-01	0.0271	0.0215	Variance is statistically similar

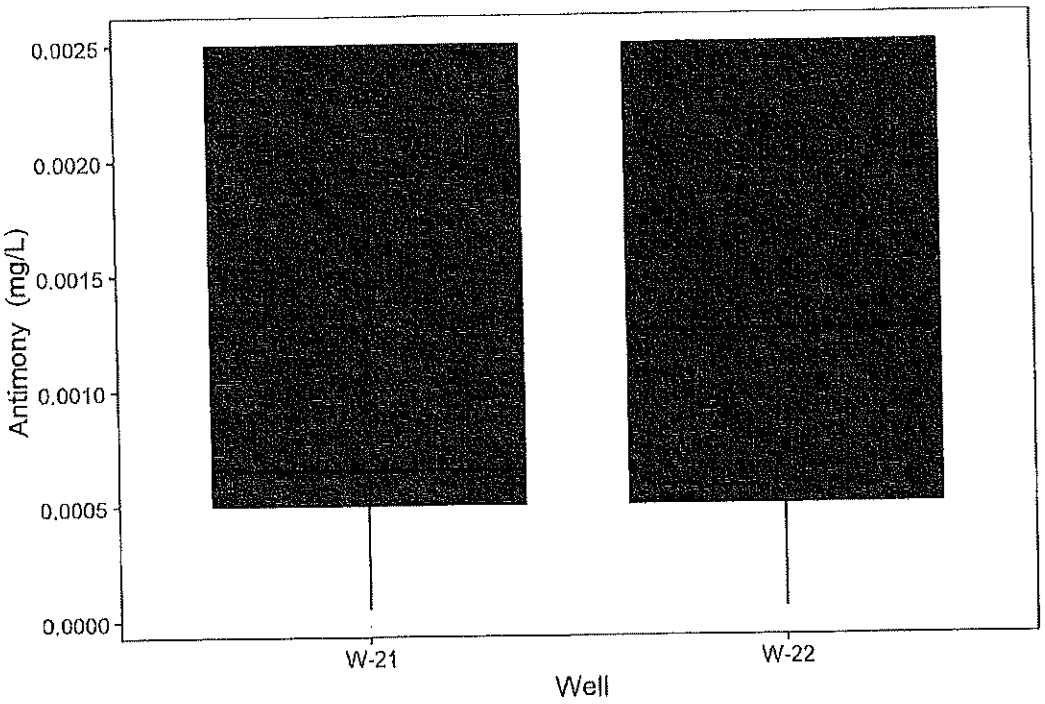
Prepared by: KSM Checked by: JPC

Note
df - degrees of freedom
COI - constituent of interest

Attachments: Attachment A: Box Plot Comparison

ATTACHMENT A

Boxplot Comparisons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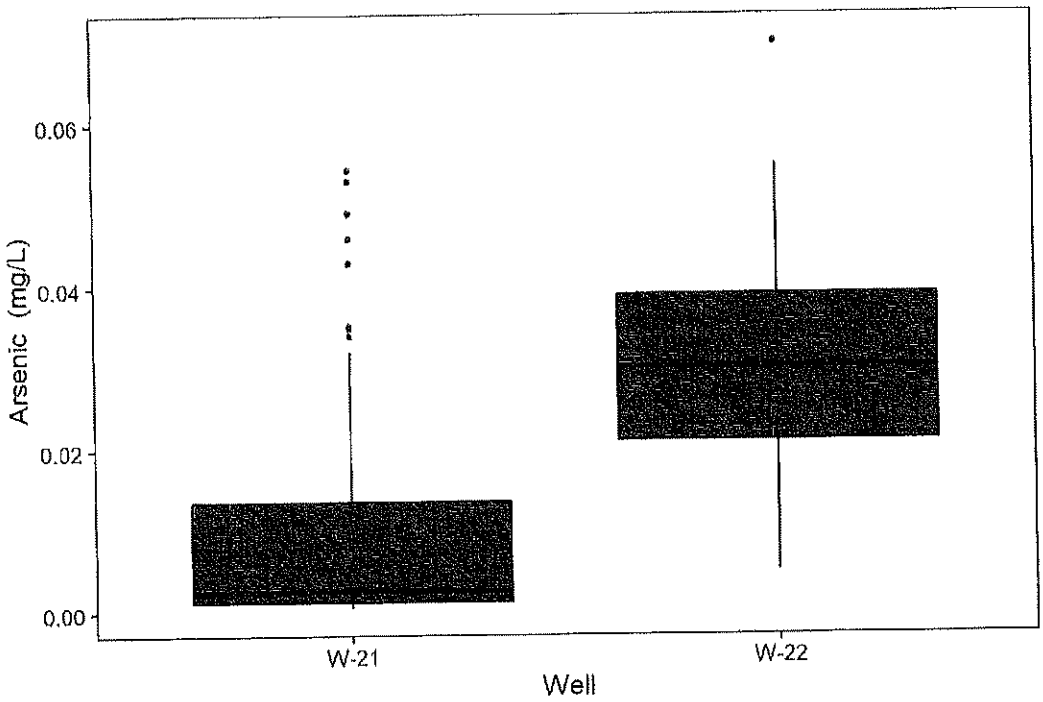
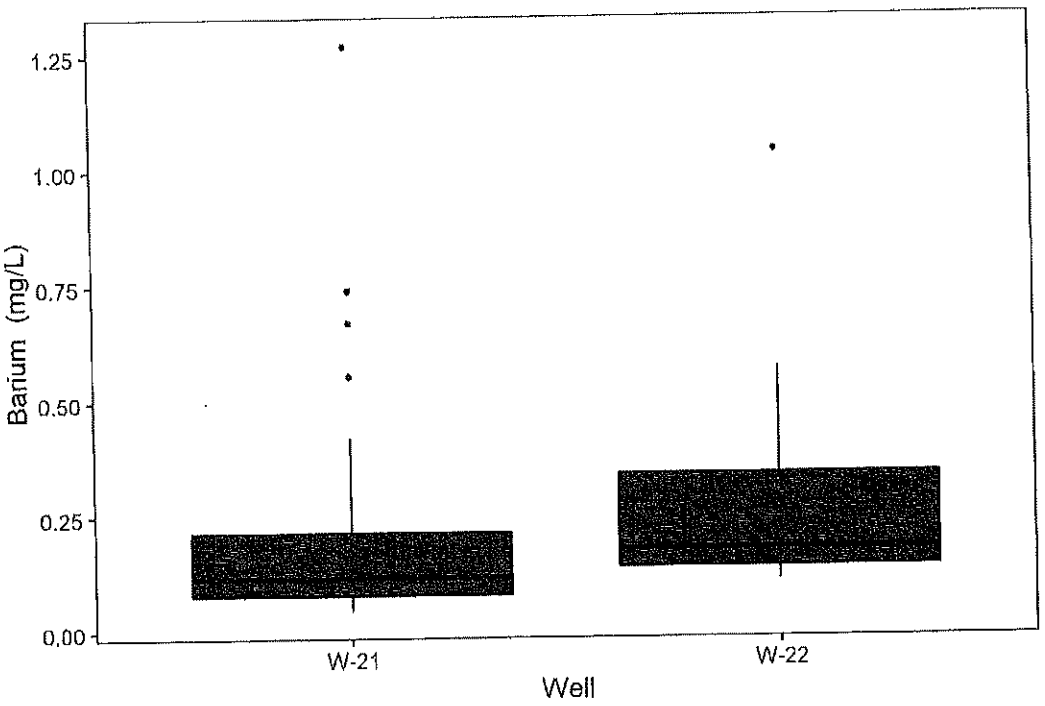
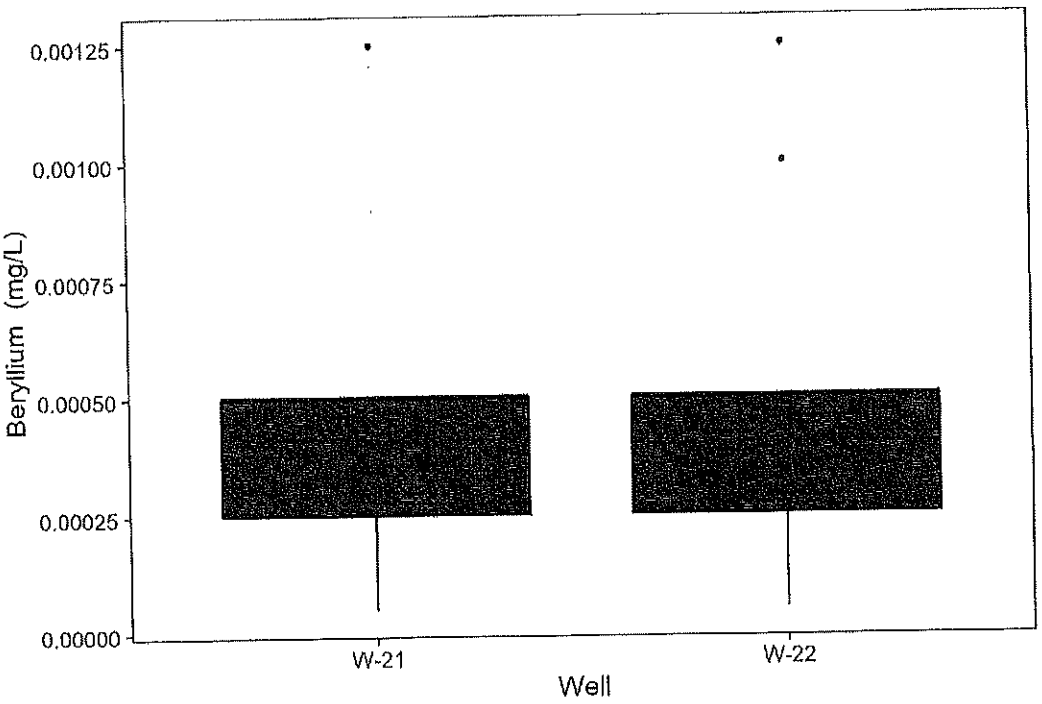
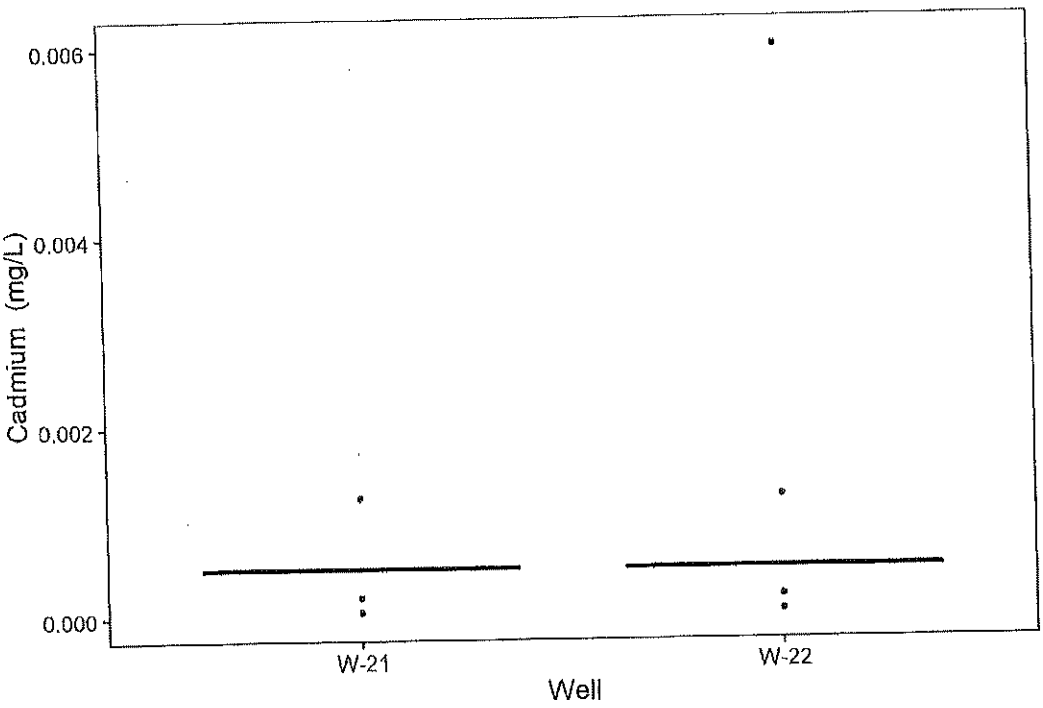
0.0020
0.0015
0.0010
0.0005
0.0000
Antimony (mg/L)
W-21
W-22
Well


0.06
0.04
0.02
0.00
Arsenic (mg/L)
W-21
W-22
Well


1.25
1.00
0.75
0.50
0.25
0.00
Barium (mg/L)
W-21
W-22
Well


0.00125
0.00100
0.00075
0.00050
0.00025
0.00000
Beryllium (mg/L)
W-21
W-22
Well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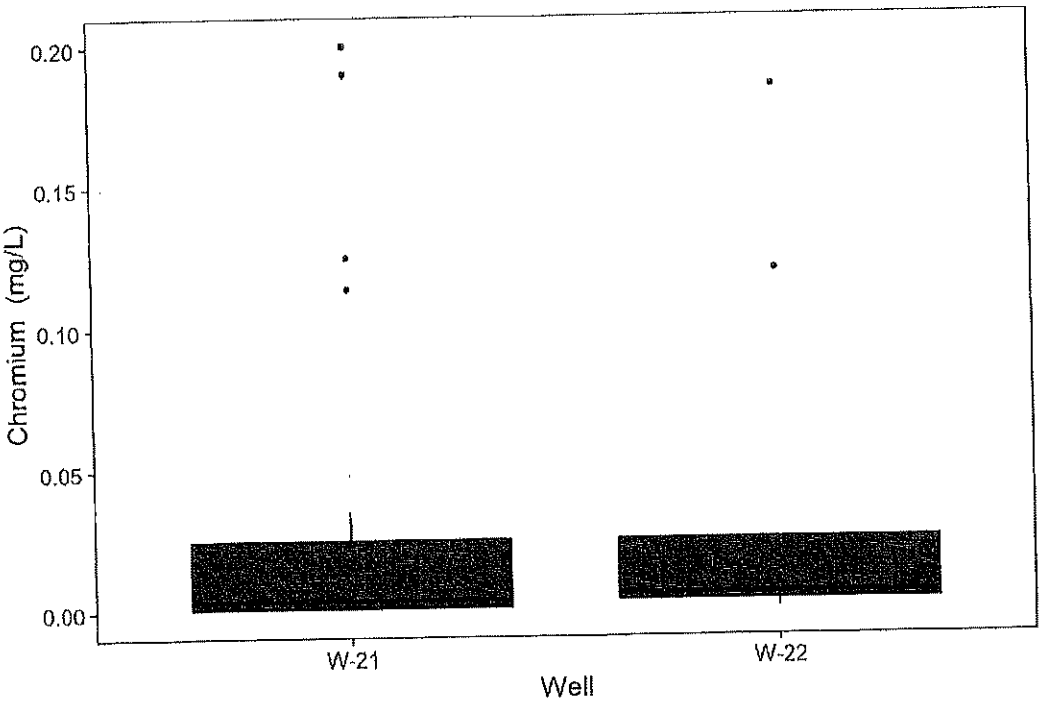
0.004
0.002
0.000
Cadmium (mg/L)
W-21
W-22
Well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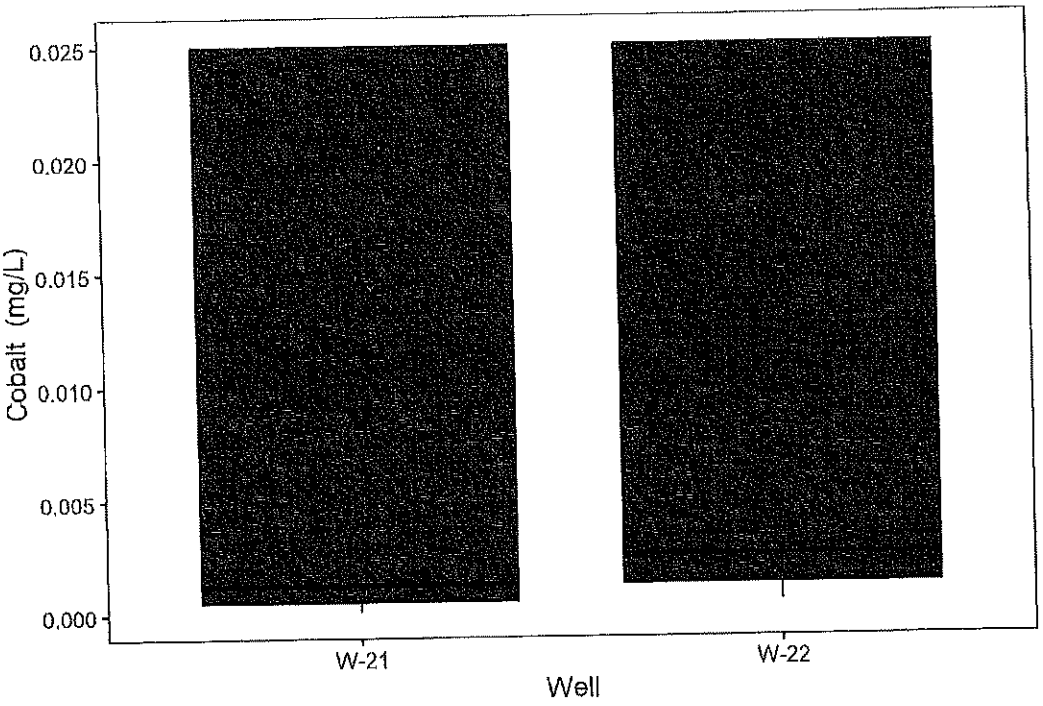
0.15
0.10
0.05
0.00
Chromium (mg/L)
W-21
W-22
Well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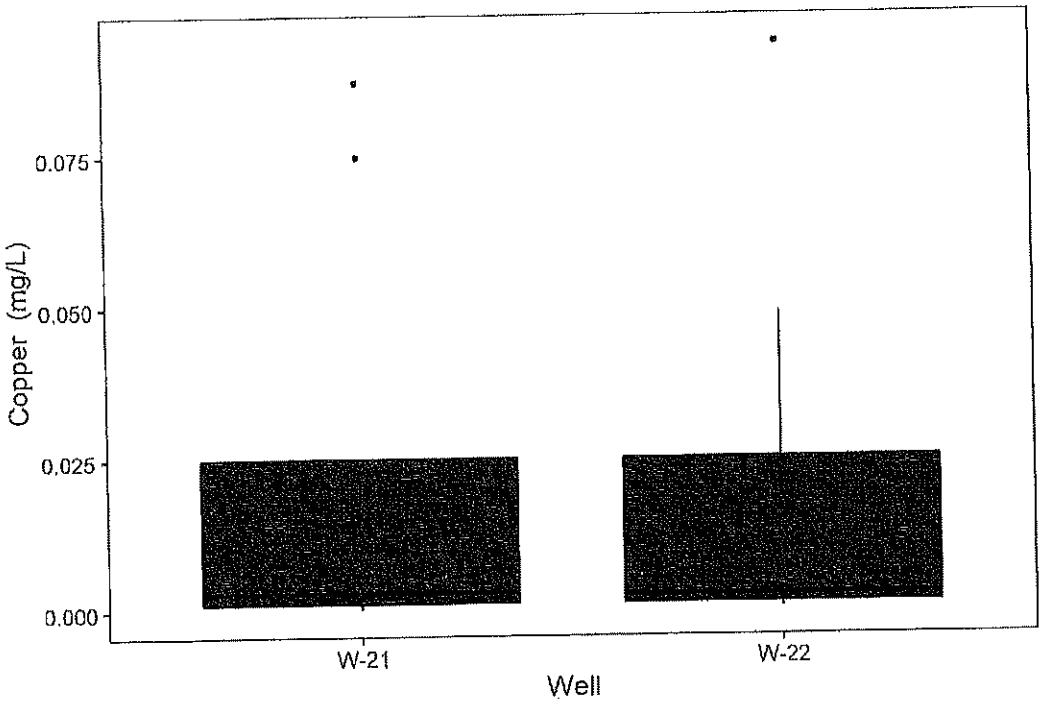
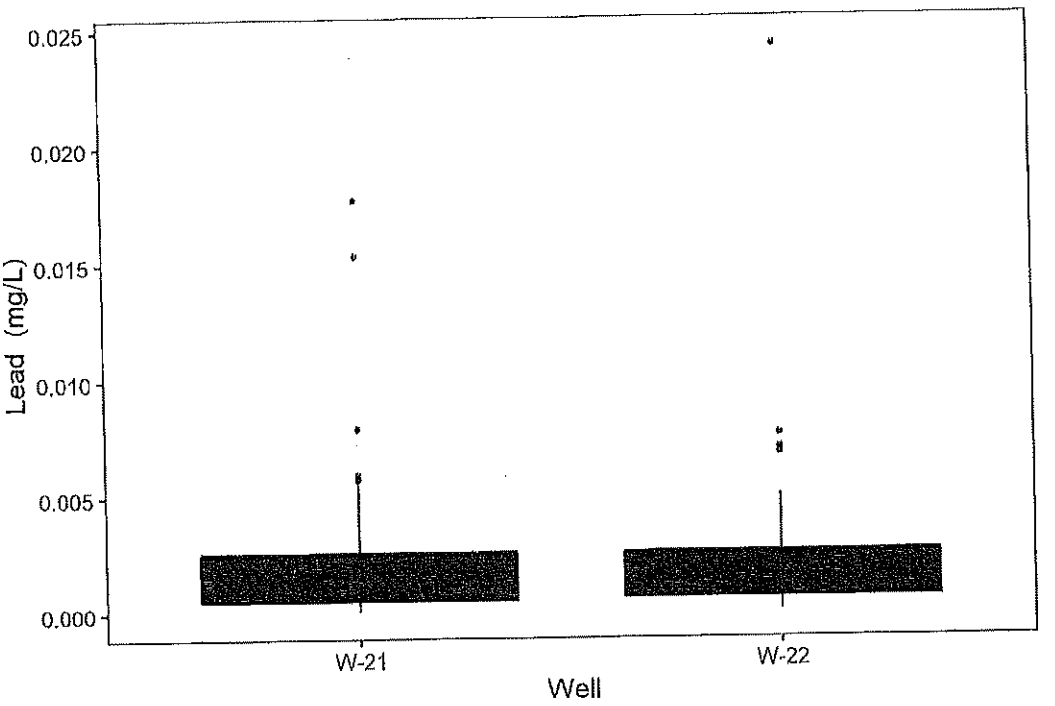
0.020
0.015
0.010
0.005
0.000
Cobalt (mg/L)
W-21
W-22
Well


0.075
0.050
0.025
0.000
Copper (mg/L)
W-21
W-22
Well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0.020
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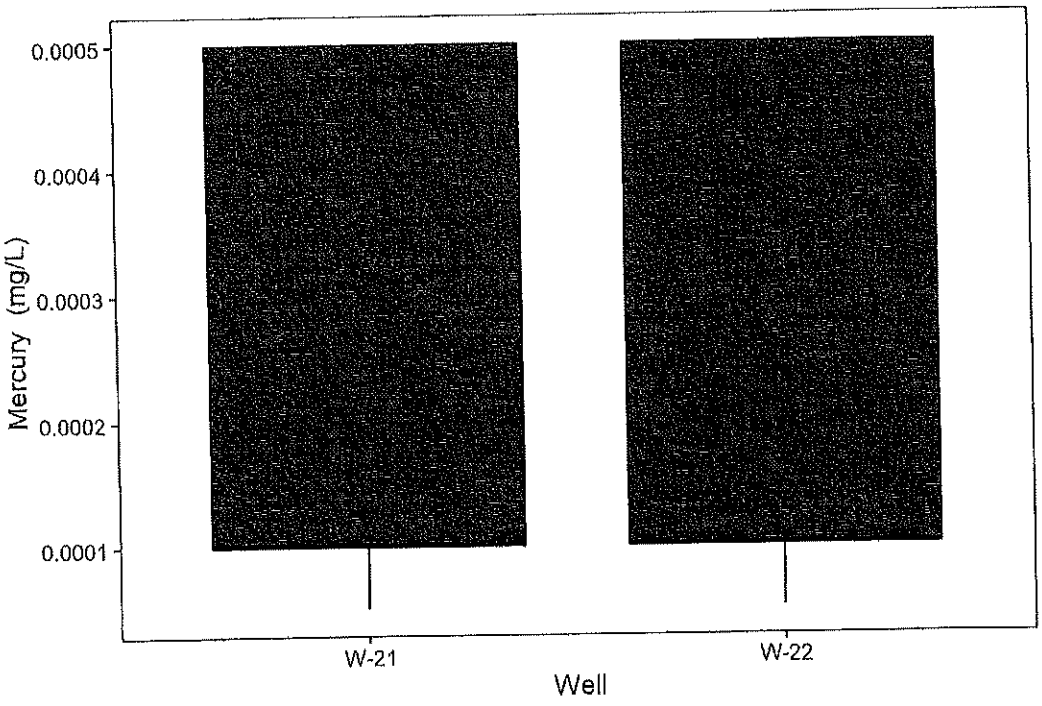
0.010
0.005
0.000
Lead (mg/L)
W-21
W-22
Well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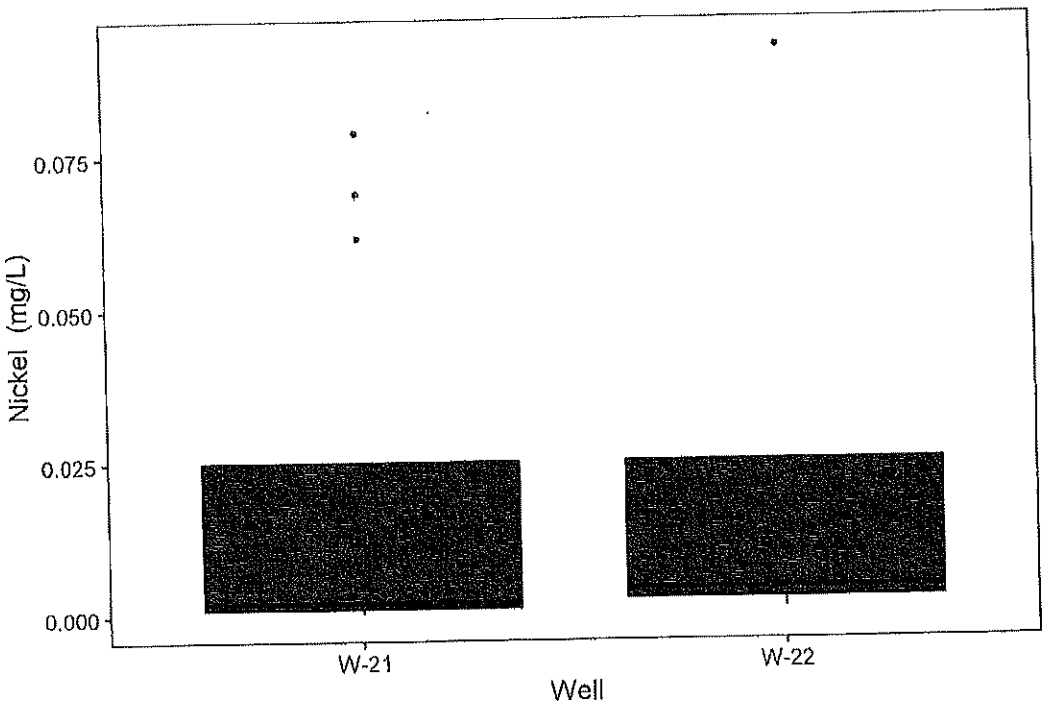
0.0004
0.0003
0.0002
0.0001
Mercury (mg/L)
W-21
W-22
Well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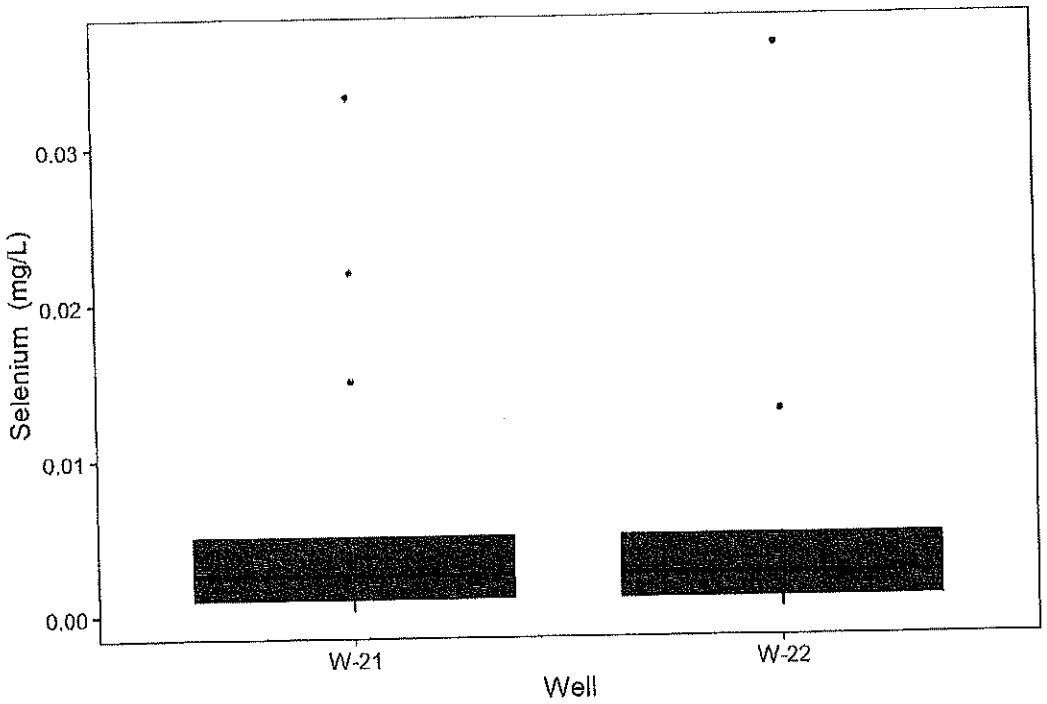
0.050
0.025
0.000
Nickel (mg/L)
W-21
W-22
Well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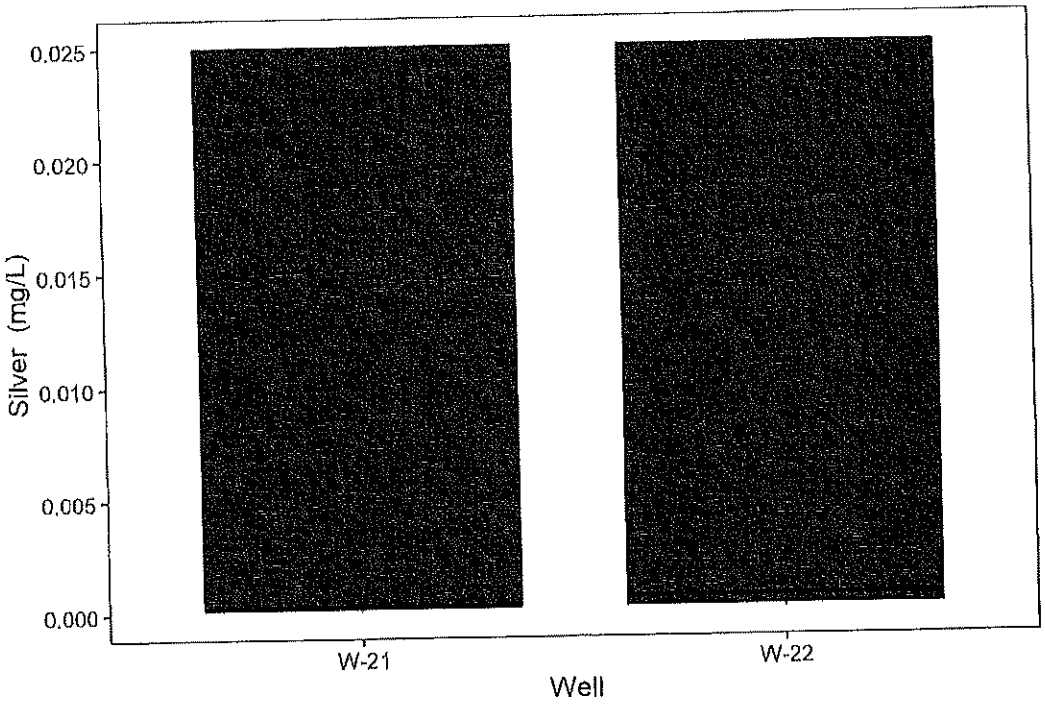
0.02
0.01
0.00
Selenium (mg/L)
W-21
W-22
Well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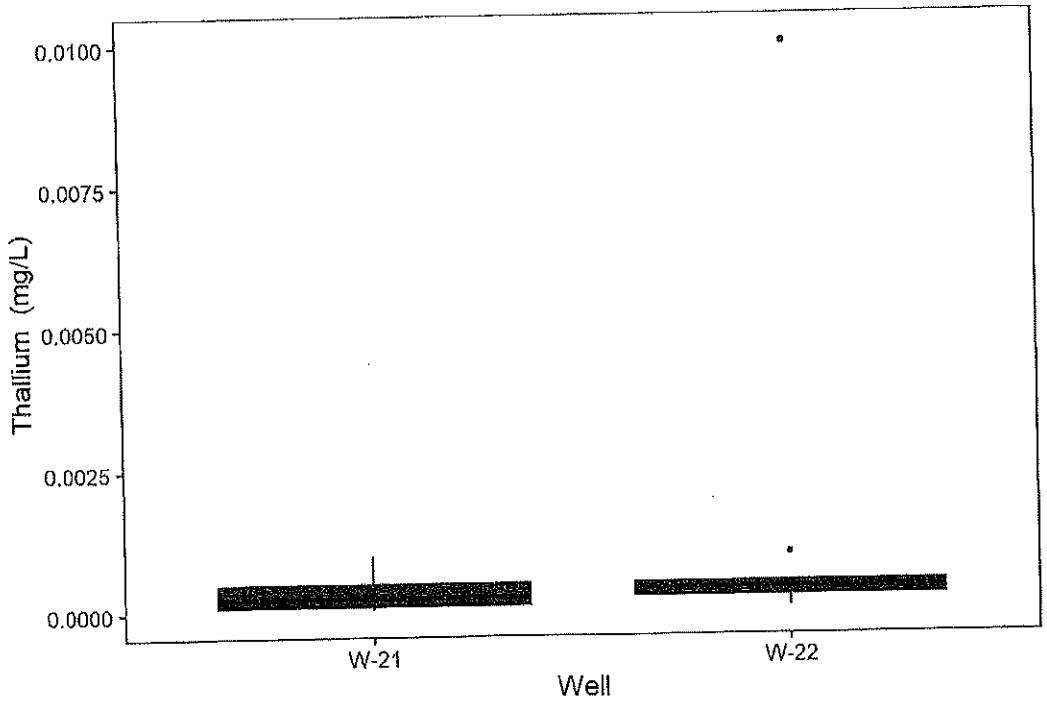
0.020
0.015
0.010
0.005
0.000
Silver (mg/L)
W-21
W-22
Well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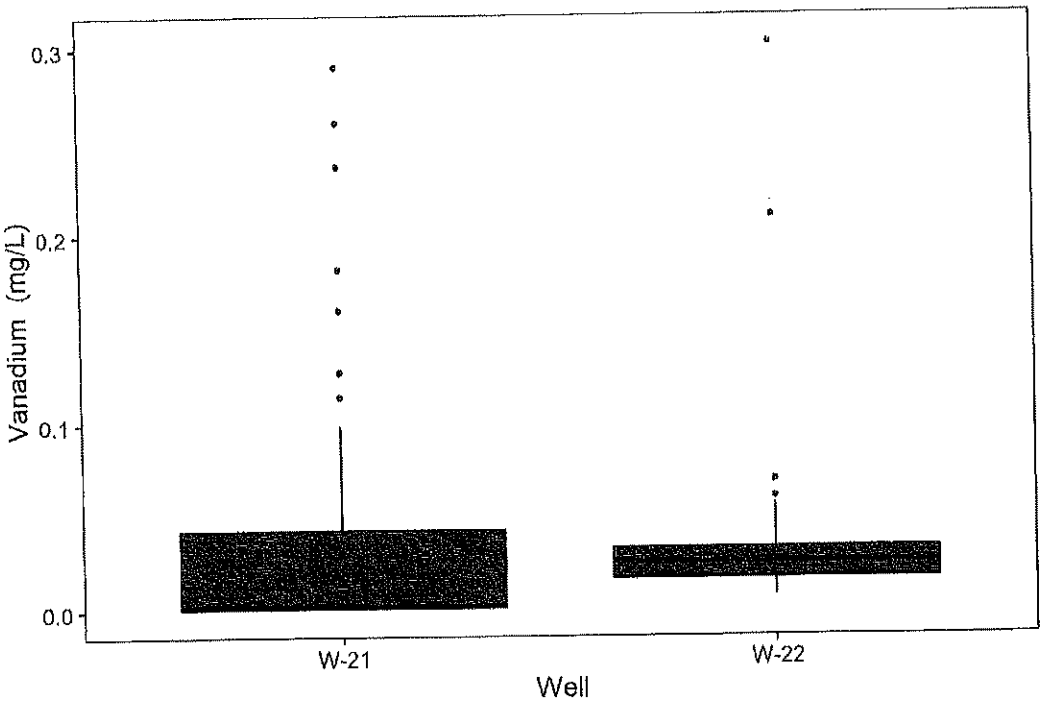
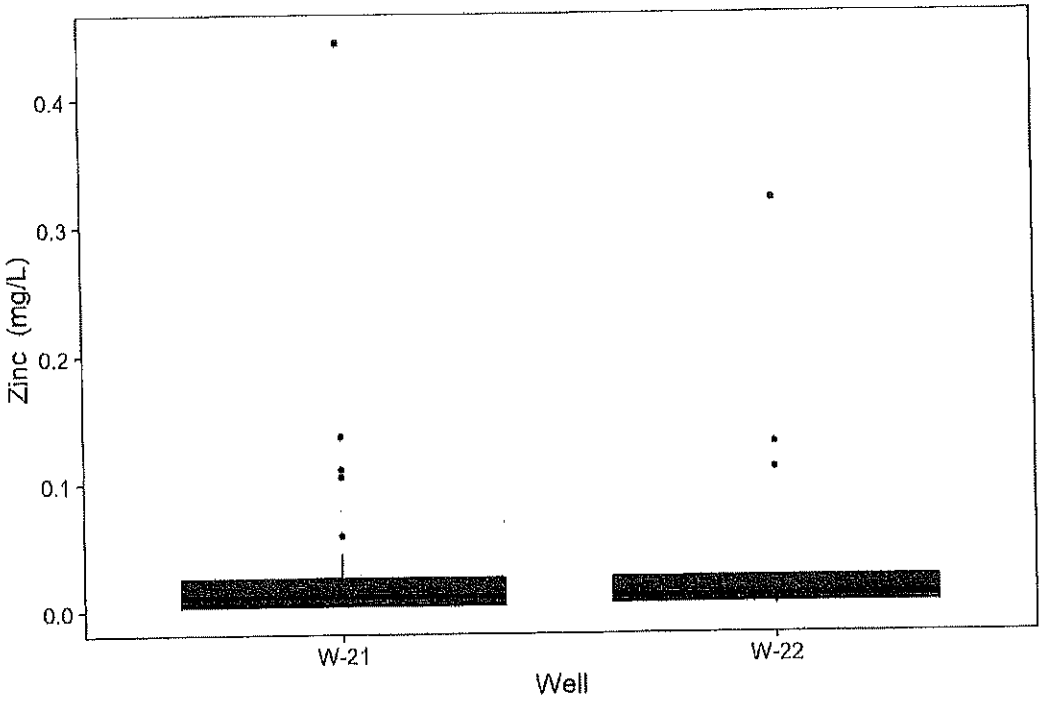
0.0075
0.0050
0.0025
0.0000
Thallium (mg/L)
W-21
W-22
Well


0.3
0.2
0.1
0.0
Vanadium (mg/L)
W-21
W-22
Well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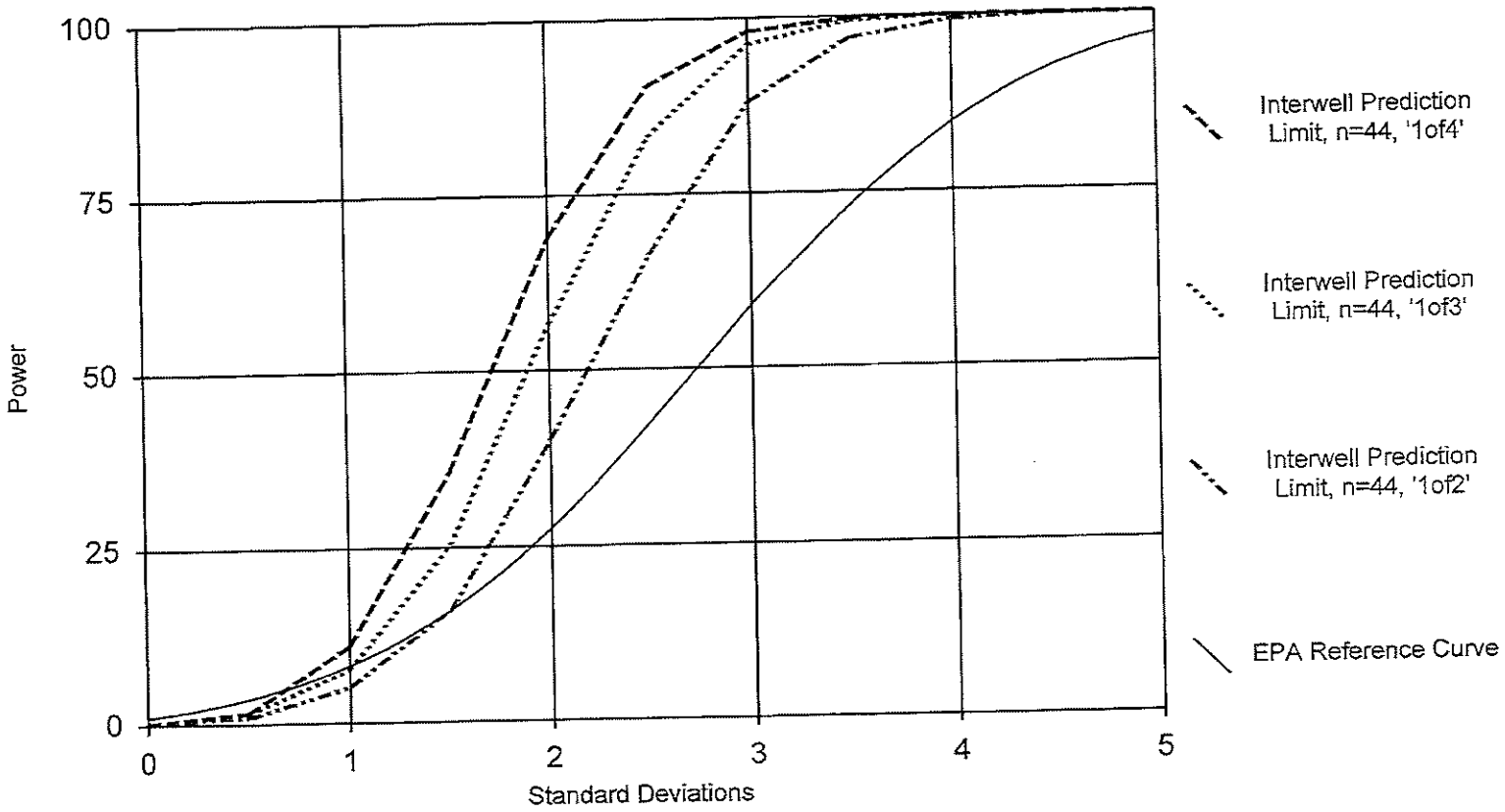
0.3
0.2
0.1
0.0
Zinc (mg/L)
W-21
W-22
Well

APPENDIX G

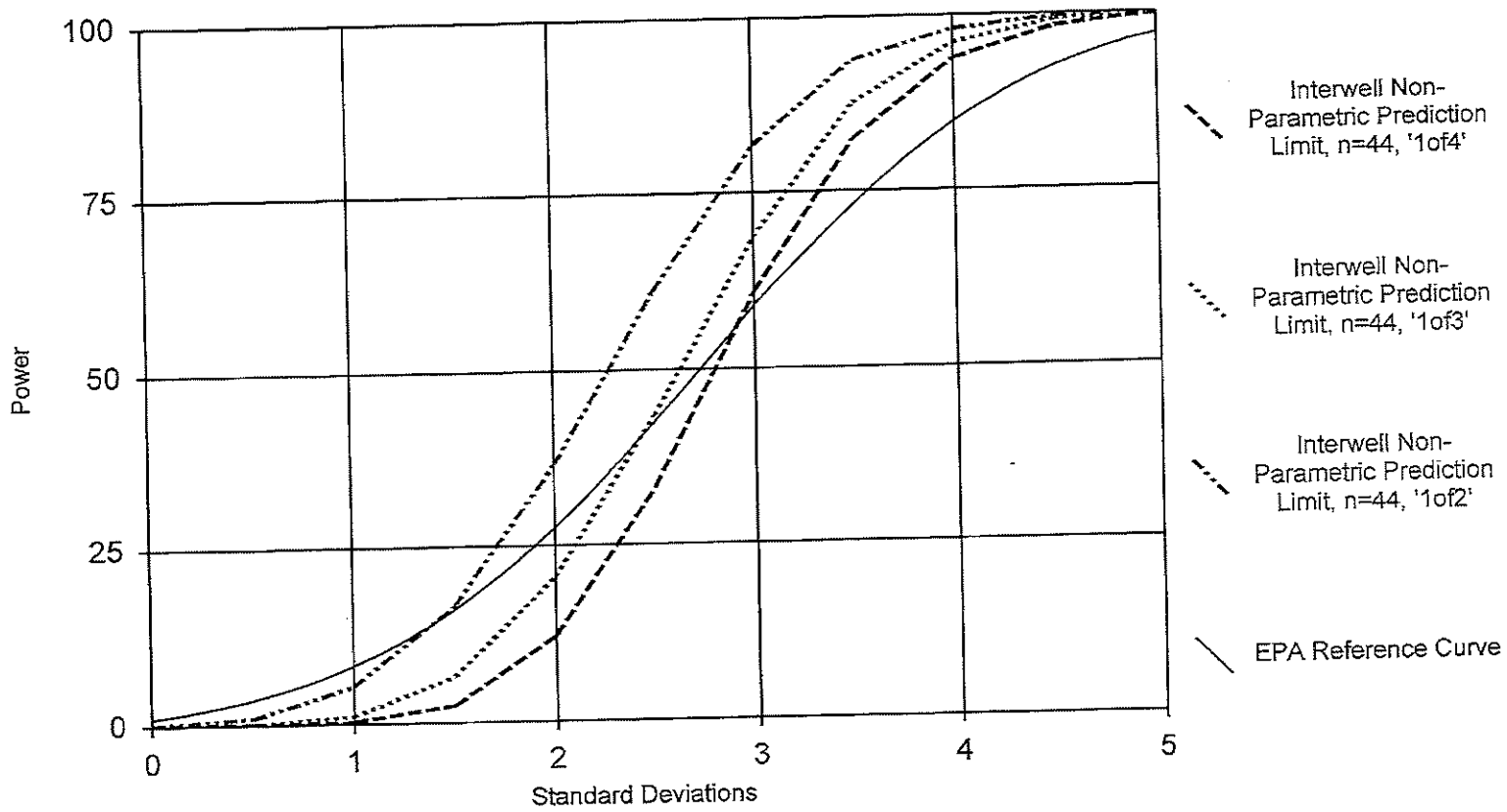
Power Curve



Analysis Run 8/8/2024 9:54 AM View: Statistics Data

GP Naheola Landfill No. 1 Client: Georgia-Pacific Data: GA-Pacific Statistics Data

Power Curve



Analysis Run 8/8/2024 9:55 AM View: Statistics Data

GP Naheola Landfill No. 1 Client: Georgia-Pacific Data: GA-Pacific Statistics Data

APPENDIX H

LaBella
Powered by partnership.

June 6, 2024

Alabama Department of Environmental Management
Post Office Box 301463
Montgomery, Alabama 36130-1463

Attention: Mr. Blake Holden
Solid Waste Branch

RE: Monitoring Well Installation Plan – W-24 – Revised
Georgia-Pacific Naheola Landfill #1
7530 Highway 114
Pennington, Choctaw County, Alabama
Permit No.: 12-02
LaBella Project No.: 2241222.00

Dear Mr. Blake Holden:

On behalf of Georgia-Pacific Naheola LLC (GP), LaBella Associates, D.P.C. (LaBella) is submitting this Work Plan for the installation of one groundwater monitoring well at the GP Naheola Landfill #1 (Permit No.: 12-02). The monitoring well (to be designated as W-24) will be installed in the vicinity of W-23 at the approximate location shown in Figure 1. This well is being installed in close proximity to W-23 in order to determine if W-23 has been compromised and to verify the metal concentrations in historical groundwater samples collected from this area.

MONITORING WELL INSTALLATION

The new groundwater monitoring well (W-24) will be installed at the approximate location shown in Figure 1, attached. Based on prior experience and understanding of Site conditions, LaBella is anticipating that the boring for the new monitoring well will be advanced using hollow-stem augers to a maximum depth of approximately 20 ft-bgs. Split spoon samples will be collected at five-foot intervals for the purpose of logging subsurface materials. The drilling and installation of the new well will be supervised by a geoscientist experienced with groundwater investigations and monitoring well installation.

Once the boring is terminated, the monitoring well will be installed as a Type II monitoring well and constructed using a 10-foot section of 2-inch Schedule 40 PVC, 0.010-slotted screen and 2-inch PVC riser casing to ground surface. A sand filter pack will be installed to a minimum of one foot above the well screen. A minimum of two feet of bentonite will be placed above the sand pack as a seal and the remainder of the annulus will be filled with a neat cement mixture to ground surface. The monitoring well will then be completed with a stand-up protective aluminum cover with a locking cap.

The monitoring well will be installed and constructed following the guidelines outlined in the most recent edition of EPA Region IV's *Environmental Investigations Standard Operating Procedures and Quality Assurance Manual* and the most recent edition of the *Alabama Environmental Investigation and Remediation Guidance (AEIRG)*. Following the completion (after at least 24 hours), the monitoring well will be developed sufficiently to remove sediments accumulated in the well screen and filter pack.

Upon completion, the location and top of casing of the new monitoring well will be surveyed by an Alabama licensed professional land surveyor. The survey will establish a measuring point elevation on the top of casing and will be referenced to mean sea level.

BACKGROUND SAMPLING

In an effort to establish a statistically viable dataset of groundwater quality at the new monitoring well location, background samples will be collected quarterly (for a total of four background measurements). Additional background samples will continue to be collected on a semi-annual basis. Each sample will be placed in laboratory provided containers, labelled, and placed in a cooler on ice to maintain a sample temperature of <6 degrees Celsius. The samples will be shipped under proper chain of custody to a certified laboratory for analysis. In accordance with the Landfill's Solid Waste Permit, the background samples will be analyzed for Appendix I Volatile Organic Compounds (VOCs) in accordance with EPA Method 8260 and Appendix I metals in accordance with EPA Methods 6020 and 7470 (mercury). The background sample dataset will be used to establish water quality within the water-bearing zone intersected at the new well location to support future statistical evaluations of groundwater quality. Once at least four background samples have been collected, a comparison of the historical data from W-23 and the newly installed well W-24 will be conducted using Analysis of Variance (ANOVA) to verify is detected concentrations of metals are comparable between wells.

Monitoring Well Installation Report & Revised GWM Plan

Following completion of the well installation activities, a letter report documenting these activities will be submitted to the Department. A revised *Groundwater Monitoring Plan* will also be completed and will include a figure showing the location of the newly installed monitoring well and a discussion on how statistical analysis will be conducted on the newly installed monitoring well.

MINOR PERMIT MODIFICATION

In addition to the services described above, Georgia Pacific is also submitting a request for a Minor Permit Modification for the addition of the new monitoring well (W-24) to the facility's permit.

LaBella Associates, D.P.C. appreciates your consideration in this matter. If you have any questions concerning this submittal or require any additional information, please contact our office at (205) 985-4874.

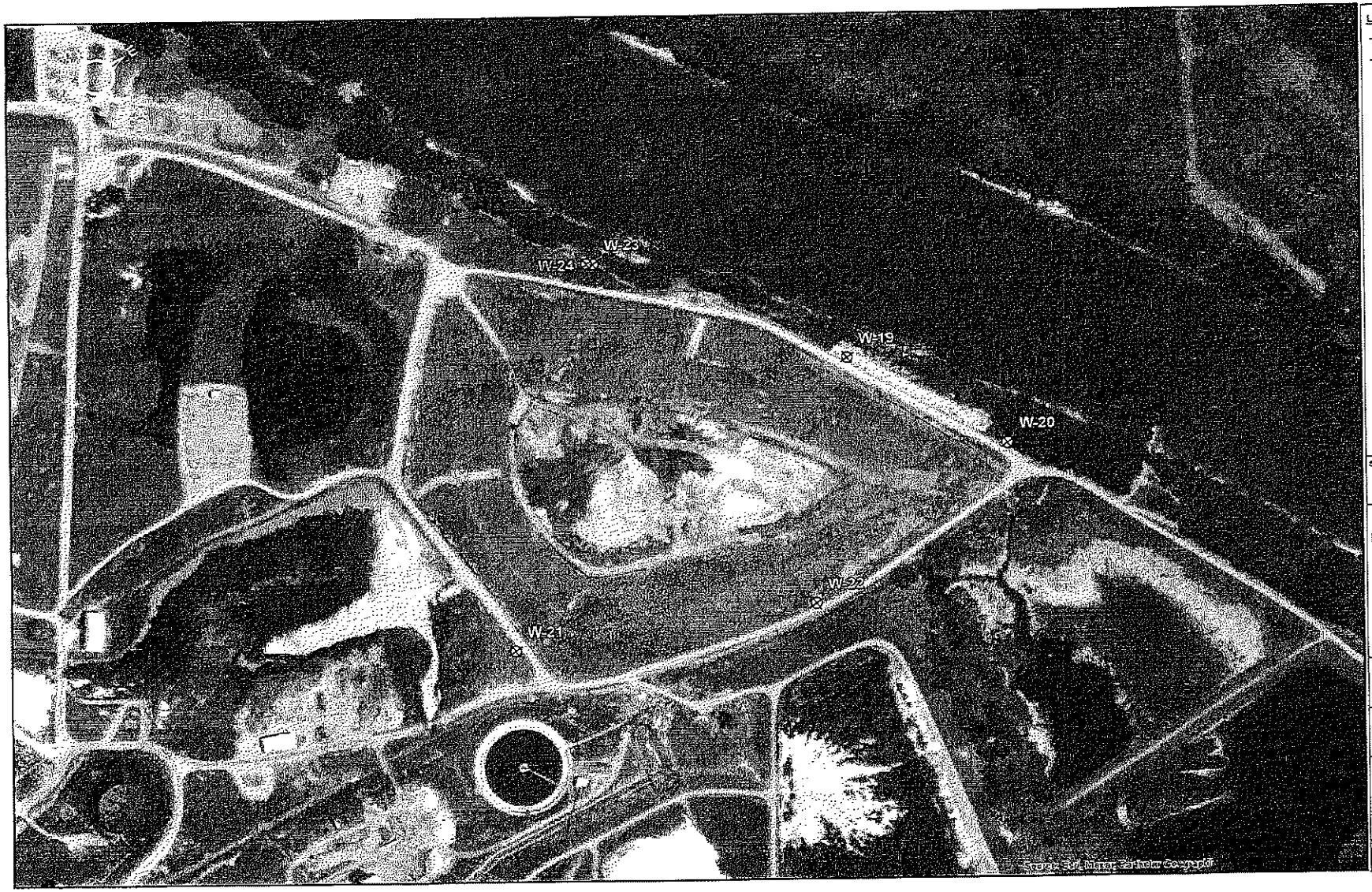
Sincerely,
LABELLA ASSOCIATES, D.P.C.

Lori K. Norton

Lori K. Norton, P.G.
Senior Project Geologist

Attachments: Figure 1 – Proposed Monitoring Well Location Map

cc: Shawn Williams, Georgia-Pacific Naheola, LLC



Legend

- Proposed Monitoring Well
- Landfill Monitoring Well

SCALE (FT):
0 150 300
1 inch = 300 feet

TITLE:

Proposed Monitoring Well Location Map

Georgia-Pacific Naheola Landfill #1

Pennington, Alabama

FIGURE NO.	PROJECT NO.
1	2241222.00
DRAWN BY:	DRAWN DATE:
LKN	06-04-2024

LaBella

528 MINERAL TRACE
HOOVER, AL 35244
(205) 985-4874

Georgia-Pacific

Georgia-Pacific
Naheola LLC

7630 Highway 114
Naheola Mill
Pennington, Alabama 36916
(205)459-1900
Thomas.Blaylock@gapac.com

Tommy Blaylock
Vice President, Manufacturing

February 14, 2024

Mr. Blake Holden
Solids Waste Branch
Alabama Department of Environmental Management
1400 Coliseum Blvd.
Montgomery, AL 36130

RE: Landfill Permit 12-02 Name Change

Dear Mr. Holden,

As discussed on our phone conversion, Georgia-Pacific Naheola LLC is requesting the following changes to the draft Solid Waste Landfill Permit 12-02.

Section III A 3
Please add demolition debris are part of the permitted waste streams.

Section III D of our current landfill permit states:
A minimum of six inches of compacted earth or other alternative cover material approved by ADEM shall be added at the conclusion of each week's operation unless a variance is granted in Section VIII. The Permittee has been approved to utilize soil-like waste material (wastewater treatment sludge, green liquor dregs, ash, lime, wood chips, sawdust, bark, and pulp mill knots) as an alternative cover material. The Permittee shall be required to cover all exposed waste with a minimum of six inches of compacted earth at the conclusion of each month's operation. (See Section VIII.4.)"

In accordance with ADEM Rule 335-13-8, Georgia-Pacific is requesting a variance from ADEM Rule 335-13-4-.23(1)(a)1. Georgia-Pacific is requesting the language under Permit Section III D to be amended to read as follows: "The Permittee shall not be required to cover waste until final elevation levels have been reached." Allowing this variance will not threaten the public health or unreasonable create environmental pollution, as further described in Georgia-Pacific's letter to ADEM on March 2, 2022.

Alternatively, if a full variance from ADEM Rule 335-13-4-.23(1)(a)1. is not granted, Georgia-Pacific requests an amendment of the current permit language which requires the monthly requirement to cover all exposed waste with a minimum of six inches of compacted earth. In the alternative, Georgia-Pacific is requesting the language under Permit Section III D to be amended to read as follows: "A minimum of six inches of compacted earth or other alternative cover material approved by ADEM shall be added at the conclusion of each week's operation unless a variance is granted in Section VIII. The Permittee has been approved to utilize soil-like waste material (wastewater treatment sludge, green liquor dregs, ash, lime, wood chips, sawdust, bark, and pulp mill knots) as an alternative cover material. The Permittee shall not be

required to cover waste with a minimum of six inches of compacted earth until final elevation levels have been reached."

Section IV C

Please change "Monitoring wells shall be bailed or pumped to remove at least four times the well volume of water. Slow recharge wells shall be bailed until dry. Wells shall be allowed to recharge prior to sampling". Please change this verbiage to: "Monitoring wells shall be bailed or pumped following low-flow protocols.

Should you have any questions or require any additional information, please contact Shawn Williams at (205) 459-1568.

Sincerely,

Tommy Blaylock, VP - Manufacturing

Georgia-Pacific Naheola LLC
Naheola Operations
7530 Highway 114
Pennington, Alabama 36916
205-459-1900
251-363-2104
thomas.blaylock@gapac.com

Tommy Blaylock
Vice President, Manufacturing

May 12, 2022

Blake Holden
Alabama Department of Environmental Management
Land Division – Solid Waste Branch
1400 Coliseum Boulevard
Montgomery, Alabama 36130

RE: Variance from monthly soil cover
Georgia-Pacific Naheola LLC
Naheola Mill, Pennington, Alabama

Dear Mr. Holden:

As requested from the department, Georgia-Pacific Naheola LLC is providing justification for a variance from ADEM Rule 335-13-4.23 (2)(a)1. This ADEM rule states that the Permittee shall be required to cover all exposed waste with a minimum of six inches of compacted earth at the conclusion of each month's operation.

Historically, the Naheola mill's landfill has utilized soil-like ADEM-approved alternative cover in lieu of weekly soil covering. This approved alternative cover can consist of wastewater treatment sludge, green liquor dregs, ash, lime mud, bark, wood chips, sawdust, and knots. The alternative cover can be used as frequently as daily to cover waste to prevent materials from being windblown. Bark, wood chips and sawdust are routinely diverted from the landfill and are used as hog fuel for the mill's boiler. Knots and wastewater treatment sludge have high moisture content 60-70% moisture and are a low fire risk. Wastewater treatment sludge is rarely landfilled and is mostly diverted to a beneficial reuse program for land application. Typically, knots are used to cover exposed waste. Then, an additional compacted cover layer consisting of a mixture of wood fly ash and green liquor dregs is used to cover the knot layer. The final layer is inert, minimizes infiltration, prevents material from being windblown, and is also used as a fire break. While using these alternative covers for over 10 years, no issues with fires or vectors have been noted.

If you have any questions concerning this request, please contact Shawn Williams at (205) 459-1568

Sincerely,

Tommy Blaylock
Vice President, Manufacturing

SOLID WASTE DISPOSAL FACILITY

MSWLF/ILF/CCR UNIT PERMIT APPLICATION PACKAGE

January 16, 2018

MEMORANDUM

TO: Applicants Seeking a Permit for Solid Waste Facilities

FROM: Stephen A. Cobb, Chief
Land Division
Alabama Department of Environmental Management

RE: Processing Solid Waste Permits by ADEM

Any permit issued by ADEM must be in accordance with §22-27-48 and §22-27-48.1 Code of Alabama. This section indicates that ADEM may not consider an application for a new or modified permit unless such application has received approval by the affected unit of local government having an approved plan. ADEM, therefore, will require the following before it can process a new or modified permit application:

1. The local government having jurisdiction must approve the permit application in accordance with §22-27-48 and §22-27-48.1 Code of Alabama.

2. Local governments should follow the procedures outlined in §22-27-48 and §22-27-48.1 Code of Alabama and the siting standards included in the local approved plan in considering approval of a facility.

This procedure applies to applications for new or modified permits. ADEM cannot review an application unless it includes approval from the affected local government. This procedure shall not apply to exempted industrial landfills receiving waste generated on site only by the permittee.

Please contact the Solid Waste Branch of ADEM at (334) 274-4201 if there are any questions.

SAC/sss/abj

SOLID WASTE APPLICATION

PERMIT APPLICATION
SOLID WASTE DISPOSAL FACILITY
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
(Submit in Triplicate)

1. Facility type:
   ____ Municipal Solid Waste Landfill (MSWLF)
   __X__ Industrial Landfill (ILF)
   ____ CCR Landfill (CCRLF)
   ____ CCR Surface Impoundment (CCRSI)
   ____ Other (explain)_____

2. Facility Name Georgia-Pacific Naheola Landfill #1

3. Applicant:

   Name: Georgia-Pacific Naheola LLC

   Address: 7530 Highway 114
   Pennington, AL 36916

   Telephone: (205) 459-1900

   If applicant/permittee is a Corporation, please list officers:

   Thomas Blaylock, V.P. Manufacturing

4. Location: (Include county highway map or USGS map)

   Township 15 North Range 1 East
   Section 31 County Choctaw

5. Land Owner:

   Name: Georgia-Pacific Naheola LLC

   Address: 7530 Highway 114
   Pennington, AL 36916

   Telephone: (205) 459-1900

   (Attach copy of agreement from landowner if applicable.)

6. Contact Person:

Name Shawn Williams

Position or
Affiliation Environmental Engineer

Address: 7530 Alabama 114
Pennington, AL 36916

Telephone: (205) 459-1568

7. Size of Facility: Unknown

Size of Disposal Area(s): 38.55 Acres

8. Identify proposed service area or specific industry that waste will be received from:

Georgia-Pacific Naheola LLC Naheola pulp and paper mill located near Pennington, Alabama

9. Proposed maximum average daily volume to be received at landfill (choose one):

_____ Tons/Day 3,000 Cubic Yards/Day

10. List all waste streams to be accepted at the facility (i.e., household solid waste, wood boiler ash, tires, trees, limbs, stumps, etc.):

Non-hazardous industrial wastes such as wood waste (bark, woodchips, waste wood), recausticizing waste (lime mud, slaker grits, green liquor dregs, powder lime), pulp mill waste (knots, pulp), general trash, construction debris (concrete, lumber, metal), boiler ash, wastewater treatment sludge and special waste approve by the Department

Signature (Responsible official of permit applicant): Tommy Blaylock Title: VP MANUFACTURING

TOMMY BLAYLOCK DATE: 04-09-2024

(please print or type name)

ADDITIONAL REQUIRED INFORMATION

Applicants seeking to obtain a permit to construct and/or continue to operate a municipal solid waste (MSW) landfill, industrial landfill, coal combustion residuals (CCR) landfill, or CCR surface impoundment are required to submit additional information as part of the Solid Waste Disposal Facility Permit Application. These additional information requirements vary depending on the facility type.

For new and existing landfill units, refer to ADEM Admin Code 335-13-5-.02 for a list of additional information to be submitted in the permit application. Some requirements apply only to MSW landfills and CCR landfills, while other requirements apply to industrial landfills. You need only to address the requirements that pertain to your type landfill. For new and existing CCR surface impoundments, refer to ADEM Admin Code 335-13-15-.09 for additional information to be submitted in the permit application.

Each rule that is applicable to your type landfill or surface impoundment must be addressed in detail in the operational narrative and/or engineering drawings before the review process can be completed. All operational narratives, engineering drawings, survey maps and legal descriptions are to be prepared by licensed engineers or surveyors registered in the State of Alabama and with their stamp or seal on each drawing/map and cover of the narrative.

Act No. 89-824 Section 9(a) states "The department may not consider an application for a new or modified permit for a facility unless such application has received approval by the affected unit of local government having an approved plan." This document must be received by the Department prior to processing the application.

The referenced rules are covered in greater detail in ADEM's Administrative Code, Division 13. Clarification can be obtained by reviewing the regulations. Copies of the ADEM Administrative Code, Division 13 regulations, can be obtained for a fee by contacting ADEM's Permits and Services Division. If the Department can answer any questions, please contact the Solid Waste Branch at (334) 274-4201.

DATA TO BE SUBMITTED ON ALL LANDFILLS REQUIRING A GEOLOGICAL EVALUATION

The following items must be submitted along with the permit application. This data is necessary for ADEM to determine if the proposed landfill site is suitable from a geological standpoint.

a. Conduct a water well survey to a minimum of 1 mile from the perimeter of the proposed landfill or expansion.

   1. Locate water wells on a USGS 7.5 minute topographic map.

   2. Provide corresponding names and addresses of well owners.

   3. Determine the depth of the well and the static water level. Specify whether these data were determined by measurement or interview.

b. Conduct borings and/or pit excavations to establish site geology and hydrology at least to the mean annual water table or bedrock.

   1. Locate soil borings or excavation pits on a USGS 7.5 minute topographic map.

   2. Provide a log of excavation which includes the following:

      Foot by foot soil classification by the Unified Soil Classification System (USCS).

      Elevation at which groundwater or bedrock was observed.

      Elevation of groundwater after 24 hours.

c. Sample soil material from test borings or pit excavations for the following tests:

   1. Proctor density 90%-95% for liner material, 85%-90% for cover material.

   2. Permeability in cm/sec at the item (1) densities.

d. Construct the following maps:

   1. Potentiometric map using general elevations established after 24 hours.

   2. Regional map to a minimum of 1 mile from the perimeter indicating geology, structural features such as faults, etc.

   3. Cross sections using borings and/or excavation pits of site.

e. Any additional information deemed necessary to properly evaluate the site.

synTerra

Science & Engineering Consultants
148 River St., Suite 220, Greenville, SC 29601 | 864.421.9999

TECHNICAL MEMORANDUM

Date: June 29, 2020 File: 366.09.02 (t)

To: Alabama Department of Environmental Management
Land Division, Solid Waste Section

Cc: Shawn Williams, Georgia-Pacific Consumer Operations LLC

From: Nathan W. Scarbrough, PE

Subject: Alternate Daily Cover Demonstration

Georgia-Pacific Consumer Operations LLC operates industrial landfill Permit Number 12-02 at its Naheola Mill near Pennington, Alabama. Putrescible waste is not disposed of in the landfill and mill process residuals are used as alternate daily cover (ADC) at the site. Five materials derived from wood and the properties that make them suitable for ADC are described in this memorandum. Previously, pulp mill byproducts slaker grit and green liquor dregs were used for ADC. These materials are now diverted to beneficial uses.

The five materials currently used for ADC are produced from the following production areas at the mill:

- Woodyard: bark, slivers of wood called "strings", and wood chips
- Pulp mill: knots segregated from the wood (cellulose) fiber
- Wastewater treatment: cellulose fiber ("fiber sludge") lost to the mill sewer

These materials are described in the following sections.

WOOD PROCESSING RESIDUALS

Bark is removed from logs delivered to the mill in debarking drums. The majority of the bark is used to fuel a biomass boiler to generate steam. A small residual stream is generated from spillage and soil contamination in storage piles. Bark in the landfill is the same as bark used for landscaping mulch. It is a soil-like material suitable for ADC.

"Strings" are slivers of wood that are typically less than 18 inches long can be generated in the debarking or chipping process. Strings are not amenable to chipping and are rejected by chip sizing screens. Strings not burned in the biomass boiler are removed to the landfill. Strings are typically used to cover waste in areas used as roads.

Logs are chipped into wood chips and screened to the proper size for pulping in the digesters. Chips lost from the process in a number of ways can become contaminated with soil and disposed of in the landfill. Like bark, wood chips become soil-like compost when used as ADC.

PULPING RESIDUAL

Wood chips contain knots that do not yield cellulose fiber suitable for papermaking. Knots are removed from pulp after cooking in the digester, drained, and disposed of in the landfill. Knots make excellent ADC because of the abundance of the material that degrades to a consistency similar to compost due to impregnation with pulping liquor.

WASTEWATER TREATMENT RESIDUAL

Cellulose fiber not captured in the papermaking process is lost to the mill sewer, settled in clarifiers, and dewatered with mechanical presses. The resulting fiber sludge is a soil-like material that can be successfully used as final cover as well as ADC.

ATTACHMENTS: ADEM WASTE PROFILES

Alabama Department of Environmental Management
Solid Waste Profile Sheet
Form 300

General Information

Profile Type (check one): ☐ New Certification ☒ Recertification ☐ Modification to Active Profile

Generator Name: Georgia-Pacific Consumer Operations LLC

Generator Physical Address: 7530 Highway 114

Generator County: Choctaw EPA ID: ALD039136231

Generator Mailing Address: 7530 Highway 114

Generator Contact: Shawn Williams Title: Environmental Engineer

Phone: (205) 459-1568 Email: shawn.williams2@gapac.com

Submitted by (if different from above):

Company Name: _____ Contact: _____

Mailing Address: _____

Phone: _____ Email: _____

Waste Information

Process Generating Waste: Operation of effluent treatment primary clarifiers

Waste Name: Waste water treatment primary sludge

If this waste is subject to Corrective Action regulations 40 CFR Part 280 (UST) provide the following information:

UST Facility ID # _____ UST Incident # _____

Source of Petroleum Contamination (Gas, Diesel, Used Oil, Hydraulic Oil, etc.): _____

Does the waste contain any of the following: ☐ PCBs ☐ Cyanides ☐ Sulfides ☐ Asbestos

Concentration: _____ Units: ☐ mg/L ☐ mg/Kg ☐ PPM ☐ PPB

Waste Type: ☐ Remediation ☒ Process ☐ CERCLA Cleanup ☐ Other

Waste Volume: 1,000 Units: cubic yards Frequency: ☒ Annual ☐ Quarterly ☐ Monthly

Waste Properties

Physical State: ☒ Solid ☐ Liquid ☐ Bladeable Sludge ☐ Solid/Liquid Combination ☐ Other

% Free Liquids 0 pH (if liquid) N/A Flash Point (if liquid) N/A

Will liquids be solidified prior to disposal (see instructions)? ☐ YES ☐ NO

Waste Disposition

Is this Foundry Waste handled in accordance to ADEM Code 335-13-4-.26(3)? ☐ YES ☑ NO

Is this Wood Ash handled in accordance to ADEM Code 335-13-4-.26(6)? ☐ YES ☑ NO

Landfill Name #1: Georgia-Pacific Consumer Operations LLC Permit #: 12-02

Landfill Name #2: _____ Permit #: _____

Landfill Name #3: _____ Permit #: _____

Landfill Name #4: _____ Permit #: _____

Current Profile No. (if applicable) _____

Alabama Department of Environmental Management
Solid Waste Profile Sheet
Form 300
Continuation Form

Process Generating Waste continued:

Other:

Certification

I certify under penalty of law that this waste material does not contain regulated medical waste, regulated PCB waste, or hazardous waste which is not conditionally exempt from Division 14 Regulations. I further certify that, at the point of disposal, this waste material will not contain any free liquids. This document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated 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.

Ronnie D. Hall
Name (type or print)

Ronnie D Hall
Signature

VP, Naheola Operations
Title

9/20/2019
Date

Alabama Department of Environmental Management
Solid Waste Profile Sheet
Form 300

General Information

Profile Type (check one): ☐ New Certification ☒ Recertification ☐ Modification to Active Profile

Generator Name: Georgia-Pacific Consumer Operations LLC

Generator Physical Address: 7530 Highway 114

Generator County: Choctaw EPA ID: ALD039135231

Generator Mailing Address: 7530 Highway 114

Generator Contact: Shawn Williams Title: Environmental Engineer

Phone: (205) 459-1568 Email: shawn.williams2@gapac.com

Submitted by (if different from above):

Company Name: _____ Contact: _____

Mailing Address: _____

Phone: _____ Email: _____

Waste Information

Process Generating Waste: Pulp manufacturing - de-knotter and screen rejects from the hardwood and softwood operations

Waste Name: Wood knots

If this waste is subject to Corrective Action regulations 40 CFR Part 280 (UST) provide the following information:

UST Facility ID # _____ UST Incident # _____

Source of Petroleum Contamination (Gas, Diesel, Used Oil, Hydraulic Oil, etc.): _____

Does the waste contain any of the following: ☐ PCBs ☐ Cyanides ☐ Sulfides ☐ Asbestos

Concentration: _____ Units: ☐ mg/L ☐ mg/Kg ☐ PPM ☐ PPB

Waste Type: ☐ Remediation ☒ Process ☐ CERCLA Cleanup ☐ Other

Waste Volume: 20,000 Units: cubic yards Frequency: ☒ Annual ☐ Quarterly ☐ Monthly

Waste Properties

Physical State: ☒ Solid ☐ Liquid ☐ Bladeable Sludge ☐ Solid/Liquid Combination ☐ Other

% Free Liquids 0 pH (if liquid) N/A Flash Point (if liquid) N/A

Will liquids be solidified prior to disposal (see instructions)? ☐ YES ☐ NO

Waste Disposition

Is this Foundry Waste handled in accordance to ADEM Code 335-13-4-.26(3)? ☐ YES ☑ NO

Is this Wood Ash handled in accordance to ADEM Code 335-13-4-.26(6)? ☐ YES ☑ NO

Landfill Name #1: Georgia-Pacific Consumer Operations LLC Permit #: 12-02

Landfill Name #2: _____ Permit #: _____

Landfill Name #3: _____ Permit #: _____

Landfill Name #4: _____ Permit #: _____

Current Profile No. (if applicable) _____

Alabama Department of Environmental Management
Solid Waste Profile Sheet
Form 300
Continuation Form

Process Generating Waste continued:

Other:

Certification

I certify under penalty of law that this waste material does not contain regulated medical waste, regulated PCB waste, or hazardous waste which is not conditionally exempt from Division 14 Regulations. I further certify that, at the point of disposal, this waste material will not contain any free liquids. This document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated 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.

Ronnie D. Hall
Name (type or print)

Ronnie D. Hall
Signature

VP, Naheola Operations
Title

9/20/2019
Date

Alabama Department of Environmental Management
Solid Waste Profile Sheet
Form 300

General Information

Profile Type (check one): ☐ New Certification ☒ Recertification ☐ Modification to Active Profile

Generator Name: Georgia-Pacific Consumer Operations LLC

Generator Physical Address: 7530 Highway 114

Generator County: Choctaw EPA ID: ALD039135231

Generator Mailing Address: 7530 Highway 114

Generator Contact: Shawn Williams Title: Environmental Engineer

Phone: (205) 459-1568 Email: shawn.williams2@gapac.com

Submitted by (if different from above):

Company Name: _____ Contact: _____

Mailing Address: _____

Phone: _____ Email: _____

Waste Information

Process Generating Waste: Gneral clean-up of mill areas where, wood, bark, chips and sawdust are produced and handled

Waste Name: Wood waste

If this waste is subject to Corrective Action regulations 40 CFR Part 280 (UST) provide the following information:

UST Facility ID # _____ UST Incident # _____

Source of Petroleum Contamination (Gas, Diesel, Used Oil, Hydraulic Oil, etc.): _____

Does the waste contain any of the following: ☐ PCBs ☐ Cyanides ☐ Sulfides ☐ Asbestos

Concentration: _____ Units: ☐ mg/L ☐ mg/Kg ☐ PPM ☐ PPB

Waste Type: ☐ Remediation ☒ Process ☐ CERCLA Cleanup ☐ Other

Waste Volume: 5,000 Units: cubic yards Frequency: ☒ Annual ☐ Quarterly ☐ Monthly

Waste Properties

Physical State: ☒ Solid ☐ Liquid ☐ Bladeable Sludge ☐ Solid/Liquid Combination ☐ Other

% Free Liquids _____ pH (if liquid) _____ Flash Point (if liquid) _____

Will liquids be solidified prior to disposal (see instructions)? ☐ YES ☐ NO

Waste Disposition

Is this Foundry Waste handled in accordance to ADEM Code 335-13-4-.26(3)? ☐ YES ☒ NO

Is this Wood Ash handled in accordance to ADEM Code 335-13-4-.26(6)? ☒ YES ☐ NO

Landfill Name #1: Georgia-Pacific Consumer Operations LLC Permit #: 12-02

Landfill Name #2: _____ Permit #: _____

Landfill Name #3: _____ Permit #: _____

Landfill Name #4: _____ Permit #: _____

Current Profile No. (if applicable) _____

Alabama Department of Environmental Management
Solid Waste Profile Sheet
Form 300
Continuation Form

Process Generating Waste continued:

Other:

Certification

I certify under penalty of law that this waste material does not contain regulated medical waste, regulated PCB waste, or hazardous waste which is not conditionally exempt from Division 14 Regulations. I further certify that, at the point of disposal, this waste material will not contain any free liquids. This document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated 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.

Ronnie D. Hall
Name (type or print)

Ronnie D. Hall
Signature

VP, Naheola Operations
Title

9/20/2019
Date

LaBella
Powered by partnership.

June 6, 2024

Alabama Department of Environmental Management
Post Office Box 301463
Montgomery, Alabama 36130-1463

Attention: Mr. Blake Holden
Solid Waste Branch

RE: Monitoring Well Installation Plan – W-24 – Revised
Georgia-Pacific Naheola Landfill #1
7530 Highway 114
Pennington, Choctaw County, Alabama
Permit No.: 12-02
LaBella Project No.: 2241222.00

Dear Mr. Blake Holden:

On behalf of Georgia-Pacific Naheola LLC (GP), LaBella Associates, D.P.C. (LaBella) is submitting this Work Plan for the installation of one groundwater monitoring well at the GP Naheola Landfill #1 (Permit No.: 12-02). The monitoring well (to be designated as W-24) will be installed in the vicinity of W-23 at the approximate location shown in Figure 1. This well is being installed in close proximity to W-23 in order to determine if W-23 has been compromised and to verify the metal concentrations in historical groundwater samples collected from this area.

MONITORING WELL INSTALLATION

The new groundwater monitoring well (W-24) will be installed at the approximate location shown in Figure 1, attached. Based on prior experience and understanding of Site conditions, LaBella is anticipating that the boring for the new monitoring well will be advanced using hollow-stem augers to a maximum depth of approximately 20 ft-bgs. Split spoon samples will be collected at five-foot intervals for the purpose of logging subsurface materials. The drilling and installation of the new well will be supervised by a geoscientist experienced with groundwater investigations and monitoring well installation.

Once the boring is terminated, the monitoring well will be installed as a Type II monitoring well and constructed using a 10-foot section of 2-inch Schedule 40 PVC, 0.010-slotted screen and 2-inch PVC riser casing to ground surface. A sand filter pack will be installed to a minimum of one foot above the well screen. A minimum of two feet of bentonite will be placed above the sand pack as a seal and the remainder of the annulus will be filled with a neat cement mixture to ground surface. The monitoring well will then be completed with a stand-up protective aluminum cover with a locking cap.

The monitoring well will be installed and constructed following the guidelines outlined in the most recent edition of EPA Region IV's *Environmental Investigations Standard Operating Procedures and Quality Assurance Manual* and the most recent edition of the *Alabama Environmental Investigation and Remediation Guidance (AEIRG)*. Following the completion (after at least 24 hours), the monitoring well will be developed sufficiently to remove sediments accumulated in the well screen and filter pack.

Upon completion, the location and top of casing of the new monitoring well will be surveyed by an Alabama licensed professional land surveyor. The survey will establish a measuring point elevation on the top of casing and will be referenced to mean sea level.

BACKGROUND SAMPLING

In an effort to establish a statistically viable dataset of groundwater quality at the new monitoring well location, background samples will be collected quarterly (for a total of four background measurements). Additional background samples will continue to be collected on a semi-annual basis. Each sample will be placed in laboratory provided containers, labelled, and placed in a cooler on ice to maintain a sample temperature of <6 degrees Celsius. The samples will be shipped under proper chain of custody to a certified laboratory for analysis. In accordance with the Landfill's Solid Waste Permit, the background samples will be analyzed for Appendix I Volatile Organic Compounds (VOCs) in accordance with EPA Method 8260 and Appendix I metals in accordance with EPA Methods 6020 and 7470 (mercury). The background sample dataset will be used to establish water quality within the water-bearing zone intersected at the new well location to support future statistical evaluations of groundwater quality. Once at least four background samples have been collected, a comparison of the historical data from W-23 and the newly installed well W-24 will be conducted using Analysis of Variance (ANOVA) to verify is detected concentrations of metals are comparable between wells.

Monitoring Well Installation Report & Revised GWM Plan

Following completion of the well installation activities, a letter report documenting these activities will be submitted to the Department. A revised *Groundwater Monitoring Plan* will also be completed and will include a figure showing the location of the newly installed monitoring well and a discussion on how statistical analysis will be conducted on the newly installed monitoring well.

MINOR PERMIT MODIFICATION

In addition to the services described above, Georgia Pacific is also submitting a request for a Minor Permit Modification for the addition of the new monitoring well (W-24) to the facility's permit.

LaBella Associates, D.P.C. appreciates your consideration in this matter. If you have any questions concerning this submittal or require any additional information, please contact our office at (205) 985-4874.

Sincerely,
LABELLA ASSOCIATES, D.P.C.

Lori K. Norton

Lori K. Norton, P.G.
Senior Project Geologist

Attachments: Figure 1 – Proposed Monitoring Well Location Map

cc: Shawn Williams, Georgia-Pacific Naheola, LLC

Legend

- Proposed Monitoring Well
- Landfill Monitoring Well

SCALE (FT):
0 150 300
1 inch = 300 feet

TITLE:

Proposed Monitoring Well Location Map

Georgia-Pacific Naheola Landfill #1

Pennington, Alabama

FIGURE NO.	PROJECT NO.
1	2241222.00
DRAWN BY:	DRAWN DATE:
LKN	06-04-2024

LaBella
Powered by partnership.

528 MINERAL TRACE
HOOVER, AL 35244
(205) 985-4874