

**CWA COMPLIANCE EVALUATION SAMPLING INSPECTION REPORT  
U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 5**

**Purpose:**

Compliance Evaluation Sampling Inspection

**Facility:**

Mark Lee Deardorff Farms  
10729 North State Road 19  
Macy, Indiana 46951  
Miami County  
40.92249109623049, -86.02672807213327

**NPDES Permit Number:**

NA

**Date of Inspection:**

03/26/2021 – Facility Walkthrough

04/16/2021 – Operator Interview

**EPA Representatives:**

Benjamin D. Atkinson, Inspector, 312-353-8243, [atkinson.ben@epa.gov](mailto:atkinson.ben@epa.gov)

Valerie Dooling, Environmental Engineer, 312-886-1767, [dooling.valerie@epa.gov](mailto:dooling.valerie@epa.gov)

**State Representatives:**

Chris Lowell, CFO Inspector, 317-650-3191, [CLOWELL@idem.IN.gov](mailto:CLOWELL@idem.IN.gov)

**Facility Representatives:**

Mark L Deardorff, Owner, 765-863-7707, [mark@deardorffarms.net](mailto:mark@deardorffarms.net)

**Report Prepared by:**

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**Inspector Signature:**

Atkinson, Benjamin  Digitally signed by Atkinson, Benjamin  
Date: 2021.06.08 14:38:24 -05'00'

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**Approver Name and Title:** Ryan J. Bahr, Section 2 Chief

Water Enforcement and Compliance Assurance Branch

**Approver Signature and Date:**

RYAN BAHR  Digitally signed by RYAN BAHR  
Date: 2021.06.08 14:50:25 -05'00'

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## **1. BACKGROUND**

The purpose of this report is to describe, evaluate and document compliance with the Clean Water Act (CWA) of the “Mark Lee Deardorff Farms” Macy, Indiana facility (the Facility) on March 26, 2021 and April 16, 2021. This inspection was performed pursuant to Section 308(a) of the Federal Water Pollution Control Act, as amended.

The Facility is a medium dairy Animal Feeding Operation (AFO). It is defined as a medium facility due to its confining or stabling more than 200 but less than 700 mature dairy cows. Specifically, the Facility stables or confines 400 mature dairy cows and 100 calves.

The Facility’s farmstead plan (attachment D) identifies that surface runoff from the north side of the facility flows north toward an unnamed intermittent waterway that flows to the east to the intermittent Wilson Rhodes Ditch. Surface runoff from the eastern portion of the facility flows to the east to the intermittent Wilson Rhodes Ditch or is collected by a surface drain that outlets to the intermittent Wilson Rhodes Ditch. Surface runoff from the southern part of the facility flows to the south toward Flowers Creek. Wilson Rhodes Ditch flows approximately 6.2 Miles to the south where it flows into Flowers Creek. Flowers creek then flows approximately 4.5 Miles southwest and flows into the Eel River. The Eel river then flows approximately 36.56 miles to the Wabash River. The Wabash River is a Traditional Navigable Waters.

The Facility has an Indiana Department of Environmental Management (IDEM) Confined Feeding Operation Approval (attachment D) but does not have a NPDES permit. The Facility received its initial IDEM authorization (attachment D) to construct and operate in 1999. In October 2008 IDEM documented that the Facility had had a silage leachate spill that discharged to the Wilson Rhodes Ditch as a result of un-approved changes to their leachate collection system. Following a series of Agreed Orders, IDEM stated that the Facility had achieved compliance with the Agreed Orders on September 12, 2012.

## **2. SITE INSPECTION**

**Table 1: Site Entry and Opening Conference**

|                                                        |                                                                 |
|--------------------------------------------------------|-----------------------------------------------------------------|
| <b>Arrival Time:</b>                                   | 7:30 AM CST                                                     |
| <b>Temperature:</b>                                    | 44° F                                                           |
| <b>Precipitation:</b>                                  | .93 inches in the previous 24 hours stopping around 5:00 AM EST |
| <b>Presented credentials?</b>                          | Yes                                                             |
| <b>Credentials presented to whom and at what time?</b> | Credentials were presented to Mark Deardorff (the Operator).    |



|                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    |
|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>Was an opening conference held? With whom?</b>                                                                            | <p>Due to the COVID-19 pandemic, the inspection took place in several parts. Initial contact was made by phone the week prior to the inspection. During those calls, COVID -19 precautions were discussed, the basic form of the inspection was explained, and the date and time were agreed upon. On the day of the site inspection, a brief opening conference was held with the Operator. The opening conference was kept brief to minimize close contact. EPA discussed the follow topics during the conference:</p> <ol style="list-style-type: none"> <li>1. Asked for access to facility</li> <li>2. Stated statutory and regulatory purpose of the inspection</li> <li>3. Areas of the facility to be inspected</li> <li>4. Roles of inspection team</li> <li>5. Agreed to a tele-conference interview in the days following the inspection</li> <li>6. Right to CBI</li> <li>7. Health and safety and PPE</li> <li>8. Informed Operator of equipment to be used.</li> <li>9. Post inspection timeframes</li> </ol> |    |
| <b>If photographs or documents were taken, does the facility consider any to be Confidential Business Information (CBI)?</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | No |
| <b>EPA vehicle parked in approved location?</b>                                                                              | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |
| <b>Location where EPA vehicle was parked?</b>                                                                                | Adjacent to the shop building on the northwest side of the Facility.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |    |
| <b>Disposable boots worn?</b>                                                                                                | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |
| <b>Other bio-security measures taken (state vet contacted, etc.):</b>                                                        | EPA vehicle washed after inspection, no other animal facilities visited in previous 48 hours, state vet contacted to ensure no reports of communicable diseases.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |    |

**2.1 Records Review (The following Records Review tables reflect information provided before the walk-through of the facility, unless otherwise noted.)**

**Table 2: Documents**

|                                                 |
|-------------------------------------------------|
| <b>Checklist(s) Used</b>                        |
| R5 CAFO Inspection Checklist                    |
| Federal CAFO Nutrient Management Plan Checklist |

**Table 3: Facility Description**

| Type of Animal | Number of Animals | Capacity | Type of Confinement |
|----------------|-------------------|----------|---------------------|
| mature         | 400               | 600      |                     |
| Calves         | 100               | 100      |                     |
|                |                   |          |                     |

|                                                                                                                                                                              |                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>Minimum Number of Animals in previous 5 years:</b>                                                                                                                        | 500                                                                                                                                  |
| <b>Maximum Number of Animals in previous 5 years:</b>                                                                                                                        | 500                                                                                                                                  |
| <b>Number of Animals that are stabled/confined and/or fed/maintained for 45 days or more in previous 12 months:</b>                                                          | 500                                                                                                                                  |
| <b>Amount of Liquid Manure Generated per year:</b>                                                                                                                           | 8-10 million gallons                                                                                                                 |
| <b>Amount of Solid Manure Generated per year:</b>                                                                                                                            | 3000 tons                                                                                                                            |
| <b>Does the facility have an NPDES Permit?</b>                                                                                                                               | No                                                                                                                                   |
| <b>SIC or NAICS code:</b>                                                                                                                                                    | 0241                                                                                                                                 |
| <b>Do animals have direct access to WOUS?</b>                                                                                                                                | No                                                                                                                                   |
| <b>Are crops, vegetation, forage growth, or post harvest residues sustained in the normal growing season over any portion of the lot or facility where animals are kept?</b> | No                                                                                                                                   |
| <b>What is the area (acres) of the production area?</b>                                                                                                                      | 40                                                                                                                                   |
| <b>What is the area (acres) of the pasture?</b>                                                                                                                              | 18 acres listed as pasture                                                                                                           |
| <b>How many employees (not counting family members)?</b>                                                                                                                     | 8                                                                                                                                    |
| <b>Other facilities under common ownership (name and address):</b>                                                                                                           | Operator states that there are no other operations that adjoin each other or use a common area or system for the disposal of wastes. |

**Table 4: Livestock Waste Storage**

| <b>Type of Storage</b>                                                                                                     | <b>Storage Capacity</b> | <b>Type of Liner</b> | <b>Depth Markers Present</b>                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------|-------------------------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Solid Manure                                                                                                               | 450,000 Cubic Feet      | Concrete             | NA                                                                                                                                          |
| Liquid                                                                                                                     | 1.656 Million Gallons   | Earthen              | No                                                                                                                                          |
| Liquid                                                                                                                     | 2.52 Million Gallons    | Earthen              | No                                                                                                                                          |
| Liquid                                                                                                                     | 2.85 Million Gallons    | Earthen              | No                                                                                                                                          |
| Liquid                                                                                                                     | 2.386 Million Gallons   | Earthen              | Yes                                                                                                                                         |
| <b>Records at site of storage structure design?</b>                                                                        |                         |                      | Yes                                                                                                                                         |
| <b>Is manure stored for the short term? If yes, describe where it is stored, how it is drained and where it drains to.</b> |                         |                      | Solid manure is temporary stored on a concrete pad located west of waste storage structure 1. No headland stacking is used by the facility. |
| <b>Are records kept of the level of manure in the storage structures?</b>                                                  |                         |                      | Yes                                                                                                                                         |
| <b>When was the last time a storage structure was emptied, either partially or completely?</b>                             |                         |                      | Fall 2000                                                                                                                                   |

|                                                                                                                                                                                         |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Do the facility personnel inspect and keep records of all diversion devices?</b>                                                                                                     | Yes |
| <b>Do the facility personnel inspect and keep records of all impoundments?</b>                                                                                                          | Yes |
| <b>Do the facility personnel inspect and keep records of all the water lines?</b>                                                                                                       | Yes |
| <b>Do the facility personnel perform routine visual inspections and keep records of the production area?</b>                                                                            | Yes |
| <b>Does the waste storage system have a managed outfall or discharge point?<br/>If yes, provide a description of the outfall and a description of the area receiving the discharge.</b> | No  |
| <b>Has the facility had any documented discharges of livestock waste to surface water in the past year?</b>                                                                             | No  |
| <b>Are there safety devices installed around any manure storage ponds? (Barriers at the end of manure push off platforms, fences around pond, signage.)</b>                             | No  |

**Table 5: Livestock Waste Management**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <b>Describe the way manure is collected and disposed of at the facility:</b>                                                                                                                                                                                                                                                                                                                                                                                              |                    |
| The dairy cow barn is flushed using recycled water from the waste storage structures. The flushed manure then goes through solids separation. Solids are stored in waste storage structure 1 and the liquids flow into waste storage structures 2-5 sequentially. Dry pack pens are scraped as needed and manure is either placed on the temporary storage pad or waste storage structure 1. Runoff from the temporary storage pad flows to the waste storage structures. |                    |
| <b>Describe the way used bedding is collected and disposed of at the facility:</b>                                                                                                                                                                                                                                                                                                                                                                                        |                    |
| Dairy cow bedding is comprised of recycled manure which is added as needed and collected through the flushing process. Calf hutches utilize sawdust and straw as bedding. They are scrapped as needed and either directly land applied or the bedding is placed on solid manure storage pad. Freshening pen uses lime base with straw on top. The pen is scrapped as needed and either directly land applied or the bedding is placed on the solid manure storage pad.    |                    |
| <b>Are mortality records kept?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                        | Yes                |
| <b>Describe the way mortalities are managed at the facility:</b>                                                                                                                                                                                                                                                                                                                                                                                                          |                    |
| Mortalities are picked up as needed by a rendering company.                                                                                                                                                                                                                                                                                                                                                                                                               |                    |
| <b>What type of method is used to provide drinking water for the animals?</b>                                                                                                                                                                                                                                                                                                                                                                                             | Tanks with floats. |
| <b>Describe the way spilled drinking water is collected and disposed of at the facility:</b>                                                                                                                                                                                                                                                                                                                                                                              |                    |

|                                                                                                                                                                                                                                                                                                                                                                                                                                         |   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| Spilled drinking water is collected with manure.                                                                                                                                                                                                                                                                                                                                                                                        |   |
| <b>Describe the way mist cooling water is collected and disposed of at the facility:</b>                                                                                                                                                                                                                                                                                                                                                |   |
| The facility does not utilize mist cooling.                                                                                                                                                                                                                                                                                                                                                                                             |   |
| <b>Describe how chemicals are stored and how used or spilled chemicals are collected and disposed of at the facility:</b>                                                                                                                                                                                                                                                                                                               |   |
| Chemicals are stored in a utility room in the milking parlor. Drains in the milking parlor go to the waste storage structures with manure.                                                                                                                                                                                                                                                                                              |   |
| <b>Describe the way water that has been used to wash/flush barns is collected and disposed of at the facility:</b>                                                                                                                                                                                                                                                                                                                      |   |
| All wash/flush water is collected with manure.                                                                                                                                                                                                                                                                                                                                                                                          |   |
| <b>Describe where water comes from that is used to clean and/or flush. (Wells, city, etc.)</b>                                                                                                                                                                                                                                                                                                                                          |   |
| Well water is used for milk parlor cleaning and recycled water from the waste storage structures is used for barn flushing.                                                                                                                                                                                                                                                                                                             |   |
| <b>Describe the way feed is contained and how runoff from feed is collected and disposed of at the facility:</b>                                                                                                                                                                                                                                                                                                                        |   |
| Silage is stored in mounds on the silage pad. Runoff and leachate from the silage and silage pad flows to one of two runoff collection points. The collection points allow low flow leachate and runoff to be directed to waste storage structure 2. High flow runoff and leachate overwhelm the low flow collection and is allowed to flow to a vegetated flow path which flows to a surface drain and later into Wilson Rhodes Ditch. |   |
| <b>If a dairy, describe how process wastewater from the plate cooler water is collected and disposed of at the facility:</b>                                                                                                                                                                                                                                                                                                            |   |
| Plate cooler water is used to wash the milking parlor floor and any extra is sent to the waste storage structures.                                                                                                                                                                                                                                                                                                                      |   |
| <b>If a dairy, describe how process wastewater from the cleaning of the milking parlor is collected and disposed of at the facility:</b>                                                                                                                                                                                                                                                                                                |   |
| Wastewater from cleaning of the milking parlor is collected with the manure.                                                                                                                                                                                                                                                                                                                                                            |   |
| <b>If a dairy, describe how process wastewater from the cleaning of the milk tanks is disposed of at the facility:</b>                                                                                                                                                                                                                                                                                                                  |   |
| Milk is loaded directly into milk tankers which are washed offsite.                                                                                                                                                                                                                                                                                                                                                                     |   |
| <b>If a dairy, how many times per day are cows milked?</b>                                                                                                                                                                                                                                                                                                                                                                              | 3 |

**Table 6: Land Application and Disposal of Manure and Process Wastewater**

|                                                                                           |                                                                                     |
|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Does the facility perform and keep records of the manure testing?</b>                  | Yes                                                                                 |
| <b>When was the last time a sample was taken of the manure and/or process wastewater?</b> | Annually                                                                            |
| <b>Describe the process to take the manure and/or process wastewater sample.</b>          | Grab sample when pumping.                                                           |
| <b>Number of acres available for land application:</b>                                    | 2500                                                                                |
| <b>Are land application records kept?</b>                                                 | Yes – distribution license                                                          |
| <b>Who applies the manure and process wastewater to the fields?</b>                       | The Facility applies solid manure. A custom hauler is hired to apply liquid manure. |
| <b>Are weather conditions at time of application kept? (24 before – 24 after)</b>         | No                                                                                  |
| <b>Does the facility perform and keep records of the soil testing?</b>                    | Yes                                                                                 |
| <b>Is manure transferred off-site to another party?</b>                                   | Yes                                                                                 |
| <b>Are manure transfer records maintained?</b>                                            | Yes                                                                                 |
| <b>Do facility personnel perform periodic inspection of land application equipment?</b>   | Yes                                                                                 |

**Table 7: Receiving Surface Waters**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Describe the surface flow pathways:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                       |
| The Facility's farmstead plan (attachment D) identifies that surface runoff from the north side of the facility flows north toward an unnamed intermittent waterway that flows to the east to the intermittent Wilson Rhodes Ditch. Surface runoff from the eastern portion of the facility flows to the east to the intermittent Wilson Rhodes Ditch or is collected by a surface drain that outlets to the intermittent Wilson Rhodes Ditch. Surface runoff from the southern part of the facility flows to the south toward Flowers Creek. Wilson Rhodes Ditch flows approximately 6.2 Miles to the south where it flows into Flowers Creek. Flowers creek then flows approximately 4.5 Miles southwest and flows into the Eel River. The Eel river then flows approximately 36.56 miles to the Wabash River. The Wabash River is a Traditional Navigable Waters. |                                                                                                                                                       |
| <b>How many months out of the year is there flow in the nearest surface water pathway:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | The unnamed intermittent tributary only flows when there has been precipitation. The Operator stated that Wilson Rhodes Ditch flows most of the year. |
| <b>Are there any storm water pathways entering the facility?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | No                                                                                                                                                    |
| <b>Are there any clean water ponds on site?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | No                                                                                                                                                    |

|                                                                                                                                             |                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| <b>What is the name of the first waterway that is identified as a Traditional Navigable Water (TNW) for surface flow from the facility?</b> | Wabash River                                           |
| <b>Is the surface water pathway nearest to the facility considered to be ephemeral, intermittent or perennial?</b>                          | Intermittent                                           |
| <b>Has the surface water pathway nearest to the facility been assessed for water quality?</b>                                               | Yes – The Wilson Rhodes Ditch is impaired for E. coli. |

**Table 8: Nutrient Management Plan**

|                     |                                                                                                                                                                                                                         |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NMP on site?</b> | Yes, However EPA did not review the NMP because the facility is an unpermitted medium and is not required to have an NMP. Additionally, the facility uses the Office of Indiana State Chemist to manifest their manure. |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Table 9: Land Application Records (details of the records reviewed)**

|                                  |                                                                                                                  |
|----------------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Land Application Records:</b> | Un-permitted AFOs do not have federal record keeping requirements and no land application records were reviewed. |
|----------------------------------|------------------------------------------------------------------------------------------------------------------|

**Table 10: Facility Records (details of the records reviewed)**

|                          |                                                                                                          |
|--------------------------|----------------------------------------------------------------------------------------------------------|
| <b>Facility Records:</b> | Un-permitted AFOs do not have federal record keeping requirements and no facility records were reviewed. |
|--------------------------|----------------------------------------------------------------------------------------------------------|

**Table 11: NPDES Permit**

|                       |                                             |
|-----------------------|---------------------------------------------|
| <b>Type of permit</b> | The Facility does not have an NPDES permit. |
|-----------------------|---------------------------------------------|

## **2.2 Walkthrough of the Facility**

Due to the COVID-19 pandemic, the inspection took place in several parts. Initial contact with Mark Deardorff (the Operator) was made by phone the week prior to the inspection. During those calls, COVID-19 precautions were discussed, the basic form of the inspection was explained, and the date and time for the site visit were agreed upon. The site visit took place on March 26, 2021 and the interview and information collection occurred on April 16, 2021.

On the day of the site visit, Ben Atkinson and Valerie Dooling (the Inspectors) along with Chris Lowell of the Indiana Department of Natural Resources (IDEM) arrived at the facility, each in separate vehicles, at approximately 7:30 AM CST. The Inspectors

donned their biosecurity boots. A brief opening conference was held with the Operator during which the Inspectors presented their credentials, described the inspection process, notified the Operator of their right to claim information as Confidential Business Information, and had the Operator identify the structures on his facility on an aerial map. The Operator stated that he did not think that there was anything he would want to claim as CBI. The Inspectors also confirmed that their parking location was acceptable.

The walkthrough of the Facility began at 8:29 AM CST. The Inspectors began the walkthrough by walking east from where their vehicles were parked by the shop building. They walked east to the south side of the freshening pen and observed an eroded flow path in outdoor lot 1 to the north. The Inspectors also observed large denuded areas in the outdoor lots (photos 1-3).

The Inspectors then walked to the northwest corner of outdoor lot 1 and observed the culvert under State Highway 19 and the grassed unnamed intermittent tributary of Wilson Rhodes Ditch (unnamed tributary) that is located just north of the northern edge of outdoor lots 1 and 2 (photo 4). The Inspectors walked east along the unnamed tributary and the northern edge of outdoor lots 1 and 2. The Inspectors observed that at the time of the inspection it was not possible to observe continuous flow in the unnamed tributary. There were sections where surface water could be observed and sections where there was no surface flow observed (photo 5). The Inspectors observed denuded ponded areas within outdoor lot 1 (photos 6 and 7). No flow was observed from the ponded areas to the unnamed tributary.

The Inspectors continued east along the northern edge of outdoor lot 1 and observed large denuded areas within outdoor lots 1 and 2. The Inspectors also observed the eroded flow path observed on the south side of outdoor lot 1 continuing northeast across outdoor lot 1 and into outdoor lot 2. The Inspectors observed flow within the eroded channel (photos 8-11).

The Inspectors continued east and observed that the unnamed tributary developed a clearly defined channel and had flowing water in the channel (photo 12). The Inspectors also observed that the eroded flow path from outdoor lot 1 had joined with the eroded flow paths in outdoor lot 2 and the surface runoff from the outdoor lots was flowing through a channel to the unnamed tributary. The inspectors collected a sample of the water that was flowing from outdoor lots 1 and 2 and into the unnamed tributary (photos 14 and 15). This sample is identified as sample S01. The Inspectors collected split samples and provided one set of samples to the Facility.

Prior to the inspection, EPA had identified an area using aerial photography which appeared to convey uncollected silage leachate. Due to time constraints related to transporting E. coli samples to the lab, the Inspectors chose to walk directly to the area identified prior to the inspection. The Inspectors observed a vegetated swale conveying runoff from the silage pad to a surface drain (photo 17 and 18). The Inspectors collected an E. coli sample from the surface water flowing into the drain (sample point S02). At this point in the inspection, Valerie Dooling placed the E. coli samples into a cooler with

ice and transported them to Microbac Laboratory in Merrillville, Indiana. Ben Atkinson (the Inspector) along with Chris Lowell of IDEM and the facility personnel continued the inspection.

After securing the general chemistry samples from S01 in their vehicle and collecting more sampling supplies, the Inspector walked to the southwest corner of waste storage structure 1. The Inspector observed what appeared to be fresh construction and concrete work as well as a pile of concrete debris (photos 19 and 20). The facility personnel stated that their previous solids separator building and the wall upon which it had sat had collapsed.

The Inspector then walked south and observed waste storage structures 2 and 3 (photos 21-23). The Inspector then walked to the northeast and observed waste storage structures 1, 5 and 4 (photos 24-29).

The Inspector then returned to sample point S02 and collected the general chemistry samples (photo 30).

The Inspector then walked to the east toward Wilson Rhodes Ditch and identified a black corrugated pipe protruding from the western bank. The facility personnel stated that they believed that the black corrugated pipe was the outlet of the surface drain. The Inspector collected general chemistry samples from this location, sampling site S03 (photos 31-33).

The Inspector then walked north and observed the confluence of the unnamed tributary with Wilson Rhodes Ditch (photos 35-38). The Inspector walked west along the unnamed tributary back the northeast corner of outdoor lot 2. The Inspector observed that the unnamed tributary appeared to abruptly stop flowing on the surface approximately 50 feet east of outdoor lot 2 and then suddenly reemerge from underground approximately 320 feet west of the confluence with intermittent Wilson Rhodes Ditch (photos 39-44). The facility personnel stated that there may have been a pipe or culvert conveying the unnamed intermittent tributary, but that they were unsure.

The Inspector then walked to the south around the east side of the waste storage structures and observed the grassed swale conveying runoff from the silage pad (photos 45-46). The Inspector observed the two stage runoff and leachate collection system. The facility personnel stated that the system was designed to collect all leachate and runoff in low flow situations but then allow high volume runoff to flow to the grassed swale (photos 47-49). The Inspector then walked around the south end of the silage pad and then north along the west side of the silage pad (photos 50-55).

The Inspector observed the two tanks which receive recycled water from the waste storage structures (photo 56). The facility personnel stated that the tanks fill up and are used to flush the barns.

The Inspector walked west around the dairy cow barn and then around the calf hutch area (photos 57-59). The Operator had stated that he believed that there was a surface drain



on the west side of the dairy cow barn. The Inspector observed the area where the suspected drain was thought to be located, but no drain or flow was observed (photos 60-61).

The Inspector walked north around the milking parlor and then east along the north side of the dairy cow barn and observed the second stormwater surface drain identified by the Operator along the edge of the gravel driveway (photo 63). The Operator stated that he believed the drain had an outlet along the unnamed intermittent tributary.

The Inspector continued walking east and observed the temporary solid manure stacking area and associated runoff collection drain (photos 64-67). The Operator stated that this drain conveyed flow to the waste storage structures.

Following the walkthrough of the Facility, the Inspector returned to their vehicle and preserved the samples. The Inspector provided split samples of the general chemistry samples to the facility.

### **2.3 Closing Conference and Post-Inspection**

**Table 12: Post Walk-Through**

|                                                                                                                       |                                  |
|-----------------------------------------------------------------------------------------------------------------------|----------------------------------|
| <b>Was a closing conference held? With whom?</b>                                                                      |                                  |
| A brief closing conference was held with the Operator.                                                                |                                  |
| <b>Were specific Areas of Concern discussed with facility personnel?</b>                                              | Yes. See Areas of Concern below. |
| <b>Who were the Areas of Concern discussed with?</b>                                                                  | The Operator                     |
| <b>Were any deficiencies or areas of concern addressed or fixed during the inspection? If so, list what was done.</b> | No                               |
| <b>Exit Time:</b>                                                                                                     | 1:00 PM CST                      |
| <b>Disposable Boots Left at Facility?</b>                                                                             | Yes                              |
| <b>Vehicle Washed after leaving facility?</b>                                                                         | Yes                              |

**Table 13: Waterway Documentation**

| <b>List the pathway taken by EPA inspectors to document the waterway at the facility.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>The Inspector observed flow:<br/>In Wilson Rhodes Ditch:</p> <ul style="list-style-type: none"> <li>• Under County Road North 400 East approximatly 600 feet north of the intersection of Coutny Road North 400 East and County Road East 1000 North (photos 68-69).</li> <li>• Then Approximatly 430 feet east of the intersection of Coutny Road North 400 East and County Road East 1000 North (photos 70-71).</li> <li>• Under County Road East 935 North approximatly 1700 feet east of the intersection of County Road North 400 East and County Road East 935 North (photos 72-73).</li> <li>• Under Road 450 East approximatly half a mile northeast of the intersection of Coutny Road North 400 East and County Road 450 East (photo 74-75).</li> <li>• Under County Road East 850 North approximatly 870 feet east of the intersection of County Road 450 East and County Road 850 North (photos 76-77).</li> </ul> <p>In Flowers Creek into which Wilson Rhodes Ditch flows:</p> <ul style="list-style-type: none"> <li>• Under County Road East 800 North approximatly 270 feet east of the intersection of County Road North 350 East and County Road East 800 North (photos 78-79).</li> <li>• Under Warsaw Trail North Road approximatly 0.6 miles north of the intersection of Warsaw Trail North Road and County Road East 700 North (photos 80-81).</li> <li>• Under County Road East 700 North approximatly 825 feet west of the intersection of Warsaw Trail North Road and County Road East 700 North (photos 82-83).</li> <li>• Under County Road East 645 North approximatly 725 feet west of the intersection of State Highway 19 (photos 86-87).</li> </ul> <p>In the Eel River into which Flowers Creek flows under State Highway 19 at the bridge south of Chili, Indiana (photos 84-85).</p> <p>See Waterway Map in Attachment A.</p> |

**Table 14a: Sampling Information**

|                                                 |                                                 |
|-------------------------------------------------|-------------------------------------------------|
| <b>Were samples taken?</b>                      | Yes                                             |
| <b>Were samples split with facility?</b>        | Yes                                             |
| <b>Number of Sample Locations?</b>              | 3                                               |
| <b>Was a trip blank created?</b>                | A blank was created after leaving the facility. |
| <b>Identify which sample is the trip blank.</b> | B01                                             |

|                                                                                                      |                                                        |
|------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| <b>Were field duplicate samples taken (1 duplicate per 20 samples)?</b>                              | No                                                     |
| <b>Were equipment blanks taken (if more than one type of equipment was used to collect samples)?</b> | No                                                     |
| <b>List chain of custody for fecal coliform samples:</b>                                             | Ben Atkinson to Valerie Dooling to Microbac laboratory |
| <b>List chain of custody for nutrient and general chemistry samples:</b>                             | Ben Atkinson to Central Research Laboratory            |
| <b>Location where samples were preserved:</b>                                                        | Facility parking lot adjacent to shop building         |
| <b>Name of people involved with sample preservation:</b>                                             | Ben Atkinson                                           |
| <b>Time of sample preservation:</b>                                                                  | Approximately 12:30 PM EST                             |
| <b>Were samples shipped to a lab?</b>                                                                | No                                                     |
| <b>Did all inspectors involved with the sampling sign the chain of custody?</b>                      | Yes                                                    |
| <b>Weather conditions at the time of sample collection:</b>                                          | Overcast                                               |
| <b>Camera name and type used to photograph sample collection:</b>                                    | Ricoh WG-4 GPS                                         |

**Table 14b: Facility Sample Information**

| Number     | Name               | Location                                  | Date           | Time               | Collector | Color/<br>Smell                       | Photo # | Photo-<br>grapher | Method of<br>Collection | H2SO4<br>Preservative |
|------------|--------------------|-------------------------------------------|----------------|--------------------|-----------|---------------------------------------|---------|-------------------|-------------------------|-----------------------|
| S01        | Pasture<br>Outlet  | Northeast<br>corner of<br>outdoor lot 2   | 03/26/2<br>021 | 10:16<br>AM<br>EST | BA VD     | Brownish<br>color/ no<br>smell noted. | 15      | BA                | Grab                    | 15 drops              |
| S02 E coli | Leachate<br>Inlet  | Surface<br>Drain                          | 03/26/2<br>021 | 10:32<br>AM<br>EST | BA VD     | Brownish<br>color                     | 18      | BA                | Grab                    | none                  |
| S02        | Leachate<br>Inlet  | Surface<br>Drain                          | 03/26/2<br>021 | 11:24<br>AM<br>EST | BA        | Brownish<br>color                     | 30      | BA                | Grab                    | 20 drops              |
| S03        | Leachate<br>Outlet | West bank of<br>Wilson<br>Rhodes<br>Ditch | 03/26/2<br>021 | 11:47A<br>M EST    | BA        | Clear                                 | 31-33   | BA                | Grab                    | 10 drops              |
| B01        | Blank              | Gas Station<br>post<br>inspection         | 03/26/2<br>021 | 4:10<br>PM<br>EST  | BA        | Clear                                 | None    | NA                | Grab                    | 5 drops               |
|            |                    |                                           |                |                    |           |                                       |         |                   |                         |                       |
|            |                    |                                           |                |                    |           |                                       |         |                   |                         |                       |
|            |                    |                                           |                |                    |           |                                       |         |                   |                         |                       |
|            |                    |                                           |                |                    |           |                                       |         |                   |                         |                       |
|            |                    |                                           |                |                    |           |                                       |         |                   |                         |                       |

Name of Laboratory where fecal coliform/E.coli samples were taken: Microbac Laboratory

Name of Laboratory where nutrients and general chemistry samples were taken: CRL

Additional laboratory and sampling notes: Sampling results are included in attachment C.

### **3. AREAS OF CONCERN**

EPA observed these areas of concern whereby pollutants have the potential to reach waters of the United States:

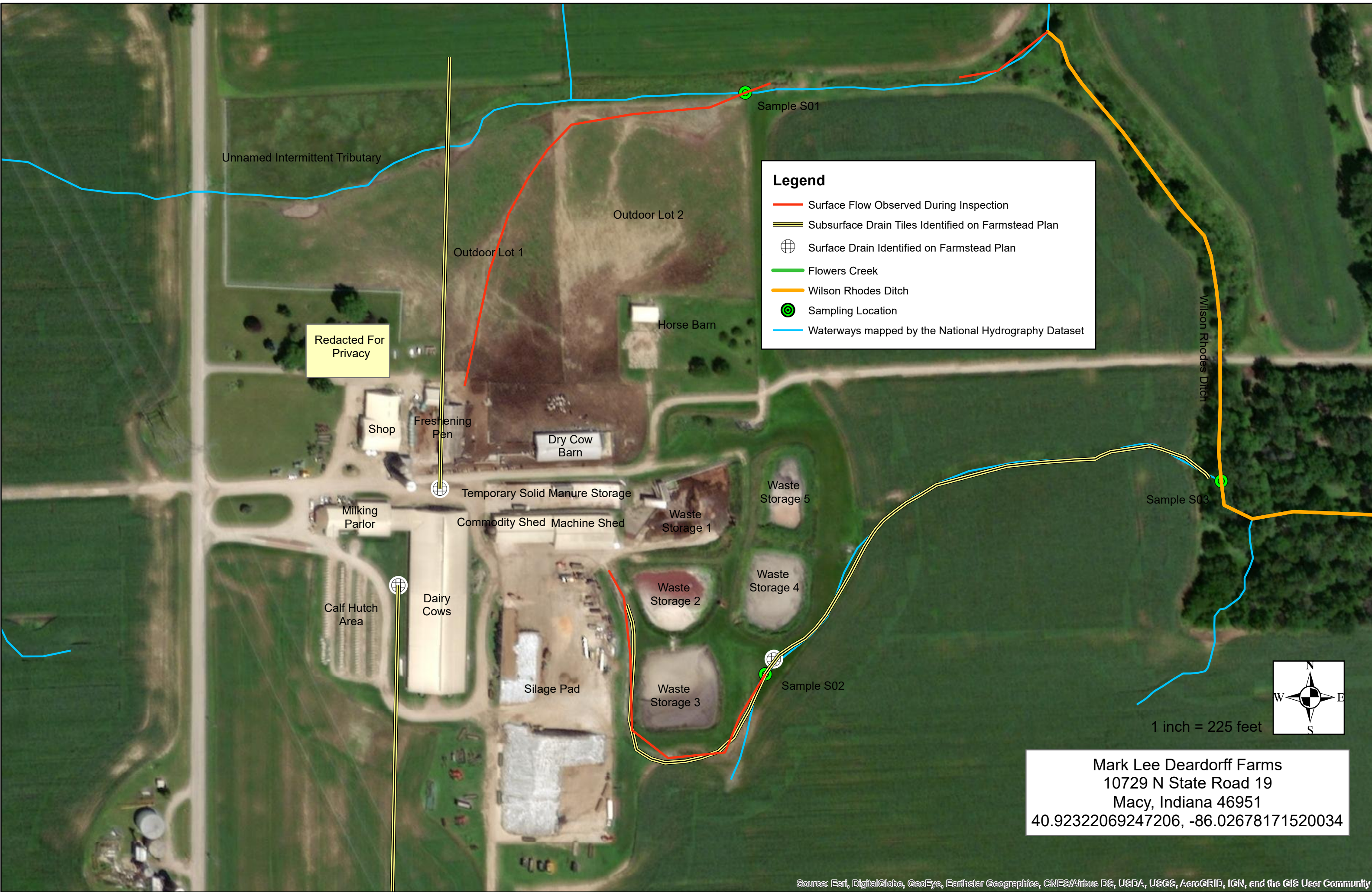
1. The channelized flow through outdoor lot 1 and outdoor lot 2 to the unnamed intermittent tributary.
2. The denuded nature of outdoor lot 1 and outdoor lot 2 and the runoff from the outdoor lots to the unnamed intermittent tributary.
3. The silage runoff conveyed by the vegetated swale to the surface drain and ultimately to Wilson Rhodes Ditch.
4. Care should be taken to ensure that no process wastewater or contaminated stormwater flows to the stormwater drains.

### **4. ATTACHMENTS**

- A. AERIAL AND WATERWAY MAPS**
- B. PHOTOLOG**
- C. SAMPLING RESULTS**
- D. DOCUMENTS FROM THE INDIANA VIRTUAL FILE CABINET**

## **ATTACHMENT A**





**Legend**

- Surface Flow Observed During Inspection
- Subsurface Drain Tiles Identified on Farmstead Plan
- Surface Drain Identified on Farmstead Plan
- Flowers Creek
- Wilson Rhodes Ditch
- Sampling Location
- Waterways mapped by the National Hydrography Dataset



1 inch = 225 feet

Mark Lee Deardorff Farms  
10729 N State Road 19  
Macy, Indiana 46951  
40.92322069247206, -86.02678171520034

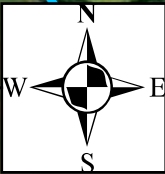


Facility

Legend

Name

- Flowers Creek
- Wilson Rhodes Ditch
- Eel\_River
- Flow Confirmed at Road Crossing



1 inch = 2,500 feet

Waterways  
Mark Lee Deardorff Farms  
10729 N State Road 19  
Macy, Indiana 46951  
40.92322069247206, -86.02678171520034

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



## **ATTACHMENT B**

**Deardorff Farms**  
**EPA Photos from day 03/26/2021 of Inspection**  
**All photos taken by Ben Atkinson, Enforcement Officer, U.S. EPA**  
**Camera: Ricoh WG-4 GPS**  
**Note: Time stamps are in Central Time, but local time was Eastern.**



1: USER0566

Description: Looking southeast at gravel drive toward the abandoned barn (near) and the dry cow barn (distant).

Location: Northwest of the abandoned barn.

Camera Direction: Southeast

Date/Time: 03/26/2021

8:35 AM CST



2: USER0567

Description: The freshening pen is to the right, the dry cow barn is to the left, and the commodity shed is in the center in the distance.

Location: North of the freshening pen.

Camera Direction: Northeast

Date/Time: 03/26/2021

8:37 AM CST



3: USER0568

Description: Looking northeast across outdoor lot 1 and outdoor lot 2. Note manure solids on concrete (blue arrow) and eroded pathway (red arrow).

Location: North of the freshening pen.

Camera Direction: Northeast

Date/Time: 03/26/2021

8:37 AM CST





4: USER0569

Description: Looking west toward the culvert under State Highway 19 (red arrow) which conveys the unnamed intermittent tributary of the Wilson Rhodes Ditch (blue arrow indicates direction of flow within the grassed waterway).

Location: North of outdoor lot 1 on the west side.

Camera Direction: West

Date/Time: 03/26/2021

8:44 AM CST



5: USER0570

Description: Looking east along the grassed water. Outdoor lots 1 and 2 to the right. Note that the surface water flow within the grassed waterway appears to start and stop in the high grass.

Location: North of outdoor lot 1 on the west side.

Camera Direction: East

Date/Time: 03/26/2021

8:45 AM CST





6: USER0571

Description: Looking west along the north edge of outdoor lot 1 with grassed waterway to the right. Note the denuded depressional area full of water was not observed contributing flow to the grassed waterway at the time of the inspection.

Location: North of outdoor lot 1.

Camera Direction: West      Date/Time: 03/26/2021      8:48 AM CST



7: USER0572

Description: Looking east along the grassed waterway. Outdoor lots 1 and 2 to the right.

Location: North of outdoor lot 1.

Camera Direction: East      Date/Time: 03/26/2021      8:50 AM CST





8: USER0573

Description: Fence between outdoor lot 1 and 2. Note eroded flow path observed in photo 3 flowing northeast from outdoor lot 1 to outdoor lot 2 (red arrow).

Location: North of northeast corner of outdoor lot 1.

Camera Direction: South      Date/Time: 03/26/2021      8:53 AM CST



9: USER0574

Description: Close up of eroded flow path flowing under the fence between outdoor lot 1 and outdoor lot 2 (red arrow indicates direction of flow within flow path).

Location: North end of outdoor lot 1 and outdoor lot 2.

Camera Direction: Southeast      Date/Time: 03/26/2021      8:55 AM CST





10: USER0575

Description: View southwest along eroded flow path.

Location: Fenceline approximately 120 feet south of north end of outdoor lots 1 and 2.

Camera Direction: Southwest

Date/Time: 03/26/2021

8:55 AM CST



11: USER0576

Description: View northeast along eroded flow path.

Location: Fenceline approximately 120 feet south of north end of outdoor lots 1 and 2.

Camera Direction: Northeast

Date/Time: 03/26/2021

8:57 AM CST





12: USER0577

Description: Grassed waterway north of the northeast corner of feedlot 2. Note that the grassed waterway has developed a more defined flowpath in this section (red arrows).

Location: North of the northeast corner of feedlot 2.

Camera Direction: East

Date/Time: 03/26/2021

9:02 AM CST



13: USER0578

Description: Looking west along north edge outdoor lot 2.

Location: North of the northeast corner of feedlot 2.

Camera Direction: West

Date/Time: 03/26/2021

9:03 AM CST





14: USER0579

Description: Flow from the eroded flow path through outdoor lots 1 and 2 (red arrow) reaching the concentrated flow within the grassed waterway (blue arrow).

Location: Northeast corner of outdoor lot 2.

Camera Direction: North

Date/Time: 03/26/2021

9:05 AM CST





15: USER0580

Description: Sample location 1 where the eroded flow path from outdoor lots 1 and 2 flows north to the concentrated flow within the grassed waterway.

Location: Northeast corner of outdoor lot 1.

Camera Direction: Southeast

Date/Time: 03/26/2021

9:19 AM CST



16: USER0581

Description: Looking west at horse barn and associated, well vegetated, outdoor lot.

Location: East of horse barn.

Camera Direction: West

Date/Time: 03/26/2021

9:25 AM CST





17: USER0582

Description: Surface drain receiving flow from grassed waterway conveying flow from silage pad runoff collection system. Note additional orange pipe entering from the south (blue arrow).

Location: South of waste storage structure 4 and east of waste storage structure 3.

Camera Direction: Down

Date/Time: 03/26/2021

9:33 AM CST



18: USER0583

Description: Surface drain receiving flow from grassed swale (red arrow) conveying flow from silage pad runoff collection system. E. coli Sample 2 (blue arrow). Due to time constraints regarding getting samples to the lab, only the E. coli sampled at the time of the photograph. Additional samples were collected later during the walkthrough.

Location: South of waste storage structure 4 and east of waste storage structure 3.

Camera Direction: South

Date/Time: 03/26/2021

9:33 AM CST





19: USER0584

Description: Waste storage structure 1 and new (not yet operational) sand settling lane.

Location: East side of the facility northeast of silage pad.

Camera Direction: Northeast

Date/Time: 03/26/2021

9:59 AM CST



20: USER0585

Description: Waste storage structure 1 and new (not yet operational) sand settling lane. Note the concrete debris from the collapse of the previous sand separation building (red arrow).

Location: East side of the facility northeast of silage pad.

Camera Direction: East

Date/Time: 03/26/2021

9:59 AM CST





21: USER0586

Description: Waste storage structure 2.

Location: Northwest corner of waste storage 2.

Camera Direction: Southeast

Date/Time: 03/26/2021

10:01 AM CST



22: USER0587

Description: Waste storage structure 2.

Location: Northwest corner of waste storage 2.

Camera Direction: Southeast

Date/Time: 03/26/2021

10:02 AM CST





23: USER0588

Description: : Waste storage struture 2 flowing into waste storage structure 3.

Location: West side of waste storage structure 2.

Camera Direction: South      Date/Time: 03/26/2021      10:02 AM CST



24: USER0589

Description: Waste storage structure 5.

Location: Southwest corner of waste storage strucutre 5.

Camera Direction: Northeast      Date/Time: 03/26/2021      10:04 AM CST





25: USER0590

Description: Waste storage structure 4.

Location: West side of waste storage structure 4.

Camera Direction: Southeast

Date/Time: 03/26/2021

10:04 AM CST



26: USER0591

Description: Waste storage structure 4. Note pipe conveying flow from waste storage 3 (red arrow).

Location: West side of waste storage structure 4.

Camera Direction: South

Date/Time: 03/26/2021

10:05 AM CST





27: USER0592

Description: Sand settling lane and waste storage structure 1 as seen from the northeast corner.

Location: Northwest of manure storage structure 5.

Camera Direction: Southwest

Date/Time: 03/26/2021

10:06 AM CST



28: USER0593

Description: Waste storage 4 as seen from the east side.

Location: Northeast of waste storage structure 4.

Camera Direction: Southwest

Date/Time: 03/26/2021

10:09 AM CST





29: USER0594

Description: Waste storage structure 5 as seen from the southeast corner. Note the pipe conveying flow from the sand settling lane (blue arrow).

Location: Southeast corner of manure storage structure 5.

Camera Direction: Northwest

Date/Time: 03/26/2021

10:09 AM CST



30: USER0595

Description: Remaining samples for sample site 2. Surface drain receiving flow from grassed waterway conveying flow from silage pad runoff collection system. Location of E. coli Sample that was taken at 9:32 AM CST.

Camera Direction: Down

Date/Time: 03/26/2021

10:24 AM CST





31: USER0596

Description: Close up of sample S03 at sample location 3, the outlet of the surface drain receiving flow from grassed waterway conveying flow from silage pad runoff collection system.

Location: East of facility on the west bank of Wilson Rhodes Ditch.

Camera Direction: Down Date/Time: 03/26/2021 10:48 AM CST



32: USER0597

Description: Close up of sample S03 at sample location 3, the outlet of the surface drain receiving flow from grassed waterway conveying flow from silage pad runoff collection system.

Location: East of facility on the west bank of the Wilson Rhodes Ditch.

Camera Direction: Down Date/Time: 03/26/2021 10:48 AM CST





33: USER0598

Description: Sample location 3, the outlet of the surface drain receiving flow from grassed waterway conveying flow from silage pad runoff collection system (red arrow). Note that there is also a field tile outlet protruding from the bank of the Wilson Rhodes Ditch (blue arrow) which was not sampled. The field tile appeared to be coming from the northwest.

Location: East of facility on the west bank of the Wilson Rhodes Ditch.

Camera Direction: West      Date/Time: 03/26/2021      10:48 AM CST



34: USER0599

Description: Puddle in muddy access road.

Location: Approximately 1,000 feet east of facility and just west of Wilson Rhodes Ditch.

Camera Direction: South      Date/Time: 03/26/2021      10:57 AM CST





35: USER0600

Description: Confluence of unnamed intermittent tributary (to which the eroded flow path from outdoor lots 1 and 2 flowed) and intermittent Wilson Rhodes Ditch.

Location: Northeast of facility. Approximately 900 feet east of the northeast corner of outdoor lot 2.

Camera Direction: Northeast

Date/Time: 03/26/2021

11:05 AM CST



36: USER0601

Description: Looking upstream along unnamed intermittent tributary north of confluence of unnamed intermittent tributary (to which the erroded flow path from outdoor lots 1 and 2 flowed) and intermittent Wilson Rhodes Ditch.

Location: Northeast of facility. Approximately 900 feet east of the northeast corner of outdoor lot 2.

Camera Direction: North

Date/Time: 03/26/2021

11:05 AM CST





37: USER0602

Description: Looking downstream along unnamed intermittent tributary south of confluence of unnamed intermittent tributary (to which the erroded flow path from outdoor lots 1 and 2 flowed) and intermittent Wilson Rhodes Ditch.

Location: Northeast of facility. Approximately 900 feet east of the northeast corner of outdoor lot 2.

Camera Direction: South

Date/Time: 03/26/2021

11:05 AM CST





38: USER0603

Description: Confluence of unnamed intermittent tributary (to which the eroded flow path from outdoor lots 1 and 2 flowed) and intermittent Wilson Rhodes Ditch.

Location: Northeast of facility. Approximately 900 feet east of the northeast corner of outdoor lot 2.

Camera Direction: Northeast

Date/Time: 03/26/2021

11:06 AM CST



39: USER0604

Description: Apparent re-emergence of the unnamed intermittent tributary.

Location: Approximately 320 feet west of confluence with intermittent Wilson Rhodes Ditch.

Camera Direction: North

Date/Time: 03/26/2021

11:09 AM CST





40: USER0605

Description: Apparent re-emergence of the unnamed intermittent tributary.

Location: Approximately 320 feet west of the confluence with intermittent Wilson Rhodes Ditch.

Camera Direction: North      Date/Time: 03/26/2021      11:09 AM CST



41: USER0606

Description: The unnamed intermittent tributary flowing northeast to the Wilson Rhodes Ditch.

Location: Approximately 320 feet west of confluence with intermittent Wilson Rhodes Ditch.

Camera Direction: Northeast      Date/Time: 03/26/2021      11:09 AM CST





42: USER0607

Description: Area east of outdoor lot 2 where the unnamed intermittent tributary ceased to flow on the surface.

Location: Approximately 50 feet east of the northeast corner of outdoor lot 2.

Camera Direction: West      Date/Time: 03/26/2021      11:17 AM CST





43: USER0608

Description: Area east of outdoor lot 2 where the unnamed intermittent tributary ceased to flow on the surface.

Location: Approximately 50 feet east of the northeast corner of outdoor lot 2.

Camera Direction: Northeast

Date/Time: 03/26/2021

11:17 AM CST



44: USER0609

Description: Area east of outdoor lot 2 where the unnamed intermittent tributary ceased to flow on the surface.

Location: Approximately 50 feet east of the northeast corner of outdoor lot 2.

Camera Direction: West

Date/Time: 03/26/2021

11:19 AM CST





45: USER0610

Description: Grassed swale conveying flow from silage pad runoff collection system to the surface drain (sample location 2).

Location: South of waste storage structure 3.

Camera Direction: East

Date/Time: 03/26/2021

11:28 AM CST



46: USER0611

Description: Grassed swale conveying flow from silage pad runoff collection system to the surface drain (sample location 2).

Location: South of waste storage structure 3.

Camera Direction: North

Date/Time: 03/26/2021

11:28 AM CST





47: USER0612

Description: Silage pad runoff collection structure. Note that there are two inlets (blue arrows) to accept runoff from the silage pad. The lower screened inlet conveys liquid to waste storage structure 2. The second inlet is set to a higher elevation and conveys liquid to the grassed swale. Location: East side of the silage pad approximately 260 feet north of the southern edge of the silage pad.

Camera Direction: Northeast

Date/Time: 03/26/2021

11:29 AM CST





48: USER0613

Description: Silage pad runoff collection structure. Note that there are two inlets (blue arrows) to accept runoff from the silage pad. The lower screened inlet conveys liquid to waste storage structure 2. The second inlet is set to a higher elevation and conveys liquid to the grassed swale. Location: East side oof the silage pad approximately 260 feet north of the southern edge of the silage pad.

Camera Direction: Northeast

Date/Time: 03/26/2021

11:29 AM CST



49: USER0614

Description: Outlet of the silage pad runoff collection structure (blue arrow) to the grassed swale (red arrow).

Location: : East side oof the silage pad approximately 260 feet north of the southern edge of the silage pad.

Camera Direction: Down

Date/Time: 03/26/2021

11:31 AM CST





50: USER0615

Description: View north along the east side of the silage pad.

Location: East side of the silage pad midway between the north and south edges.

Camera Direction: North      Date/Time: 03/26/2021      11:36 AM CST



51: USER0616

Description: Looking west across the southern edge of the silage pad.

Location: Southeastern corner of the silage pad.

Camera Direction: West      Date/Time: 03/26/2021      11:38 AM CST





52: USER0617

Description: Looking north across the western edge of the silage pad.

Location:Southwestern corner of the silage pad.

Camera Direction: North      Date/Time: 03/26/2021      11:39 AM CST



53: USER0618

Description: Looking east across the southern edge of the silage pad.

Location:Southwestern corner of the silage pad.

Camera Direction: East      Date/Time: 03/26/2021      11:39 AM CST





54: USER0619

Description: Looking north across the western edge of the silage pad.

Location: Midway between the northern edge and southern edge of the silage pad.

Camera Direction: North Date/Time: 03/26/2021 11:41 AM CST



55: USER0620

Description: Looking north. The dairy cow barn is to the left and silage pad is to the right.

Location: Southeast corner of the dairy cow barn.

Camera Direction: North Date/Time: 03/26/2021 11:42 AM CST





56: USER0621

Description: South side of the dairy cow barn. Note the two flush tanks (blue arrows) which are used to recycle process wastewater from the waste storage structures for flushing the barns.

Location: Southeast corner of the dairy cow barn.

Camera Direction: Northwest

Date/Time: 03/26/2021

11:42 AM CST



57: USER0622

Description: Looking north along the west side of the dairy cow barn. Calf hutch area to the left and milking parlor in the distance.

Location: West side of dairy cow barn.

Camera Direction: North

Date/Time: 03/26/2021

11:43 AM





58: USER0623

Description: South side of the calf hutch area.

Location: Southeast of calf hutch area.

Camera Direction: West. Date/Time: 03/26/2021 11:44 AM



59: USER0624

Description: Looking north along the west side of the calf hutch area.

Location: Southwest corner of calf hutch area.

Camera Direction: North Date/Time: 03/26/2021 11:46 AM CST





60: USER0625

Description: Low area with standing water on west side of cow barn. Operator stated that he believed that there was a storm water drain in this area but did not know the location of the outlet. No water was observed flowing at the time of the inspection.

Location: West side of the dairy cow barn.

Camera Direction: South

Date/Time: 03/26/2021

11:49 AM CST



61: USER0626

Description: Low area with standing water on west side of cow barn. Operator stated that he believed that there was a storm water drain in this area but did not know the location of the outlet. No water was observed flowing at the time of the inspection.

Location: West side of the dairy cow barn.

Camera Direction: South

Date/Time: 03/26/2021

11:49 AM CST





62: USER0627

Description: Looking east toward freshening pen.

Location: West side of the facility.

Camera Direction: East

Date/Time: 03/26/2021

11:51 AM



63: USER0628

Description: Surface drain in driveway north of the dairy cow barn. Operator stated that he believed the drain outlet somewhere into the unnamed intermittent tributary.

Location: North of the dairy cow barn.

Camera Direction: Down

Date/Time: 03/26/2021

11:53 AM CST





64: USER0629

Description: Looking east at the temporary solid manure stacking site.

Location: Northeast of the dairy cow barn.

Camera Direction: East      Date/Time: 03/26/2021 11:54 AM



65: USER0630

Description: Mistake photo.

Location:

Camera Direction:

Date/Time: 03/26/2021





66: USER0631

Description: Looking west along the north side of the dairy cow barn.

Location: Northeast of the dairy cow barn.

Camera Direction: West      Date/Time: 03/26/2021      11:56 AM CST



67: USER0632

Description: Runoff collection from the temporary solid manure stacking site (blue arrow). The operator stated that this drain outlet to the waste storage structures.

Location: West end of the temporary solid manure stacking site.

Camera Direction: East      Date/Time: 03/26/2021      11:56 AM CST





68: USER0633

Description: Up stream along Wilson Rhodes Ditch as it flows through a culvert under County Road North 400 East.

Location: Approximately 600 feet north of the intersection of County Road North 400 East and County Road East 1000 North.

Camera Direction: Northwest

Date/Time: 03/26/2021

1:20 PM CST



69: USER0634

Description: Down stream along Wilson Rhodes Ditch as it flows through a culvert under County Road North 400 East.

Location: Approximately 600 feet north of the intersection of County Road North 400 East and County Road East 1000 North.

Camera Direction: Southeast

Date/Time: 03/26/2021

1:20 PM CST





70: USER0635

Description: Up stream along Wilson Rhodes Ditch as it flows through a culvert under County Road East 1000 North.

Location: Approximately 430 feet east of the intersection of Coutny Road North 400 East and County Road East 1000 North.

Camera Direction: North Date/Time: 03/26/2021 1:24 PM CST



71: USER0636

Description: Down stream along Wilson Rhodes Ditch as it flows through a culvert under County Road East 1000 North.

Location: Approximately 430 feet north of the intersection of Coutny Road North 400 East and County Road East 1000 North.

Camera Direction: South Date/Time: 03/26/2021 1:25 PM CST





72: USER0637

Description: Up stream along Wilson Rhodes Ditch as it flows through a culvert under County Road East 935 North.

Location: Approximately 1700 feet east of the intersection of County Road North 400 East and County Road East 935 North.

Camera Direction: North Date/Time: 03/26/2021 1:29 PM CST



73: USER0638

Description: Down stream along Wilson Rhodes Ditch as it flows through a culvert under County Road East 935 North.

Location: Approximately 1700 feet east of the intersection of County Road North 400 East and County Road East 935 North.

Camera Direction: South Date/Time: 03/26/2021 1:29 PM CST





74: USER0639

Description: Up stream along Wilson Rhodes Ditch as it flows through a culvert under County Road 450 East.

Location: Approximately half a mile northeast of the intersection of County Road North 400 East and County Road 450 East.

Camera Direction: North Date/Time: 03/26/2021 1:34 PM CST



75: USER0640

Description: Down stream along Wilson Rhodes Ditch as it flows through a culvert under County Road 450 East.

Location: Approximately half a mile northeast of the intersection of County Road North 400 East and County Road 450 East.

Camera Direction: South Date/Time: 03/26/2021 1:35 PM CST





76: USER0641

Description: Up stream along Wilson Rhodes Ditch as it flows through a culvert under County Road East 850 North.

Location: Approximately 870 feet east of the intersection of County Road 450 East and County Road 850 North.

Camera Direction: North

Date/Time: 03/26/2021

1:46 PM CST



77: USER0642

Description: Down stream along Wilson Rhodes Ditch as it flows through a culvert under County Road East 850 North.

Location: Approximately 870 feet east of the intersection of County Road 450 East and County Road 850 North.

Camera Direction: South

Date/Time: 03/26/2021

1:46 PM CST





78: USER0643

Description: Up stream along Flowers Creek (into which Wilson Rhodes Ditch flows) as it flows through a culvert under County Road East 800 North.

Location: Approximately 270 feet east of the intersection of County Road North 350 East and County Road East 800 North.

Camera Direction: North      Date/Time: 03/26/2021      2:00 PM CST



79: USER0644

Description: Down stream along Flowers Creek (into which Wilson Rhodes Ditch flowed) as it flows through a culvert under County Road East 800 North.

Location: Approximately 270 feet east of the intersection of County Road North 350 East and County Road East 800 North.

Camera Direction: South      Date/Time: 03/26/2021      2:00 PM CST





80: USER0645

Description: Up stream along Flowers Creek as it flows through a culvert under Warsaw Trail North Road.

Location: Approximately 0.6 miles north of the intersection of Warsaw Trail North Road and County Road East 700 North.

Camera Direction: East

Date/Time: 03/26/2021

2:04 PM CST



81: USER0646

Description: Down stream along Flowers Creek as it flows through a culvert under Warsaw Trail North Road.

Location: Approximately 0.6 miles north of the intersection of Warsaw Trail North Road and County Road East 700 North.

Camera Direction: West

Date/Time: 03/26/2021

2:04 PM CST





82: USER0647

Description: Up stream along Flowers Creek as it flows through a culvert under County Road East 700 North.

Location: Approximatly 825 feet west of the intersection of Warsaw Trail North Road and County Road East 700 North.

Camera Direction: North      Date/Time: 03/26/2021      2:07 PM CST



83: USER0648

Description: Down stream along Flowers Creek as it flows through a culvert under County Road East 700 North.

Location: Approximatly 825 feet west of the intersection of Warsaw Trail North Road and County Road East 700 North.

Camera Direction: South      Date/Time: 03/26/2021      2:07 PM CST





84: USER0649

Description: Up river along the Eel River as it flows under State Highway 19.

Location: Bridge over the Eel River south of Chili, Indiana.

Camera Direction: East

Date/Time: 03/26/2021

2:13 PM CST



85: USER0650

Description: Down along the Eel River as it flows under State Highway 19.

Location: Bridge over the Eel River south of Chili, Indiana.

Camera Direction: West

Date/Time: 03/26/2021

2:13 PM CST





86: USER0651

Description: Up stream along Flowers Creek as it flows through a culvert under County Road East 645 North.

Location: Approximatly 725 feet west of the intersection of State Highway 19.

Camera Direction: North      Date/Time: 03/26/2021      2:16 PM CST



87: USER0652

Description: Down stream along Flowers Creek as it flowes through a culvert under County Road East 645 North toward the Eel River.

Location: Approximatly 725 feet west of the intersection of State Highway 19.

Camera Direction: South      Date/Time: 03/26/2021      2:16 PM CST





## **ATTACHMENT C**



Microbac Laboratories, Inc. - Chicagoland

CERTIFICATE OF ANALYSIS

21C1694

Project Description

EP-W-15-006 Proj 0352.02.002

For:

Jessica Gray

**ERG - Eastern Research Group**

14555 Avion Parkway Suite 200

Chantilly, VA 20151-1102

---

Bonnie Feil

Project Manager Assistant

Friday, April 2, 2021

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac Laboratories, Inc. - Chicagoland. If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed above.

I certify that all test results meet all of the requirements of the accrediting authority listed within this report. Analytical results are reported on a 'as received' basis unless specified otherwise. Analytical results for solids with units ending in (dry) are reported on a dry weight basis. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

Microbac Laboratories, Inc.

250 West 84th Drive | Merrillville, IN 46410 | 219.769.8378 p | [www.microbac.com](http://www.microbac.com)





Microbac Laboratories, Inc. - Chicagoland

## CERTIFICATE OF ANALYSIS

21C1694

**ERG - Eastern Research Group**

Jessica Gray  
14555 Avion Parkway Suite 200  
Chantilly, VA 20151-1102

**Project Name: EP-W-15-006 Proj 0352.02.002**

Project / PO Number: 0352.02.002/4 Mod 1  
Received: 03/26/2021  
Reported: 04/02/2021

---

### Case Narrative

#### BA01 Deardorff 001 Pasture 2 Corner

Initial analyses of 3/26/21 resulted in an E. coli result with an estimated value above the countable range for the dilution. The sample was re-analyzed out-of-holding time on 3/27/21 with a larger dilution. Both results are represented in this report.

---

### Sample Summary Report

| <u>Sample Name</u>                        | <u>Laboratory ID</u> | <u>Client Matrix</u> | <u>Sample Type</u> | <u>Sample Begin</u> | <u>Sample Taken</u> | <u>Lab Received</u> |
|-------------------------------------------|----------------------|----------------------|--------------------|---------------------|---------------------|---------------------|
| BA01 Deardorff 001<br>Pasture 2 Corner    | 21C1694-01           | Aqueous              |                    |                     | 03/26/21 10:16      | 03/26/21 11:50      |
| BA01 Deardorff 002<br>Leachate Collection | 21C1694-02           | Aqueous              |                    |                     | 03/26/21 10:32      | 03/26/21 11:50      |



Microbac Laboratories, Inc. - Chicagoland

## CERTIFICATE OF ANALYSIS

21C1694

### Analytical Testing Parameters

|                   |                                     |                  |                  |
|-------------------|-------------------------------------|------------------|------------------|
| Client Sample ID: | BA01 Deardorff 001 Pasture 2 Corner | Collection Date: | 03/26/2021 10:16 |
| Sample Matrix:    | Aqueous                             |                  |                  |
| Lab Sample ID:    | 21C1694-01                          |                  |                  |

| Microbiology                                             | Result   | RL   | Units     | DF | Note | Prepared      | Analyzed      | Analyst |
|----------------------------------------------------------|----------|------|-----------|----|------|---------------|---------------|---------|
| SM 9223 B MPN-1997/SM 9223 B (Colilert Quanti-Tray)-1997 |          |      |           |    |      |               |               |         |
| Escherichia coli                                         | > 241960 |      | MPN/100mL | 1  |      | 03/26/21 1411 | 03/27/21 1442 | JAA     |
| Escherichia coli                                         | 170000   | 1000 | MPN/100mL | 1  |      | 03/27/21 1212 | 03/28/21 1226 | BML     |

|                   |                                        |                  |                  |
|-------------------|----------------------------------------|------------------|------------------|
| Client Sample ID: | BA01 Deardorff 002 Leachate Collection | Collection Date: | 03/26/2021 10:32 |
| Sample Matrix:    | Aqueous                                |                  |                  |
| Lab Sample ID:    | 21C1694-02                             |                  |                  |

| Microbiology                                             | Result | RL  | Units     | DF | Note | Prepared      | Analyzed      | Analyst |
|----------------------------------------------------------|--------|-----|-----------|----|------|---------------|---------------|---------|
| SM 9223 B MPN-1997/SM 9223 B (Colilert Quanti-Tray)-1997 |        |     |           |    |      |               |               |         |
| Escherichia coli                                         | 130000 | 100 | MPN/100mL | 1  |      | 03/26/21 1411 | 03/27/21 1442 | JAA     |

### Definitions

MPN/100mL Most Probable Number per 100 Milliliters  
RL: Reporting Limit

### Cooler Receipt Log

Cooler ID: Default Cooler Temp: 5.6°C

### Cooler Inspection Checklist

|                                                    |     |                                               |     |
|----------------------------------------------------|-----|-----------------------------------------------|-----|
| Ice Present or not required?                       | Yes | Shipping containers sealed or not required?   | Yes |
| Custody seals intact or not required?              | Yes | Chain of Custody (COC) Present?               | Yes |
| COC includes customer information?                 | Yes | Relinquished and received signature on COC?   | Yes |
| Sample collector identified on COC?                | Yes | Sample type identified on COC?                | Yes |
| Correct type of Containers Received                | Yes | Correct number of containers listed on COC?   | Yes |
| Containers Intact?                                 | Yes | COC includes requested analyses?              | Yes |
| Enough sample volume for indicated tests received? | Yes | Sample labels match COC (Name, Date & Time?)  | Yes |
| Samples arrived within hold time?                  | Yes | Correct preservatives on COC or not required? | Yes |
| Chemical preservations checked or not required?    | Yes | Preservation checks meet method requirements? | Yes |
| VOA vials have zero headspace, or not recd.?       | Yes |                                               |     |

### Report Comments

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.

Reviewed and Approved By:

Bonnie Feil

Bonnie Feil  
Project Manager Assistant  
04/02/2021 17:30

Microbac Laboratories, Inc.

250 West 84th Drive | Merrillville, IN 46410 | 219.769.8378 p | [www.microbac.com](http://www.microbac.com)

Page 3 of 4







UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

US EPA Region 5 LSASD Analytical Services Branch

536 SOUTH CLARK STREET

CHICAGO, ILLINOIS 60605

**Date:** 4/9/2021

**Title:** ASB Data Report for Deardorff

**To:** Water Division, US EPA Region 5  
77 West Jackson Boulevard  
Chicago, IL 60604

**From:** Colin Breslin, Chemist  
breslin.colin@epa.gov  
US EPA Region 5 LSASD Analytical Services Branch

The results reported in this document apply to the samples as received and relate only to the items tested. The data transmitted under this cover memo successfully passed the data review process and applicable Analytical Services Branch (ASB) laboratory Standard Operating Procedures. In accordance with the EPA QA/G-8 *Guidance on Environmental Data Verification and Data Validation*, ASB performs data verification on all the data generated internally. ASB does not perform data validation or quality assessment procedures.

This report was reviewed and the information provided herein accurately represents the analysis performed.

*Please contact the analyst with any technical report issues, Amanda Wroble at (312)-353-0375 for sample project concerns, and Robert Snyder at (312)-353-9083 with data transmittal questions. Thank you.*

**Attached are Results for: Deardorff**

---

**Analyses included in this report:**

Nitrate-Nitrite N DA, Enzymatic reduction

Report Name: 2103010 Nitrate-Nitrite N DA, Enzymatic reduction FINAL Apr 09 21 0949





**Environmental Protection Agency Region 5**  
**US EPA Region 5 LSASD Analytical Services Branch**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

Water Division, US EPA Region 5  
77 West Jackson Boulevard  
Chicago IL, 60604

Project: Deardorff  
Project Number: BA-01-21  
Project Manager: Ben Atkinson

**Reported:**  
Apr-09-21 09:49

**Accredited Analyses included in this Report**



**Method:** *NECi Method NO7-0003 in Water*

**Analysis:** *Nitrate-Nitrite N DA, Enzymatic reduction*

**Analyte**

**Certifications**

Nitrate-Nitrite N

ISO/IEC 17025:2017

**Analytes not listed above are not accredited by ANAB.**



## Environmental Protection Agency Region 5

### US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

Water Division, US EPA Region 5  
77 West Jackson Boulevard  
Chicago IL, 60604

Project: Deardorff  
Project Number: BA-01-21  
Project Manager: Ben Atkinson

**Reported:**  
Apr-09-21 09:49

## ANALYSIS CASE NARRATIVE

### General Information

Analyst: Colin Breslin  
Phone Number: 312-886-2912

| <u>Sample</u> | <u>Analysis List</u>                      |
|---------------|-------------------------------------------|
| 2103010-01    | Nitrate-Nitrite N DA, Enzymatic reduction |
| 2103010-02    | Nitrate-Nitrite N DA, Enzymatic reduction |
| 2103010-03    | Nitrate-Nitrite N DA, Enzymatic reduction |
| 2103010-04    | Nitrate-Nitrite N DA, Enzymatic reduction |

All holding times were met.

The samples were prepared and analyzed using laboratory SOP AIG031B, Version #5, based on:

Method List

NECi Method NO7-0003

### Sample Analysis and Results

The data reported herein meets any requirements referenced in the previously mentioned SOP and Sampling QAPP titled "General Field Sampling Plan for AFO Inspections" and dated "FY 2021". QAPP and laboratory reporting limit requirements were met, and results were reported to the MDL.

### Quality Control

All quality control audits were within laboratory limits or did not result in qualification of the data, except as follows:

Matrix Spike (MS):

The matrix spike of field sample 2103010-01 was recovered at 114%, which exceeded the control limits of 90 – 110%. The result for field sample 2103010-01 was flagged with a high bias.





Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

**WORK ORDER**

Printed: 3/30/2021 1:30:52PM

**2103010**

**US EPA Region 5 LSASD Analytical Services Branch**

**Client:** Water Division, US EPA Region 5

**Project:** Deardorff

**Project Manager:** Angela Ockrassa Davis

**Project Number:** BA-01-21

**Report To:**

Ben Atkinson  
Water Division, US EPA Region 5

77 West Jackson Boulevard  
Chicago, IL 60604

Phone: (312) 353-2004  
Fax: (312) 886-2001

Date Due: May-14-21 15:00 (45 day TAT)

Received By: Robert Snyder

Logged In By: Robert Snyder

Date Received: Mar-30-21 10:08

Date Logged In: Mar-30-21 11:31

|                    |     |                               |
|--------------------|-----|-------------------------------|
| Sample tags/labels | Yes | Work Order Comments:          |
| Seals Intact       | Yes | pH paper used in SC = 18D1901 |
| Received on ice    | Yes |                               |
| Paperwork Included | Yes |                               |

Cooler(s) information:

Default Cooler - 0.40 C

**Sample ID:** [2103010-01](#)

**Sampled:** [Mar-26-21 10:16](#)

**Matrix:** [Water](#)

**Sample Name:** [S01](#)

**Sample Location/Comments:** [Pasture outlet](#)

**Sample Comments:**

| Analysis                                  | Hold time (days) | Expires         | Comments |
|-------------------------------------------|------------------|-----------------|----------|
| Ammonia N DA, Distilled                   | 28               | Apr-23-21 10:16 | pH = 1   |
| Nitrate-Nitrite N DA, Enzymatic reduction | 28               | Apr-23-21 10:16 | pH = 1   |
| Solids, TDS                               | 7                | Apr-02-21 10:16 | pH = 7   |
| Solids, TSS                               | 7                | Apr-02-21 10:16 | pH = 7   |
| TKN DA                                    | 28               | Apr-23-21 10:16 | pH = 1   |
| Total Phosphorus DA                       | 28               | Apr-23-21 10:16 | pH = 1   |

**Sample ID:** [2103010-02](#)

**Sampled:** [Mar-26-21 10:24](#)

**Matrix:** [Water](#)

**Sample Name:** [S02](#)

**Sample Location/Comments:** [Leachate inlet](#)

**Sample Comments:**

| Analysis                                  | Hold time (days) | Expires         | Comments |
|-------------------------------------------|------------------|-----------------|----------|
| Ammonia N DA, Distilled                   | 28               | Apr-23-21 10:24 | pH = 1   |
| Nitrate-Nitrite N DA, Enzymatic reduction | 28               | Apr-23-21 10:24 | pH = 1   |
| Solids, TDS                               | 7                | Apr-02-21 10:24 | pH = 7   |
| Solids, TSS                               | 7                | Apr-02-21 10:24 | pH = 7   |

2103010

## US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5

Project: Deardorff

Project Manager: Angela Ockrassa Davis

Project Number: BA-01-21

Sample ID: [2103010-02](#) Sampled: [Mar-26-21 10:24](#) Matrix: [Water](#)Sample Name: [S02](#) Sample Location/Comments: [Leachate inlet](#)

## Sample Comments:

| Analysis            | Hold time (days) | Expires         | Comments |
|---------------------|------------------|-----------------|----------|
| TKN DA              | 28               | Apr-23-21 10:24 | pH = 1   |
| Total Phosphorus DA | 28               | Apr-23-21 10:24 | pH = 1   |

Sample ID: [2103010-03](#) Sampled: [Mar-26-21 11:47](#) Matrix: [Water](#)Sample Name: [S03](#) Sample Location/Comments: [Leachate outlet](#)

## Sample Comments:

| Analysis                                  | Hold time (days) | Expires         | Comments |
|-------------------------------------------|------------------|-----------------|----------|
| Ammonia N DA, Distilled                   | 28               | Apr-23-21 11:47 | pH = 1   |
| Nitrate-Nitrite N DA, Enzymatic reduction | 28               | Apr-23-21 11:47 | pH = 1   |
| Solids, TDS                               | 7                | Apr-02-21 11:47 | pH = 7   |
| Solids, TSS                               | 7                | Apr-02-21 11:47 | pH = 7   |
| TKN DA                                    | 28               | Apr-23-21 11:47 | pH = 1   |
| Total Phosphorus DA                       | 28               | Apr-23-21 11:47 | pH = 1   |

Sample ID: [2103010-04](#) Sampled: [Mar-26-21 16:10](#) Matrix: [Water](#)Sample Name: [B01](#) Sample Location/Comments: [Blank](#)

## Sample Comments:

| Analysis                                  | Hold time (days) | Expires         | Comments |
|-------------------------------------------|------------------|-----------------|----------|
| Ammonia N DA, Distilled                   | 28               | Apr-23-21 16:10 | pH = 1   |
| Nitrate-Nitrite N DA, Enzymatic reduction | 28               | Apr-23-21 16:10 | pH = 1   |
| Solids, TDS                               | 7                | Apr-02-21 16:10 | pH = 5   |
| Solids, TSS                               | 7                | Apr-02-21 16:10 | pH = 5   |
| TKN DA                                    | 28               | Apr-23-21 16:10 | pH = 1   |
| Total Phosphorus DA                       | 28               | Apr-23-21 16:10 | pH = 1   |



**WORK ORDER**

**Printed: 3/30/2021 1:30:52PM**

**2103010**

**US EPA Region 5 LSASD Analytical Services Branch**

**Client: Water Division, US EPA Region 5**  
**Project: Deardorff**

**Project Manager: Angela Ockrassa Davis**  
**Project Number: BA-01-21**

Reviewed By

Date



## Environmental Protection Agency Region 5

### US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

Water Division, US EPA Region 5  
77 West Jackson Boulevard  
Chicago IL, 60604

Project: Deardorff  
Project Number: BA-01-21  
Project Manager: Ben Atkinson

**Reported:**  
Apr-09-21 09:49

### Nitrate-Nitrite Nitrogen, Nitrate Reductase, NECi Method N07-0003 (modified)

#### US EPA Region 5 LSASD Analytical Services Branch

**S01 (2103010-01)**

**Matrix: Water**

**Sampled: Mar-26-21 10:16**

**Received: Mar-30-21 10:08**

| Analyte           | Result | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Units | Dilution | Batch   | Prepared  | Analyzed  |
|-------------------|--------|-----------------------|------|--------------------|-------|----------|---------|-----------|-----------|
| Nitrate-Nitrite N | 9.34   | (MS), K               | 0.50 | 1.00               | mg/L  | 10       | B21D003 | Apr-06-21 | Apr-06-21 |

**S02 (2103010-02)**

**Matrix: Water**

**Sampled: Mar-26-21 10:24**

**Received: Mar-30-21 10:08**

| Analyte           | Result | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Units | Dilution | Batch   | Prepared  | Analyzed  |
|-------------------|--------|-----------------------|------|--------------------|-------|----------|---------|-----------|-----------|
| Nitrate-Nitrite N | 0.62   |                       | 0.05 | 0.10               | mg/L  | 1        | B21D003 | Apr-06-21 | Apr-06-21 |

**S03 (2103010-03)**

**Matrix: Water**

**Sampled: Mar-26-21 11:47**

**Received: Mar-30-21 10:08**

| Analyte           | Result | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Units | Dilution | Batch   | Prepared  | Analyzed  |
|-------------------|--------|-----------------------|------|--------------------|-------|----------|---------|-----------|-----------|
| Nitrate-Nitrite N | 9.83   |                       | 0.50 | 1.00               | mg/L  | 10       | B21D003 | Apr-06-21 | Apr-06-21 |

**B01 (2103010-04)**

**Matrix: Water**

**Sampled: Mar-26-21 16:10**

**Received: Mar-30-21 10:08**

| Analyte           | Result | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Units | Dilution | Batch   | Prepared  | Analyzed  |
|-------------------|--------|-----------------------|------|--------------------|-------|----------|---------|-----------|-----------|
| Nitrate-Nitrite N | U      |                       | 0.05 | 0.10               | mg/L  | 1        | B21D003 | Apr-06-21 | Apr-06-21 |





**Environmental Protection Agency Region 5**  
**US EPA Region 5 LSASD Analytical Services Branch**

536 South Clark Street, Chicago, IL 60605  
Phone: (312) 353-8370 Fax: (312) 886-2591

Water Division, US EPA Region 5  
77 West Jackson Boulevard  
Chicago IL, 60604

Project: Deardorff  
Project Number: BA-01-21  
Project Manager: Ben Atkinson

**Reported:**  
Apr-09-21 09:49

**Notes and Definitions**

- K The identification of the analyte is acceptable; the reported value may be biased high. The actual value is expected to be less than the reported value.
- (MS) Matrix spike recovery criteria not met for this analyte
- U Not Detected
- NR Not Reported
- Q QC limit Exceeded



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
 REGION 5 ANALYTICAL SERVICES BRANCH LABORATORY  
 536 SOUTH CLARK STREET (LAB-10C)  
 CHICAGO, ILLINOIS 60605

**ELECTRONIC LABORATORY DATA PACKAGE  
 FINAL LEVEL IV  
 COVER PAGE**

|                                      |                         |
|--------------------------------------|-------------------------|
| LIMS Work order(s):                  | 2103010                 |
| Primary Analyst:                     | Nidia Fuentes           |
| Analysis:                            | Ammonia N DA, Distilled |
| Date:                                | May 14, 2021            |
| Data Reporting Qualtrax Workflow ID: | 25063                   |

Digital Signature of Primary Analyst:

**Digital Signature Agreement:** By signing above the primary analyst understands and agrees that they will be held legally bound, obligated, and responsible for the use of their digital signature as they would be by using their hand-written signature.





## Table of Contents

Client Project Name: Deardorff (BA-01-21)  
 Work Order Number: 2103010

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**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY****US EPA Region 5 LSASD Analytical Services Branch****536 SOUTH CLARK STREET****CHICAGO, ILLINOIS 60605**

**Date:** 5/14/2021

**Title:** ASB Data Report for Deardorff

**To:** Water Division, US EPA Region 5  
77 West Jackson Boulevard  
Chicago, IL 60604

**From:** Nidia Fuentes, Chemist  
fuentes.nidia@epa.gov  
US EPA Region 5 LSASD Analytical Services Branch

The results reported in this document apply to the samples as received and relate only to the items tested. The data transmitted under this cover memo successfully passed the data review process and applicable Analytical Services Branch (ASB) laboratory Standard Operating Procedures. In accordance with the EPA QA/G-8 *Guidance on Environmental Data Verification and Data Validation*, ASB performs data verification on all the data generated internally. ASB does not perform data validation or quality assessment procedures.

This report was reviewed and the information provided herein accurately represents the analysis performed.

---

*Please contact the analyst with any technical report issues, Amanda Wroble at (312)-353-0375 for sample project concerns, and Robert Snyder at (312)-353-9083 with data transmittal questions. Thank you.*

**Attached are Results for: Deardorff**

---

**Analyses included in this report:**

Ammonia N DA, Distilled

Report Name: 2103010 Ammonia N DA, Distilled FINAL May 14 21 1000





**Environmental Protection Agency Region 5**  
**US EPA Region 5 LSASD Analytical Services Branch**

536 South Clark Street, Chicago, IL 60605  
 Phone:(312)353-8370 Fax:(312)886-2591

Water Division, US EPA Region 5  
 77 West Jackson Boulevard  
 Chicago IL, 60604

Project: Deardorff  
 Project Number: BA-01-21  
 Project Manager: Ben Atkinson

**Reported:**  
 May-14-21 10:00

**Accredited Analyses included in this Report**



**Method:** *SM 4500-H+ B in Water*  
**Analysis:** *Ammonia N DA, Distilled*  
**Analyte**

**Certifications**

| Analyte      | Certifications     |
|--------------|--------------------|
| Ammonia as N | ISO/IEC 17025:2017 |

*Analyses not listed above are not accredited by ANAB.*



## Environmental Protection Agency Region 5

### US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605  
 Phone:(312)353-8370 Fax:(312)886-2591

Water Division, US EPA Region 5  
 77 West Jackson Boulevard  
 Chicago IL, 60604

Project: Deardorff  
 Project Number: BA-01-21  
 Project Manager: Ben Atkinson

**Reported:**  
 May-14-21 10:00

## ANALYSIS CASE NARRATIVE

### Analysis List

#### Ammonia N DA, Distilled

Analyst: Nidia Fuentes  
 Phone #: 312-353-9079

## General Information

### Samples analyzed:

| <u>Sample</u> | <u>Analysis List</u>    |
|---------------|-------------------------|
| 2103010-01    | Ammonia N DA, Distilled |
| 2103010-02    | Ammonia N DA, Distilled |
| 2103010-03    | Ammonia N DA, Distilled |
| 2103010-04    | Ammonia N DA, Distilled |

### Holding times:

All holding times were met.

## Sample Analysis and Results

The samples were analyzed using ASB SOP AIG029B, Version #9. The samples were stored in the refrigerator at all times, except when in use. The data reported herein meets any requirements referenced in the previously mentioned SOP and Sampling QAPP titled “General Field Sampling Plan for AFO Inspections” and dated “FY 2021”, except for those listed in the Quality Control section.

### SOP Based on:

#### Method List

SM 4500-H+ B

## Quality Control

All quality control audits were within ASB limits or did not result in qualification of the data except for any listed below.





## Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605  
Phone: (312) 353-8370 Fax: (312) 886-2591

### WORK ORDER

Printed: 3/30/2021 1:30:52PM

**2103010**

### US EPA Region 5 LSASD Analytical Services Branch

**Client:** Water Division, US EPA Region 5

**Project:** Deardorff

**Project Manager:** Angela Ockrassa Davis

**Project Number:** BA-01-21

**Report To:**

Ben Atkinson  
Water Division, US EPA Region 5

77 West Jackson Boulevard  
Chicago, IL 60604

Phone: (312) 353-2004  
Fax: (312) 886-2001

Date Due: May-14-21 15:00 (45 day TAT)

Received By: Robert Snyder

Logged In By: Robert Snyder

Date Received: Mar-30-21 10:08

Date Logged In: Mar-30-21 11:31

|                    |            |                               |
|--------------------|------------|-------------------------------|
| Sample tags/labels | <b>Yes</b> | <b>Work Order Comments:</b>   |
| Seals Intact       | <b>Yes</b> | pH paper used in SC = 18D1901 |
| Received on ice    | <b>Yes</b> |                               |
| Paperwork Included | <b>Yes</b> |                               |

**Cooler(s) information:**

Default Cooler - 0.40 C

**Sample ID:** [2103010-01](#)

**Sampled:** [Mar-26-21 10:16](#)

**Matrix:** [Water](#)

**Sample Name:** [S01](#)

**Sample Location/Comments:** [Pasture outlet](#)

**Sample Comments:**

| Analysis                                  | Hold time (days) | Expires         | Comments |
|-------------------------------------------|------------------|-----------------|----------|
| Ammonia N DA, Distilled                   | 28               | Apr-23-21 10:16 | pH = 1   |
| Nitrate-Nitrite N DA, Enzymatic reduction | 28               | Apr-23-21 10:16 | pH = 1   |
| Solids, TDS                               | 7                | Apr-02-21 10:16 | pH = 7   |
| Solids, TSS                               | 7                | Apr-02-21 10:16 | pH = 7   |
| TKN DA                                    | 28               | Apr-23-21 10:16 | pH = 1   |
| Total Phosphorus DA                       | 28               | Apr-23-21 10:16 | pH = 1   |

**Sample ID:** [2103010-02](#)

**Sampled:** [Mar-26-21 10:24](#)

**Matrix:** [Water](#)

**Sample Name:** [S02](#)

**Sample Location/Comments:** [Leachate inlet](#)

**Sample Comments:**

| Analysis                                  | Hold time (days) | Expires         | Comments |
|-------------------------------------------|------------------|-----------------|----------|
| Ammonia N DA, Distilled                   | 28               | Apr-23-21 10:24 | pH = 1   |
| Nitrate-Nitrite N DA, Enzymatic reduction | 28               | Apr-23-21 10:24 | pH = 1   |
| Solids, TDS                               | 7                | Apr-02-21 10:24 | pH = 7   |
| Solids, TSS                               | 7                | Apr-02-21 10:24 | pH = 7   |

## WORK ORDER

Printed: 3/30/2021 1:30:52PM

2103010

## US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5

Project Manager: Angela Ockrassa Davis

Project: Deardorff

Project Number: BA-01-21

Sample ID: [2103010-02](#) Sampled: [Mar-26-21 10:24](#) Matrix: [Water](#)Sample Name: [S02](#) Sample Location/Comments: [Leachate inlet](#)

## Sample Comments:

| Analysis            | Hold time (days) | Expires         | Comments |
|---------------------|------------------|-----------------|----------|
| TKN DA              | 28               | Apr-23-21 10:24 | pH = 1   |
| Total Phosphorus DA | 28               | Apr-23-21 10:24 | pH = 1   |

Sample ID: [2103010-03](#) Sampled: [Mar-26-21 11:47](#) Matrix: [Water](#)Sample Name: [S03](#) Sample Location/Comments: [Leachate outlet](#)

## Sample Comments:

| Analysis                                  | Hold time (days) | Expires         | Comments |
|-------------------------------------------|------------------|-----------------|----------|
| Ammonia N DA, Distilled                   | 28               | Apr-23-21 11:47 | pH = 1   |
| Nitrate-Nitrite N DA, Enzymatic reduction | 28               | Apr-23-21 11:47 | pH = 1   |
| Solids, TDS                               | 7                | Apr-02-21 11:47 | pH = 7   |
| Solids, TSS                               | 7                | Apr-02-21 11:47 | pH = 7   |
| TKN DA                                    | 28               | Apr-23-21 11:47 | pH = 1   |
| Total Phosphorus DA                       | 28               | Apr-23-21 11:47 | pH = 1   |

Sample ID: [2103010-04](#) Sampled: [Mar-26-21 16:10](#) Matrix: [Water](#)Sample Name: [B01](#) Sample Location/Comments: [Blank](#)

## Sample Comments:

| Analysis                                  | Hold time (days) | Expires         | Comments |
|-------------------------------------------|------------------|-----------------|----------|
| Ammonia N DA, Distilled                   | 28               | Apr-23-21 16:10 | pH = 1   |
| Nitrate-Nitrite N DA, Enzymatic reduction | 28               | Apr-23-21 16:10 | pH = 1   |
| Solids, TDS                               | 7                | Apr-02-21 16:10 | pH = 5   |
| Solids, TSS                               | 7                | Apr-02-21 16:10 | pH = 5   |
| TKN DA                                    | 28               | Apr-23-21 16:10 | pH = 1   |
| Total Phosphorus DA                       | 28               | Apr-23-21 16:10 | pH = 1   |



## WORK ORDER

Printed: 3/30/2021 1:30:52PM

**2103010****US EPA Region 5 LSASD Analytical Services Branch**

**Client:** Water Division, US EPA Region 5  
**Project:** Deardorff

**Project Manager:** Angela Ockrassa Davis  
**Project Number:** BA-01-21

---

Reviewed By

Date



## Environmental Protection Agency Region 5

### US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605  
 Phone: (312) 353-8370 Fax: (312) 886-2591

Water Division, US EPA Region 5  
 77 West Jackson Boulevard  
 Chicago IL, 60604

Project: Deardorff  
 Project Number: BA-01-21  
 Project Manager: Ben Atkinson

**Reported:**  
 May-14-21 10:00

### Ammonia Nitrogen, SM4500B & H (modified) US EPA Region 5 LSASD Analytical Services Branch

**S01 (2103010-01) Matrix: Water Sampled: Mar-26-21 10:16 Received: Mar-30-21 10:08**

| Analyte      | Result | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Units | Dilution | Batch   | Prepared  | Analyzed  |
|--------------|--------|-----------------------|------|--------------------|-------|----------|---------|-----------|-----------|
| Ammonia as N | 8.11   |                       | 1.60 | 2.00               | mg/L  | 10       | B21D027 | Apr-21-21 | Apr-21-21 |

**S02 (2103010-02) Matrix: Water Sampled: Mar-26-21 10:24 Received: Mar-30-21 10:08**

| Analyte      | Result | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Units | Dilution | Batch   | Prepared  | Analyzed  |
|--------------|--------|-----------------------|------|--------------------|-------|----------|---------|-----------|-----------|
| Ammonia as N | 26.6   |                       | 1.60 | 2.00               | mg/L  | 10       | B21D027 | Apr-21-21 | Apr-21-21 |

**S03 (2103010-03) Matrix: Water Sampled: Mar-26-21 11:47 Received: Mar-30-21 10:08**

| Analyte      | Result | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Units | Dilution | Batch   | Prepared  | Analyzed  |
|--------------|--------|-----------------------|------|--------------------|-------|----------|---------|-----------|-----------|
| Ammonia as N | 3.05   |                       | 0.16 | 0.20               | mg/L  | 1        | B21D027 | Apr-21-21 | Apr-21-21 |

**B01 (2103010-04) Matrix: Water Sampled: Mar-26-21 16:10 Received: Mar-30-21 10:08**

| Analyte      | Result | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Units | Dilution | Batch   | Prepared  | Analyzed  |
|--------------|--------|-----------------------|------|--------------------|-------|----------|---------|-----------|-----------|
| Ammonia as N | U      |                       | 0.16 | 0.20               | mg/L  | 1        | B21D027 | Apr-21-21 | Apr-21-21 |





**Environmental Protection Agency Region 5**  
**US EPA Region 5 LSASD Analytical Services Branch**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

Water Division, US EPA Region 5  
77 West Jackson Boulevard  
Chicago IL, 60604

Project: Deardorff  
Project Number: BA-01-21  
Project Manager: Ben Atkinson

**Reported:**  
May-14-21 10:00

**Notes and Definitions**

U Not Detected  
NR Not Reported  
Q QC limit Exceeded



**Environmental Protection Agency  
US EPA Region 5 LSASD Analytical Services Branch**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

## Quality Control Summary

**Date:** 5/14/2021

**Analyst:** Nidia Fuentes

**Project:** Deardorff

**Analyte:** Ammonia as N

**Analysis:** Ammonia N DA, Distilled

| QC Sample Name | Result  | Units | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Spike<br>Level | Source<br>Result | % REC<br>or abs<br>diff (pH) | % REC or<br>abs diff<br>(pH) Limits | % RPD<br>or abs<br>diff (pH) | %RPD<br>or abs<br>diff (pH)<br>Limits |
|----------------|---------|-------|-----------------------|------|--------------------|----------------|------------------|------------------------------|-------------------------------------|------------------------------|---------------------------------------|
| 21D2102-CAL1   | 0.0020  | mg/L  |                       | 0.16 | 0.20               | 0.000          |                  | %                            |                                     |                              |                                       |
| 21D2102-CAL2   | 0.08    | mg/L  |                       | 0.16 | 0.20               | 0.1000         |                  | 84%                          |                                     |                              |                                       |
| 21D2102-CAL3   | 0.20    | mg/L  |                       | 0.16 | 0.20               | 0.2000         |                  | 98%                          |                                     |                              |                                       |
| 21D2102-CAL4   | 0.41    | mg/L  |                       | 0.16 | 0.20               | 0.4000         |                  | 103%                         |                                     |                              |                                       |
| 21D2102-CAL5   | 0.82    | mg/L  |                       | 0.16 | 0.20               | 0.8000         |                  | 102%                         |                                     |                              |                                       |
| 21D2102-CAL6   | 1.99    | mg/L  |                       | 0.16 | 0.20               | 2.000          |                  | 100%                         |                                     |                              |                                       |
| 21D2102-CAL7   | 4.00    | mg/L  |                       | 0.16 | 0.20               | 4.000          |                  | 100%                         |                                     |                              |                                       |
| 21D2102-CCB1   | -0.01   | mg/L  |                       | 0.16 | 0.20               |                |                  |                              |                                     |                              |                                       |
| 21D2102-CCB2   | -0.0060 | mg/L  |                       | 0.16 | 0.20               |                |                  |                              |                                     |                              |                                       |
| 21D2102-CCB3   | -0.0040 | mg/L  |                       | 0.16 | 0.20               |                |                  |                              |                                     |                              |                                       |
| 21D2102-CCB4   | 0.01    | mg/L  |                       | 0.16 | 0.20               |                |                  |                              |                                     |                              |                                       |
| 21D2102-CCB5   | -0.0070 | mg/L  |                       | 0.16 | 0.20               |                |                  |                              |                                     |                              |                                       |
| 21D2102-CCB6   | -0.0090 | mg/L  |                       | 0.16 | 0.20               |                |                  |                              |                                     |                              |                                       |
| 21D2102-CCV1   | 3.25    | mg/L  |                       | 0.16 | 0.20               | 3.000          |                  | 108%                         | 90-110                              |                              |                                       |
| 21D2102-CCV2   | 3.25    | mg/L  |                       | 0.16 | 0.20               | 3.000          |                  | 108%                         | 90-110                              |                              |                                       |
| 21D2102-CCV3   | 3.23    | mg/L  |                       | 0.16 | 0.20               | 3.000          |                  | 108%                         | 90-110                              |                              |                                       |
| 21D2102-CCV4   | 3.23    | mg/L  |                       | 0.16 | 0.20               | 3.000          |                  | 108%                         | 90-110                              |                              |                                       |
| 21D2102-CCV5   | 3.23    | mg/L  |                       | 0.16 | 0.20               | 3.000          |                  | 108%                         | 90-110                              |                              |                                       |
| 21D2102-CCV6   | 3.21    | mg/L  |                       | 0.16 | 0.20               | 3.000          |                  | 107%                         | 90-110                              |                              |                                       |

Report Name: 2103010 Ammonia N DA, Distilled FINAL May 14 21 1000





**Environmental Protection Agency  
US EPA Region 5 LSASD Analytical Services Branch**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

## Quality Control Summary

**Date:** 5/14/2021

**Analyst:** Nidia Fuentes

**Project:** Deardorff

**Analyte:** Ammonia as N

**Analysis:** Ammonia N DA, Distilled

| QC Sample Name                     | Result | Units | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Spike<br>Level | Source<br>Result | % REC<br>or abs<br>diff (pH) | % REC or<br>abs diff<br>(pH) Limits | % RPD<br>or abs<br>diff (pH) | %RPD<br>or abs<br>diff (pH)<br>Limits |
|------------------------------------|--------|-------|-----------------------|------|--------------------|----------------|------------------|------------------------------|-------------------------------------|------------------------------|---------------------------------------|
| 21D2102-ICB1                       | -0.01  | mg/L  |                       | 0.16 | 0.20               |                |                  |                              |                                     |                              |                                       |
| 21D2102-ICV1                       | 3.19   | mg/L  |                       | 0.16 | 0.20               | 3.000          |                  | 106%                         | 90-110                              |                              |                                       |
| B21D027-BLK1                       | U      | mg/L  |                       | 0.16 | 0.20               |                |                  |                              |                                     |                              |                                       |
| B21D027-BS1                        | 2.07   | mg/L  |                       | 0.16 | 0.20               | 2.000          |                  | 104%                         | 73-120                              |                              |                                       |
| B21D027-BS2                        | 2.14   | mg/L  |                       | 0.16 | 0.20               | 2.000          |                  | 107%                         | 73-120                              |                              |                                       |
| B21D027-DUP1<br>Source: 2103010-01 | 7.72   | mg/L  |                       | 1.60 | 2.00               |                | 8.11             |                              |                                     | 5                            | 14                                    |
| B21D027-MRL1                       | 0.18   | mg/L  |                       | 0.16 | 0.20               | 0.2000         |                  | 92%                          | 71-147                              |                              |                                       |
| B21D027-MS1<br>Source: 2103010-01  | 10.4   | mg/L  |                       | 1.60 | 2.00               | 2.000          | 8.11             | 115%                         | 50-148                              |                              |                                       |

### Notes and Definitions

U Not Detected  
NR Not Reported  
Q QC limit Exceeded

Nidia Fuentes



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
 REGION 5 LSASD ANALYTICAL SERVICE BRANCH  
 536 SOUTH CLARK STREET  
 CHICAGO, ILLINOIS 60605

### Data Verification Checklist

|                      |                         |                  |           |
|----------------------|-------------------------|------------------|-----------|
| <b>Work:</b>         | 2103010                 | <b>Project:</b>  | Deardorff |
| <b>Analysis:</b>     | Ammonia N DA, Distilled |                  |           |
| <b>CRL SOP Used:</b> | AIG029B v9              | <b>Batch ID:</b> | B21D027   |

### General Information

| Question # | Question                                                                                    | Analyst Response (YES/ NO/ NA) |
|------------|---------------------------------------------------------------------------------------------|--------------------------------|
| 1          | Did samples meet the laboratory's standard conditions of sample acceptability upon receipt? | YES                            |
| 2          | Was customer contact communication included?                                                | NA                             |
| 3          | Are all field sample ID numbers cross-referenced to the laboratory ID numbers?              | YES                            |
| 4          | Were all samples prepared and analyzed within holding times?                                | YES                            |

### Sample Results

| Question # | Question                                                                                     | Analyst Response (YES/ NO/ NA) |
|------------|----------------------------------------------------------------------------------------------|--------------------------------|
| 5          | Were calculations checked?                                                                   | YES                            |
| 6          | Were all analyte results checked?                                                            | YES                            |
| 7          | Were all results for soil and sediment samples reported on a dry weight basis?               | NA                             |
| 8          | Were % moisture (or solids) reported for all soil and sediment samples?                      | NA                             |
| 9          | Other than those results < RL, were all other raw values bracketed by calibration standards? | YES                            |
| 10         | Are the RLs for each method analyte included in the laboratory data package?                 | YES                            |
| 11         | Are MDLs/RLs adjusted for dilutions?                                                         | YES                            |
| 12         | Were the raw data (for example, chromatograms, spectral data) reviewed?                      | YES                            |
| 13         | Were data associated with manual integrations flagged on the raw data?                       | NA                             |

### Standards

| Question # | Question                                                                                                                             | Analyst Response (YES/ NO/ NA) |
|------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 14         | Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources as specified in the analytical SOP? | YES                            |
| 15         | Were standard/reagent preparations checked (preparation date, expiration date, parent standard IDs, etc.), if applicable?            | YES                            |

### Batch Quality Control



Work: 2103010

Project: Deardorff

**Batch Quality Control**

| Question # | Question                                                                                                                      | Analyst Response (YES/ NO/ NA) |
|------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 16         | Were appropriate type(s) of blanks analyzed?                                                                                  | YES                            |
| 17         | Were blanks analyzed at the appropriate frequency?                                                                            | YES                            |
| 18         | Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures? | YES                            |
| 19         | Were blank concentrations $\leq$ MDL or RL, as applicable in the analytical SOP?                                              | YES                            |
| 20         | Was each LCS/SRM taken through the entire analytical procedure, including prep and cleanup steps?                             | YES                            |
| 21         | Were LCSs/SRMs analyzed at the required frequency?                                                                            | YES                            |
| 22         | Were LCS/SRM %Rs within the laboratory QC limits or other acceptance criteria?                                                | YES                            |
| 23         | Were the project/method specified analytes included in the MS?                                                                | YES                            |
| 24         | Were MS analyzed at the appropriate frequency?                                                                                | YES                            |
| 25         | Were MS %Rs within the laboratory QC limits?                                                                                  | YES                            |
| 26         | Were appropriate analytical duplicates analyzed for each matrix?                                                              | YES                            |
| 27         | Were analytical duplicates analyzed at the appropriate frequency?                                                             | YES                            |
| 28         | Were RPDs or relative standard deviations within the laboratory QC limits or other acceptance criteria?                       | YES                            |
| 29         | Were RLs analyzed at the appropriate frequency?                                                                               | YES                            |
| 30         | Were RL recoveries within the laboratory QC limits?                                                                           | YES                            |

**Calibration**

| Question # | Question                                                                                       | Analyst Response (YES/ NO/ NA) |
|------------|------------------------------------------------------------------------------------------------|--------------------------------|
| 31         | Were calibration correlation coefficient or other acceptance criteria met?                     | YES                            |
| 32         | Was the number of calibration standards recommended in the method used for all analytes?       | YES                            |
| 33         | Were all points generated between the lowest and highest standard used to calculate the curve? | YES                            |
| 34         | Are calibration data available for all instruments used?                                       | YES                            |

**Calibration Verification**

| Question # | Question                                                                                                                  | Analyst Response (YES/ NO/ NA) |
|------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 35         | Was the absolute value of the analyte concentration in the ICB/CCB $\leq$ MDL or RL, as applicable in the analytical SOP? | YES                            |
| 36         | Was the calibration curve verified for each analyte?                                                                      | YES                            |
| 37         | Has the calibration curve been verified using an appropriate second source standard?                                      | YES                            |

Work: 2103010

Project: Deardorff

**Calibration Verification**

| Question # | Question                                                | Analyst Response (YES/ NO/ NA) |
|------------|---------------------------------------------------------|--------------------------------|
| 38         | Were ICV/CCV analyzed at the method-required frequency? | YES                            |
| 39         | Were ICV/CCV %R within the laboratory QC limits?        | YES                            |

**Quality Control**

| Question # | Question                                                                                              | Analyst Response (YES/ NO/ NA) |
|------------|-------------------------------------------------------------------------------------------------------|--------------------------------|
| 40         | QC limits in LIMS checked against the SOP?                                                            | YES                            |
| 41         | Were percent differences, recoveries, and the linearity within the QC limits specified in the method? | YES                            |
| 42         | Were QC charts checked if a QC audit, excluding matrix QC (MS or DUP), was out of limit?              | NA                             |

**Supporting Data**

| Question # | Question                                                                                                       | Analyst Response (YES/ NO/ NA) |
|------------|----------------------------------------------------------------------------------------------------------------|--------------------------------|
| 43         | Were support equipment data (balance verification, data logs, logbook entries, etc.) included in data package? | YES                            |
| 44         | Were approved spreadsheet(s) used?                                                                             | YES                            |

**Document Verification**

| Question # | Question                                                                                                                                                                                                                                                                                                                                                                                                            | Analyst Response (YES/ NO/ NA) |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 45         | Is the MDL or RL study up-to-date for each reported analyte?                                                                                                                                                                                                                                                                                                                                                        | YES                            |
| 46         | Is documentation of the analyst's capability up-to-date and on file?<br><div style="display: flex; justify-content: space-between; align-items: center;"> <div> <small>REVIEWED</small><br/> <small>By NFUENTES at 12:30 pm, May 13, 2021</small> </div> <div style="color: red;">-In process-</div> <div> <small>REVIEWED</small><br/> <small>By NFUENTES at 12:30 pm, May 13, 2021</small> </div> </div> ID:24456 | YES <del>NO</del>              |
| 47         | Are the procedures for compound/analyte identification documented?                                                                                                                                                                                                                                                                                                                                                  | YES                            |
| 48         | Are laboratory SOPs current and on file for the method performed?                                                                                                                                                                                                                                                                                                                                                   | YES                            |
| 49         | Were data evaluated against project QAPP or Sample Plan, any special requests in the sample schedule, and documented in case narrative?                                                                                                                                                                                                                                                                             | YES                            |
| 50         | Were electronic pathways checked (add pathway and files below)?<br><br>Notes/Comments: J:\Vol1\Projects (New File Structure)\Deardorff\1.<br>A&I\NFuentes\DA-4\2103010\04212021-AMM\ARC_70.bak                                                                                                                                                                                                                      | YES                            |

**Accreditation**

| Question # | Question                      | Analyst Response (YES/ NO/ NA) |
|------------|-------------------------------|--------------------------------|
| 51         | ANAB logo used appropriately? | YES                            |

**REVIEWED**

By NFUENTES at 9:29 am, Apr 26, 2021

Analyst's Signature and Date\*:



**Work:** 2103010**Project:** Deardorff**REVIEWED***By AK at 9:15 am, May 14, 2021***Reviewer's Signature and Date\*:****\*Reviewer Concurs with Analyst Responses****Additional Notes/Comments (if applicable):**

# **Ammonia N DA, Distilled**



# BATCH

B21D027



Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

Date: 4/21/2021

AMMONIA DISTILLATION LOG (EASY STILL) FOR WATER SAMPLES

Prepared Date: Apr-21-21

Analyst (initials): NF

**Batch Number: B21D027**

**Analyses Included On This Benchsheet**

**Ammonia N DA, Distilled**

| Distillation # | Position #    | Sample Number           | Source ID             | Spike Type | Spike ID | Spike Volume (uL) | Sample Volume (mL) | Adjusted pH is ~9.5 (Y/N) | Comments                                                                      |
|----------------|---------------|-------------------------|-----------------------|------------|----------|-------------------|--------------------|---------------------------|-------------------------------------------------------------------------------|
| 1              | 5             | 2103010-01              |                       |            |          |                   | 50                 | Y                         | pH = 1                                                                        |
| 1              | 8             | 2103010-02              |                       |            |          |                   | 50                 | Y                         | pH = 1                                                                        |
| 1              | 9             | 2103010-03              |                       |            |          |                   | 50                 | Y                         | pH = 1                                                                        |
| 1              | 10            | 2103010-04              |                       |            |          |                   | 50                 | Y                         | pH = 1                                                                        |
| <del>1</del>   | <del>11</del> | <del>2104004-01</del>   |                       |            |          |                   | <del>50</del>      | <del>Y</del>              | <del>pH = 1</del> <div>REVIEWED<br/>By NF/NTES at 8:55 am, Apr 29, 2021</div> |
| <del>1</del>   | <del>14</del> | <del>2104004-02</del>   |                       |            |          |                   | <del>50</del>      | <del>Y</del>              | <del>pH = 1</del> <div>REVIEWED<br/>By NF/NTES at 8:55 am, Apr 29, 2021</div> |
| 1              | 1             | B21D027-BLK1            |                       |            |          |                   | 50                 | Y                         |                                                                               |
| 1              | 2             | B21D027-BS1             |                       | Pre-Prep   | 19K1224  | 100               | 50                 | Y                         |                                                                               |
| 1              | 3             | B21D027-BS2             |                       | Pre-Prep   | 19K1224  | 100               | 50                 | Y                         |                                                                               |
| 1              | 6             | B21D027-DUP1            | 2103010-01            |            |          |                   | 50                 | Y                         |                                                                               |
| <del>1</del>   | <del>12</del> | <del>B21D027-DUP2</del> | <del>2104004-01</del> |            |          |                   | <del>50</del>      | <del>Y</del>              | <del>*</del> <div>REVIEWED<br/>By NF/NTES at 8:55 am, Apr 29, 2021</div>      |
| 1              | 4             | B21D027-MRL1            |                       | Pre-Prep   | 21D2116  | 2500              | 50                 | Y                         |                                                                               |
| 1              | 7             | B21D027-MS1             | 2103010-01            | Pre-Prep   | 19K1224  | 100               | 50                 | Y                         |                                                                               |





Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

Date: 4/21/2021

AMMONIA DISTILLATION LOG (EASY STILL) FOR WATER SAMPLES

Prepared Date: Apr-21-21

Analyst (initials): NF

**Batch Number: B21D027**

**Analyses Included On This Benchsheet**

**Ammonia N DA, Distilled**

| Distillation #                                  | Position #                              | Sample Number | Source ID  | Spike Type          | Spike ID | Spike Volume (uL)  | Sample Volume (mL) | Adjusted pH is ~9.5 (Y/N) | Comments                                                          |
|-------------------------------------------------|-----------------------------------------|---------------|------------|---------------------|----------|--------------------|--------------------|---------------------------|-------------------------------------------------------------------|
| 1                                               | 13                                      | B21D027-MS2   | 2104004-01 | Pre-Prep            | 19K1224  | 100                | 50                 | Y                         | *<br><div>REVIEWED<br/>By NFJENTES at 9:55 am, Apr 29, 2021</div> |
| <b>PREPARATION REAGENTS/STANDARDS/PIPETTES:</b> |                                         |               |            |                     |          |                    |                    |                           |                                                                   |
| <u>19K1224:</u>                                 | NH3N-StockControlStandard               |               |            | Prepared: Nov-12-19 |          | Expires: May-06-21 |                    |                           |                                                                   |
| <u>21D2116:</u>                                 | NH3N-MRL Spike                          |               |            | Prepared: Apr-21-21 |          | Expires: May-21-21 |                    |                           |                                                                   |
| <u>19F0521:</u>                                 | Sodium Hydroxide 10% (w/v)              |               |            | Prepared: May-02-19 |          | Expires: Apr-30-22 |                    |                           |                                                                   |
| <u>19F1209:</u>                                 | NH3N Distilled-Borate Buffer            |               |            | Prepared: Jun-12-19 |          | Expires: Dec-12-30 |                    |                           |                                                                   |
| <u>20K0528:</u>                                 | Test Strip: pH 5.0 - 10                 |               |            | Prepared: Nov-05-20 |          | Expires: Oct-31-21 |                    |                           |                                                                   |
| <u>21B2306:</u>                                 | Pipette (Electronic) -- 50 -1,000 uL    |               |            | Prepared: Feb-15-21 |          | Expires: Aug-31-21 |                    |                           |                                                                   |
| <u>21B2307:</u>                                 | Pipette (Electronic) -- 200 -5000 uL    |               |            | Prepared: Feb-15-21 |          | Expires: Aug-31-21 |                    |                           |                                                                   |
| <u>21B2308:</u>                                 | Pipette (Electronic) -- 500 - 10,000 uL |               |            | Prepared: Feb-15-21 |          | Expires: Aug-31-21 |                    |                           |                                                                   |
| <u>21B2309:</u>                                 | Pipette (Electronic) -- 5 -100 uL       |               |            | Prepared: Feb-15-21 |          | Expires: Aug-31-21 |                    |                           |                                                                   |
| <u>21D2112:</u>                                 | NH3NDistilled-ReceivingSol/BLK          |               |            | Prepared: Apr-21-21 |          | Expires: May-21-21 |                    |                           |                                                                   |

# BATCH REAGENTS

19F0521



# Certificate of Analysis

**Sodium Hydroxide, 10% (w/v) (100 g/L)**

**Lot Number:** 4905821

**Product Number:** 7260

**Manufacture Date:** MAY 02, 2019

**Expiration Date:** APR 2022

| Name             | CAS#      | Grade           |
|------------------|-----------|-----------------|
| Water            | 7732-18-5 | ACS/ASTM/USP/EP |
| Sodium Hydroxide | 1310-73-2 | Reagent         |

| Test                                      | Specification      | Result       | NIST SRM# |
|-------------------------------------------|--------------------|--------------|-----------|
| Appearance                                | Colorless liquid   | Passed       |           |
| Assay (vs. Sulfuric Acid/Phenolphthalein) | 9.96-10.04 % (w/v) | 9.97 % (w/v) | 723       |

| Specification                             | Reference           |
|-------------------------------------------|---------------------|
| Sodium hydroxide solution (100 g/1000 mL) | TAPPI (T 602 cm-97) |
| Sodium Hydroxide Solution (100 g/L)       | ASTM (D 3866 A)     |
| Sodium Hydroxide Solution (100 g/L)       | ASTM (D 858 B)      |
| Sodium Hydroxide Solution (100 g/L)       | ASTM (D 1886 B)     |
| Sodium Hydroxide Solution (100 g/L)       | ASTM (D 3557 B)     |
| Sodium Hydroxide Solution (100 g/L)       | ASTM (D 3558 B)     |
| Sodium Hydroxide Solution (100 g/L)       | ASTM (D 1688 B)     |
| Sodium Hydroxide Solution (100 g/L)       | ASTM (D 3559 B)     |
| Sodium hydroxide, 10% solution            | TAPPI (T 618 cm-84) |
| Sodium Hydroxide Solution (100 g/L)       | ASTM (D 1266)       |
| Sodium Hydroxide Solution (100 g/L)       | ASTM (D 3372)       |
| Sodium Hydroxide Solution (100 g/L)       | ASTM (D 1266)       |
| Sodium Hydroxide Reagent Solution         | ACS (N/A)           |

Volumetric glassware complies with Class A tolerance requirements of ASTM E 288 and NIST Circular 434; it is calibrated before first use and recalibrated regularly in accordance with ASTM E 542 and NIST Procedure NBSIR 74-461. Balances are calibrated regularly with weights certified traceable to the NIST national mass standard. Thermometers and temperature probes are calibrated before first use and recalibrated regularly with a thermometer traceable to NIST standards. All products are prepared according to master documents that assure manufacture according to validated methods. Batch records document raw material traceability and production and testing history for each lot manufactured.

| Part Number | Size / Package Type | Shelf Life (Unopened Container) |
|-------------|---------------------|---------------------------------|
| 7260-1      | 4 L natural poly    | 36 months                       |
| 7260-16     | 500 mL natural poly | 36 months                       |
| 7260-2.5    | 10 L Cubitainer®    | 36 months                       |
| 7260-32     | 1 L natural poly    | 36 months                       |
| 7260-4      | 120 mL natural poly | 36 months                       |

**Recommended Storage:** 15°C - 30°C (59°F - 86°F)

**REVIEWED**

**By AK at 10:51 am, Feb 11, 2020**



Jim Gibbs (05/02/2019)

Quality Control Supervisor

This Certificate of Analysis is designed to comply with ISO Guide 31 "Reference Materials -- Contents of Certificates and Labels."

This test report shall not be reproduced, except in full, without the written approval of Ricca Chemical Company.



# BATCH REAGENTS

19F1209



Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

**Reagent Preparation Bench Sheet**

Table of Contents

Print Date: 6/12/2019

Parameter / SOP #: NH3N (Distilled)/AIG029B v6

Prepared by: Nidia Fuentes

Reagent: NH3N Distilled-Borate Buffer

Preparation Date: Jun-12-19

**REVIEWED**  
By AK at 10:31 am, Mar 18, 2021

LIMS ID: 19F1209

Expiration Date: ~~Dec-09-20~~ **Dec-12-30**

| Chemical Name (Formula)             | LIMS ID | Mass or Volume<br>(specify units) |
|-------------------------------------|---------|-----------------------------------|
| 0.1 N NaOH                          | 19F1203 | 44 mL                             |
| 0.025 M Sodium Tetraborate Solution | 19F1208 | 250 mL                            |
|                                     |         |                                   |
|                                     |         |                                   |
|                                     |         |                                   |

Total Volume : 500 mL

**Comments :**

**REVIEWED**  
By AK at 7:55 am, Jun 26, 2019

Reviewed with WO# **1906002 AK 6-26-19**

No expiration date - **Existing expiration date (Dec-09-20) was updated to Dec-12-30 since there is no expiration for this reagent.**

See user defined fields for reagent information prep

Analyst Signature:

*Nidia Fuentes*

**REVIEWED**  
By AK at 10:33 am, Mar 18, 2021



# BATCH REAGENTS

20K0528



# Certificate of Analysis

1.09533.0001 pH-indicator strips  
pH 5.0 - 10.0 non-bleeding pH 5.0 - 5.5 - 6.0 - 6.5 - 7.0 - 7.5 - 8.0 - 8.5 - 9.0  
- 9.5 - 10.0 MQuant®  
Batch HC020025

---

## Batch Values

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Application test conforms

Date of release (DD.MM.YYYY) 17.02.2020  
Minimum shelf life (DD.MM.YYYY) 31.10.2021

Tom Kupfer  
Responsible laboratory manager quality control

---

This document has been produced electronically and is valid without a signature.

**REVIEWED**  
**By AK at 1:28 pm, May 06, 2021**

# BATCH REAGENTS

21B2306





# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - P-4136

| CUSTOMER DETAILS |                   |  |  | Asset#            | P-4136                                      |
|------------------|-------------------|--|--|-------------------|---------------------------------------------|
| Customer         | EPA               |  |  | Serial Number     | 424801A                                     |
| Contact          | Angela Ockrassa   |  |  | Pipette Model     | Eppendorf Xplorer/E 1000ul,V,100-1000ul,1ch |
| Location         | A&I               |  |  | Calibration Date  | 15-Feb-2021                                 |
| Address          | 536 S. Clark St.  |  |  | Next Due Date     | 31-Aug-2021                                 |
|                  | Chicago, IL 60605 |  |  | Technician        | Nishat K                                    |
| Telephone        | 312-353-7445      |  |  | Report Print Date | 15-Feb-2021                                 |

| ENVIRONMENTAL CONDITIONS |       |                                  |         |                               |         |
|--------------------------|-------|----------------------------------|---------|-------------------------------|---------|
| Water Temperature °C     | 21.10 | Barometric Pressure kPa          | 100.10  | Z Factor (cm <sup>3</sup> /g) | 1.00308 |
| Relative Humidity (%)    | 41.00 | Air Density (g/cm <sup>3</sup> ) | 0.00119 | Liquid Density (gm/ml)        | 0.9980  |

| STANDARD EQUIPMENT                   |               |                  |               |
|--------------------------------------|---------------|------------------|---------------|
| Standard                             | Serial Number | Calibration Date | Next Due Date |
| ST2-Mettler Balance AX205DR/0.00001g | 1122303954    | 14-Jan-2021      | 31-Jan-2022   |
| Digital Barometer                    | 200303896     | 19-May-2020      | 31-May-2022   |
| Digital Thermometer                  | 200303896     | 19-May-2020      | 31-May-2022   |
| Thermocouple w/Probe                 | 200311521     | 23-May-2020      | 31-May-2022   |

| Calibration Data - As Found |    |         |         |          |            |         |             |         |        |        |               |               |
|-----------------------------|----|---------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|---------------|
|                             |    |         |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight | Sample Volume |
| Volume (uL)                 | Ch | Mean    | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          | (uL)          |
| 100.00                      | 1  | 100.41  | 0.19197 | 0.60     | 0.40544    | 3.00000 | 0.19119     | 0.60000 | Passed |        |               |               |
|                             |    |         |         |          |            |         |             |         |        | 1      | 100.14000     | 100.44807     |
|                             |    |         |         |          |            |         |             |         |        | 2      | 99.87000      | 100.17724     |
|                             |    |         |         |          |            |         |             |         |        | 3      | 100.05000     | 100.35779     |
|                             |    |         |         |          |            |         |             |         |        | 4      | 100.33000     | 100.63865     |
| 1000.00                     | 1  | 1003.42 | 0.11597 | 5.66     | 0.34224    | 0.60000 | 0.01156     | 0.20000 | Passed |        |               |               |
|                             |    |         |         |          |            |         |             |         |        | 1      | 1000.37000    | 1003.44752    |
|                             |    |         |         |          |            |         |             |         |        | 2      | 1000.45000    | 1003.52777    |
|                             |    |         |         |          |            |         |             |         |        | 3      | 1000.18000    | 1003.25694    |
|                             |    |         |         |          |            |         |             |         |        | 4      | 1000.38000    | 1003.45755    |

| Calibration Data - As Calibrated |    |         |         |          |            |         |             |         |        |        |               |               |
|----------------------------------|----|---------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|---------------|
|                                  |    |         |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight | Sample Volume |
| Volume (uL)                      | Ch | Mean    | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          | (uL)          |
| 100.00                           | 1  | 100.44  | 0.27671 | 0.63     | 0.44305    | 3.00000 | 0.27549     | 0.60000 | Passed |        |               |               |
|                                  |    |         |         |          |            |         |             |         |        | 1      | 100.54000     | 100.84930     |
|                                  |    |         |         |          |            |         |             |         |        | 2      | 99.96000      | 100.26752     |
|                                  |    |         |         |          |            |         |             |         |        | 3      | 100.08000     | 100.38788     |
|                                  |    |         |         |          |            |         |             |         |        | 4      | 99.96000      | 100.26752     |
| 1000.00                          | 1  | 1002.71 | 0.70565 | 5.70     | 0.27078    | 0.60000 | 0.07037     | 0.20000 | Passed |        |               |               |
|                                  |    |         |         |          |            |         |             |         |        | 1      | 999.85000     | 1002.92592    |
|                                  |    |         |         |          |            |         |             |         |        | 2      | 999.90000     | 1002.97607    |
|                                  |    |         |         |          |            |         |             |         |        | 3      | 1000.18000    | 1003.25694    |
|                                  |    |         |         |          |            |         |             |         |        | 4      | 998.60000     | 1001.67208    |



# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - P-4136

Comment Cleaned/Checked

1. PASS grade denotes that pipette meets OEM/ISO 8655 specifications. This pipette was calibrated gravimetrically using Standard Operating Procedure (NSOP), De-Ionized Water, Manufacturer/Generic Pipette tips and a Mettler Analytical Balance. All the standard equipment used to calibrate pipettes are certified at regular intervals traceable to National Institute of Standards and Technology (NIST). The test procedures comply to ISO/IEC 17025 guidelines.
2. As a standard practice, Multi-Channel pipettes are checked & calibrated at one random channel only, all other channels are verified. Multi-Channel (All) includes verification and data capturing on all channels.
3. Calibration and Measurement Capability (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. Calibration and Measurement Capabilities represent expanded uncertainties expressed at approximately the 95% level of confidence, usually using a coverage factor of  $k=2$ . The actual measurement uncertainty of a specific calibration performed by a laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.
4. The results above relate only to the item calibrated. This report shall not be reproduced except in full, without the written approval of Novamed Inc.
5. All Syringes are checked and verified at 3% of inaccuracy and imprecision specifications.

Technician

Date

15-Feb-2021

QC Designee

Review Date

15-Feb-2021

**REVIEWED**

By AK at 1:03 pm, Feb 18, 2021

# BATCH REAGENTS

21B2307





# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - Y-6609

| CUSTOMER DETAILS |                   |  |  | Asset#            | Y-6609                                      |
|------------------|-------------------|--|--|-------------------|---------------------------------------------|
| Customer         | EPA               |  |  | Serial Number     | J13539G                                     |
| Contact          | Angela Ockrassa   |  |  | Pipette Model     | Eppendorf Xplorer Plus/E 5ml,V, 0.2-5ml,1ch |
| Location         | A&I               |  |  | Calibration Date  | 15-Feb-2021                                 |
| Address          | 536 S. Clark St.  |  |  | Next Due Date     | 31-Aug-2021                                 |
|                  | Chicago, IL 60605 |  |  | Technician        | Nishat K                                    |
| Telephone        | 312-353-7445      |  |  | Report Print Date | 15-Feb-2021                                 |

| ENVIRONMENTAL CONDITIONS |       |                         |         |                        |         |
|--------------------------|-------|-------------------------|---------|------------------------|---------|
| Water Temperature °C     | 21.10 | Barometric Pressure kPa | 100.10  | Z Factor (cm3/g)       | 1.00308 |
| Relative Humidity (%)    | 41.00 | Air Density (g/cm3)     | 0.00119 | Liquid Density (gm/ml) | 0.9980  |

| STANDARD EQUIPMENT                   |               |                  |               |
|--------------------------------------|---------------|------------------|---------------|
| Standard                             | Serial Number | Calibration Date | Next Due Date |
| ST2-Mettler Balance AX205DR/0.00001g | 1122303954    | 14-Jan-2021      | 31-Jan-2022   |
| Digital Barometer                    | 200303896     | 19-May-2020      | 31-May-2022   |
| Digital Thermometer                  | 200303896     | 19-May-2020      | 31-May-2022   |
| Thermocouple w/Probe                 | 200311521     | 23-May-2020      | 31-May-2022   |

| Calibration Data - As Found |    |         |         |          |            |         |             |         |        |        |               |               |
|-----------------------------|----|---------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|---------------|
|                             |    |         |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight | Sample Volume |
| Volume (uL)                 | Ch | Mean    | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          | (uL)          |
| 500.00                      | 1  | 504.78  | 1.90663 | 3.43     | 0.95663    | 3.00000 | 0.37771     | 0.60000 | Passed |        |               |               |
|                             |    |         |         |          |            |         |             |         |        | 1      | 501.45000     | 502.99265     |
|                             |    |         |         |          |            |         |             |         |        | 2      | 505.84000     | 507.39616     |
|                             |    |         |         |          |            |         |             |         |        | 3      | 503.34000     | 504.88847     |
|                             |    |         |         |          |            |         |             |         |        | 4      | 502.31000     | 503.85530     |
| 5000.00                     | 1  | 5009.37 | 1.66219 | 28.28    | 0.18737    | 0.60000 | 0.03318     | 0.15000 | Passed |        |               |               |
|                             |    |         |         |          |            |         |             |         |        | 1      | 4994.51000    | 5009.87502    |
|                             |    |         |         |          |            |         |             |         |        | 2      | 4992.97000    | 5008.33029    |
|                             |    |         |         |          |            |         |             |         |        | 3      | 4996.11000    | 5011.47995    |
|                             |    |         |         |          |            |         |             |         |        | 4      | 4992.43000    | 5007.78862    |

| Calibration Data - As Calibrated |    |         |         |          |            |         |             |         |        |        |               |               |
|----------------------------------|----|---------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|---------------|
|                                  |    |         |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight | Sample Volume |
| Volume (uL)                      | Ch | Mean    | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          | (uL)          |
| 500.00                           | 1  | 504.63  | 1.18568 | 3.08     | 0.92603    | 3.00000 | 0.23496     | 0.60000 | Passed |        |               |               |
|                                  |    |         |         |          |            |         |             |         |        | 1      | 503.58000     | 505.12920     |
|                                  |    |         |         |          |            |         |             |         |        | 2      | 504.00000     | 505.55050     |
|                                  |    |         |         |          |            |         |             |         |        | 3      | 501.35000     | 502.89234     |
|                                  |    |         |         |          |            |         |             |         |        | 4      | 503.40000     | 504.94865     |
| 5000.00                          | 1  | 5012.32 | 1.13501 | 28.28    | 0.24640    | 0.60000 | 0.02264     | 0.15000 | Passed |        |               |               |
|                                  |    |         |         |          |            |         |             |         |        | 1      | 4996.35000    | 5011.72068    |
|                                  |    |         |         |          |            |         |             |         |        | 2      | 4996.50000    | 5011.87115    |
|                                  |    |         |         |          |            |         |             |         |        | 3      | 4998.64000    | 5014.01773    |
|                                  |    |         |         |          |            |         |             |         |        | 4      | 4996.30000    | 5011.67053    |



# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - Y-6609

Comment Cleaned/Checked/Calibrated

1. PASS grade denotes that pipette meets OEM/ISO 8655 specifications. This pipette was calibrated gravimetrically using Standard Operating Procedure (NSOP), De-Ionized Water, Manufacturer/Generic Pipette tips and a Mettler Analytical Balance. All the standard equipment used to calibrate pipettes are certified at regular intervals traceable to National Institute of Standards and Technology (NIST). The test procedures comply to ISO/IEC 17025 guidelines.
2. As a standard practice, Multi-Channel pipettes are checked & calibrated at one random channel only, all other channels are verified. Multi-Channel (All) includes verification and data capturing on all channels.
3. Calibration and Measurement Capability (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. Calibration and Measurement Capabilities represent expanded uncertainties expressed at approximately the 95% level of confidence, usually using a coverage factor of  $k=2$ . The actual measurement uncertainty of a specific calibration performed by a laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.
4. The results above relate only to the item calibrated. This report shall not be reproduced except in full, without the written approval of Novamed Inc.
5. All Syringes are checked and verified at 3% of inaccuracy and imprecision specifications.

Technician

Date

15-Feb-2021

QC Designee

Review Date

15-Feb-2021

**REVIEWED**

By AK at 12:58 pm, Feb 18, 2021

# BATCH REAGENTS

21B2308





# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - P-4146

| CUSTOMER DETAILS |                   |  |  | Asset#            | P-4146                                  |
|------------------|-------------------|--|--|-------------------|-----------------------------------------|
| Customer         | EPA               |  |  | Serial Number     | 424660A                                 |
| Contact          | Angela Ockrassa   |  |  | Pipette Model     | Eppendorf Xplorer/E 10ml,V,0.5-10ml,1ch |
| Location         | A&I               |  |  | Calibration Date  | 15-Feb-2021                             |
| Address          | 536 S. Clark St.  |  |  | Next Due Date     | 31-Aug-2021                             |
|                  | Chicago, IL 60605 |  |  | Technician        | Nishat K                                |
| Telephone        | 312-353-7445      |  |  | Report Print Date | 15-Feb-2021                             |

| ENVIRONMENTAL CONDITIONS |     |       |                     |                |                 |
|--------------------------|-----|-------|---------------------|----------------|-----------------|
| Water Temperature        | °C  | 21.10 | Barometric Pressure | kPa            | 100.10          |
| Relative Humidity        | (%) | 41.00 | Air Density         | (g/cm3)        | 0.00119         |
|                          |     |       |                     | Z Factor       | (cm3/g) 1.00308 |
|                          |     |       |                     | Liquid Density | (gm/ml) 0.9980  |

| STANDARD EQUIPMENT                   |               |                  |               |
|--------------------------------------|---------------|------------------|---------------|
| Standard                             | Serial Number | Calibration Date | Next Due Date |
| ST2-Mettler Balance AX205DR/0.00001g | 1122303954    | 14-Jan-2021      | 31-Jan-2022   |
| Digital Barometer                    | 200303896     | 19-May-2020      | 31-May-2022   |
| Digital Thermometer                  | 200303896     | 19-May-2020      | 31-May-2022   |
| Thermocouple w/Probe                 | 200311521     | 23-May-2020      | 31-May-2022   |

| Calibration Data - As Found |    |         |         |          |            |         |             |         |        |        |               |               |
|-----------------------------|----|---------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|---------------|
|                             |    |         |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight | Sample Volume |
| Volume (uL)                 | Ch | Mean    | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          | (uL)          |
| 1000.00                     | 1  | 1003.73 | 1.57929 | 5.87     | 0.37259    | 3.00000 | 0.15734     | 0.60000 | Passed |        |               |               |
|                             |    |         |         |          |            |         |             |         |        | 1      | 999.26000     | 1002.33411    |
|                             |    |         |         |          |            |         |             |         |        | 2      | 1002.74000    | 1005.82481    |
|                             |    |         |         |          |            |         |             |         |        | 3      | 999.63000     | 1002.70524    |
|                             |    |         |         |          |            |         |             |         |        | 4      | 1000.96000    | 1004.03934    |
| 10000.00                    | 1  | 9986.19 | 8.90664 | 56.99    | 0.13805    | 0.60000 | 0.08919     | 0.15000 | Passed |        |               |               |
|                             |    |         |         |          |            |         |             |         |        | 1      | 9965.93000    | 9996.58901    |
|                             |    |         |         |          |            |         |             |         |        | 2      | 9946.61000    | 9977.20958    |
|                             |    |         |         |          |            |         |             |         |        | 3      | 9949.97000    | 9980.57991    |
|                             |    |         |         |          |            |         |             |         |        | 4      | 9959.76000    | 9990.40003    |

| Calibration Data - As Calibrated |    |         |         |          |            |         |             |         |        |        |               |               |
|----------------------------------|----|---------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|---------------|
|                                  |    |         |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight | Sample Volume |
| Volume (uL)                      | Ch | Mean    | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          | (uL)          |
| 1000.00                          | 1  | 1004.12 | 2.14764 | 6.05     | 0.41171    | 3.00000 | 0.21388     | 0.60000 | Passed |        |               |               |
|                                  |    |         |         |          |            |         |             |         |        | 1      | 1003.27000    | 1006.35644    |
|                                  |    |         |         |          |            |         |             |         |        | 2      | 999.20000     | 1002.27392    |
|                                  |    |         |         |          |            |         |             |         |        | 3      | 1002.47000    | 1005.55398    |
|                                  |    |         |         |          |            |         |             |         |        | 4      | 999.21000     | 1002.28395    |
| 10000.00                         | 1  | 9991.46 | 3.45813 | 56.42    | 0.08537    | 0.60000 | 0.03461     | 0.15000 | Passed |        |               |               |
|                                  |    |         |         |          |            |         |             |         |        | 1      | 9959.82000    | 9990.46022    |
|                                  |    |         |         |          |            |         |             |         |        | 2      | 9957.42000    | 9988.05283    |
|                                  |    |         |         |          |            |         |             |         |        | 3      | 9965.61000    | 9996.26803    |
|                                  |    |         |         |          |            |         |             |         |        | 4      | 9960.43000    | 9991.07209    |



# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - P-4146

Comment Cleaned/Checked

1. PASS grade denotes that pipette meets OEM/ISO 8655 specifications. This pipette was calibrated gravimetrically using Standard Operating Procedure (NSOP), De-Ionized Water, Manufacturer/Generic Pipette tips and a Mettler Analytical Balance. All the standard equipment used to calibrate pipettes are certified at regular intervals traceable to National Institute of Standards and Technology (NIST). The test procedures comply to ISO/IEC 17025 guidelines.
2. As a standard practice, Multi-Channel pipettes are checked & calibrated at one random channel only, all other channels are verified. Multi-Channel (All) includes verification and data capturing on all channels.
3. Calibration and Measurement Capability (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. Calibration and Measurement Capabilities represent expanded uncertainties expressed at approximately the 95% level of confidence, usually using a coverage factor of  $k=2$ . The actual measurement uncertainty of a specific calibration performed by a laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.
4. The results above relate only to the item calibrated. This report shall not be reproduced except in full, without the written approval of Novamed Inc.
5. All Syringes are checked and verified at 3% of inaccuracy and imprecision specifications.

Technician

Date

15-Feb-2021

QC Designee

Review Date

15-Feb-2021

**REVIEWED**

By AK at 1:02 pm, Feb 18, 2021

# BATCH REAGENTS

21B2309





# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - P-4129

| CUSTOMER DETAILS |                   |  |  | Asset#            | P-4129                                  |
|------------------|-------------------|--|--|-------------------|-----------------------------------------|
| Customer         | EPA               |  |  | Serial Number     | 424277A                                 |
| Contact          | Angela Ockrassa   |  |  | Pipette Model     | Eppendorf Xplorer/E 100ul,V,5-100ul,1ch |
| Location         | A&I               |  |  | Calibration Date  | 15-Feb-2021                             |
| Address          | 536 S. Clark St.  |  |  | Next Due Date     | 31-Aug-2021                             |
|                  | Chicago, IL 60605 |  |  | Technician        | Nishat K                                |
| Telephone        | 312-353-7445      |  |  | Report Print Date | 15-Feb-2021                             |

| ENVIRONMENTAL CONDITIONS |       |                                  |         |                               |         |
|--------------------------|-------|----------------------------------|---------|-------------------------------|---------|
| Water Temperature °C     | 21.10 | Barometric Pressure kPa          | 100.10  | Z Factor (cm <sup>3</sup> /g) | 1.00308 |
| Relative Humidity (%)    | 41.00 | Air Density (g/cm <sup>3</sup> ) | 0.00119 | Liquid Density (gm/ml)        | 0.9980  |

| STANDARD EQUIPMENT                |               |                  |               |
|-----------------------------------|---------------|------------------|---------------|
| Standard                          | Serial Number | Calibration Date | Next Due Date |
| ST2-Mettler Balance MX5/0.000001g | 1120303862    | 14-Jan-2021      | 31-Jan-2022   |
| Digital Barometer                 | 200303896     | 19-May-2020      | 31-May-2022   |
| Digital Thermometer               | 200303896     | 19-May-2020      | 31-May-2022   |
| Thermocouple w/Probe              | 200311521     | 23-May-2020      | 31-May-2022   |

| Calibration Data - As Found |    |        |         |          |            |         |             |         |        |        |               |
|-----------------------------|----|--------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|
|                             |    |        |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight |
| Volume (uL)                 | Ch | Mean   | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          |
| 10.00                       | 1  | 10.19  | 0.04910 | 0.05     | 1.94015    | 2.00000 | 0.48168     | 1.00000 | Passed |        |               |
|                             |    |        |         |          |            |         |             |         |        | 1      | 10.13700      |
|                             |    |        |         |          |            |         |             |         |        | 2      | 10.11300      |
|                             |    |        |         |          |            |         |             |         |        | 3      | 10.22500      |
|                             |    |        |         |          |            |         |             |         |        | 4      | 10.17600      |
| 100.00                      | 1  | 100.56 | 0.08892 | 0.15     | 0.56242    | 0.80000 | 0.08842     | 0.20000 | Passed |        |               |
|                             |    |        |         |          |            |         |             |         |        | 1      | 100.35400     |
|                             |    |        |         |          |            |         |             |         |        | 2      | 100.20100     |
|                             |    |        |         |          |            |         |             |         |        | 3      | 100.30000     |
|                             |    |        |         |          |            |         |             |         |        | 4      | 100.16100     |

| Calibration Data - As Calibrated |    |        |         |          |            |         |             |         |        |        |               |
|----------------------------------|----|--------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|
|                                  |    |        |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight |
| Volume (uL)                      | Ch | Mean   | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          |
| 10.00                            | 1  | 10.14  | 0.03628 | 0.05     | 1.36588    | 2.00000 | 0.35793     | 1.00000 | Passed |        |               |
|                                  |    |        |         |          |            |         |             |         |        | 1      | 10.09700      |
|                                  |    |        |         |          |            |         |             |         |        | 2      | 10.09900      |
|                                  |    |        |         |          |            |         |             |         |        | 3      | 10.07000      |
|                                  |    |        |         |          |            |         |             |         |        | 4      | 10.15600      |
| 100.00                           | 1  | 100.14 | 0.05143 | 0.15     | 0.14414    | 0.80000 | 0.05135     | 0.20000 | Passed |        |               |
|                                  |    |        |         |          |            |         |             |         |        | 1      | 99.85200      |
|                                  |    |        |         |          |            |         |             |         |        | 2      | 99.90300      |
|                                  |    |        |         |          |            |         |             |         |        | 3      | 99.79300      |
|                                  |    |        |         |          |            |         |             |         |        | 4      | 99.80000      |



# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - P-4129

Comment Cleaned/Checked

1. PASS grade denotes that pipette meets OEM/ISO 8655 specifications. This pipette was calibrated gravimetrically using Standard Operating Procedure (NSOP), De-ionized Water, Manufacturer/Generic Pipette tips and a Mettler Analytical Balance. All the standard equipment used to calibrate pipettes are certified at regular intervals traceable to National Institute of Standards and Technology (NIST). The test procedures comply to ISO/IEC 17025 guidelines.
2. As a standard practice, Multi-Channel pipettes are checked & calibrated at one random channel only, all other channels are verified. Multi-Channel (All) includes verification and data capturing on all channels.
3. Calibration and Measurement Capability (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. Calibration and Measurement Capabilities represent expanded uncertainties expressed at approximately the 95% level of confidence, usually using a coverage factor of  $k=2$ . The actual measurement uncertainty of a specific calibration performed by a laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.
4. The results above relate only to the item calibrated. This report shall not be reproduced except in full, without the written approval of Novamed Inc.
5. All Syringes are checked and verified at 3% of inaccuracy and imprecision specifications.

Technician

Date

15-Feb-2021

QC Designee

Review Date

15-Feb-2021

**REVIEWED**

*By AK at 1:00 pm, Feb 18, 2021*

# BATCH REAGENTS

21D2112





Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

**Reagent Preparation Bench Sheet**

Print Date: 4/26/2021

The benchsheet inadvertently not printed  
on the day it was prepared

**REVIEWED**  
By NFUENTES at 11:39 am, Apr 26, 2021

Parameter / SOP #: NH3N Distilled/AIG029B v8\_9

Prepared by: Nidia Fuentes

Reagent: NH3NDistilled-ReceivingSol/BLK

**REVIEWED**  
By NFUENTES at 1:28 pm, May 10, 2021

Preparation Date: Apr-21-21

LIMS ID: 21D2112

Expiration Date: May-21-21

| Chemical Name (Formula) | LIMS ID | Mass or Volume<br>(specify units) |
|-------------------------|---------|-----------------------------------|
| Sulfuric Acid (H2SO4)   | 20B0607 | 1 mL                              |
|                         |         |                                   |
|                         |         |                                   |
|                         |         |                                   |
|                         |         |                                   |

Total Volume : 1000 mL

**Comments :**

See user defined fields for details

**REVIEWED**  
By AK at 1:28 pm, May 10, 2021

Analyst Signature:

*Nidia Fuentes*

# **SEQUENCE**

**21D2102**

Sequence Date: 04/21/2021

Instrument: DA-4

Sequence Analyses:

Ammonia N DA, Distilled

## ANALYSIS SEQUENCE

21D2102

| Instrument: | DA-4      | Analysis Date: Apr-21-21 |                                      | Calibration ID: UNASSIGNED |                         | Matrix: Water |          |
|-------------|-----------|--------------------------|--------------------------------------|----------------------------|-------------------------|---------------|----------|
| Order       | Container | Lab Number               | Sample name or QC sample designation |                            | Analysis                | STD ID        | Comments |
| 1           |           | 21D2102-CAL1             | Cal Standard                         |                            | QC                      | 21D2115       |          |
| 2           |           | 21D2102-CAL2             | Cal Standard                         |                            | QC                      | 21D2132       |          |
| 3           |           | 21D2102-CAL3             | Cal Standard                         |                            | QC                      | 21D2133       |          |
| 4           |           | 21D2102-CAL4             | Cal Standard                         |                            | QC                      | 21D2134       |          |
| 5           |           | 21D2102-CAL5             | Cal Standard                         |                            | QC                      | 21D2135       |          |
| 6           |           | 21D2102-CAL6             | Cal Standard                         |                            | QC                      | 21D2136       |          |
| 7           |           | 21D2102-CAL7             | Cal Standard                         |                            | QC                      | 21D2113       |          |
| 8           |           | 21D2102-ICB1             | ICB                                  |                            | QC                      |               |          |
| 9           |           | 21D2102-ICV1             | ICV                                  |                            | QC                      | 21D2114       |          |
| 10          |           | 21D2102-CCB1             | ICB                                  |                            | QC                      |               |          |
| 11          |           | 21D2102-CCV1             | ICV                                  |                            | QC                      | 21D2114       |          |
| 12          |           | B21D027-MRL1             | MRL Check                            |                            | QC                      |               |          |
| 13          |           | B21D027-BLK1             | Blank                                |                            | QC                      |               |          |
| 14          |           | B21D027-BS1              | LCS                                  |                            | QC                      |               |          |
| 15          |           | B21D027-BS2              | LCS                                  |                            | QC                      |               |          |
| 16          |           | 21D2102-CCB2             | ICB                                  |                            | QC                      |               |          |
| 17          |           | 21D2102-CCV2             | ICV                                  |                            | QC                      | 21D2114       |          |
| 18          |           | 21D2102-CCB3             | ICB                                  |                            | QC                      |               |          |
| 19          |           | 21D2102-CCV3             | ICV                                  |                            | QC                      | 21D2114       |          |
| 20          | A         | 2103010-03               | S03                                  |                            | Ammonia N DA, Distilled |               | pH = 1   |
| 21          | A         | 2103010-04               | B01                                  |                            | Ammonia N DA, Distilled |               | pH = 1   |
| 22          |           | 21D2102-CCB4             | ICB                                  |                            | QC                      |               |          |
| 23          |           | 21D2102-CCV4             | ICV                                  |                            | QC                      | 21D2114       |          |



| Order | Container | Lab Number   | Sample name or QC sample designation | Analysis                | STD ID  | Comments |
|-------|-----------|--------------|--------------------------------------|-------------------------|---------|----------|
| 24    | A         | 2103010-01   | S01                                  | Ammonia N DA, Distilled |         | pH = 1   |
| 25    |           | 21D2102-CCB5 | ICB                                  | QC                      |         |          |
| 26    |           | 21D2102-CCV5 | ICV                                  | QC                      | 21D2114 |          |
| 27    |           | B21D027-DUP1 | Duplicate                            | QC                      |         |          |
| 28    |           | B21D027-MS1  | Matrix Spike                         | QC                      |         |          |
| 29    | A         | 2103010-02   | S02                                  | Ammonia N DA, Distilled |         | pH = 1   |
| 30    |           | 21D2102-CCB6 | ICB                                  | QC                      |         |          |
| 31    |           | 21D2102-CCV6 | ICV                                  | QC                      | 21D2114 |          |

### PREPARATION REAGENTS/STANDARDS/PIPETTES:

|                 |                                   |                     |                    |
|-----------------|-----------------------------------|---------------------|--------------------|
| <u>19K1224:</u> | NH3N-StockControlStandard         | Prepared: Nov-12-19 | Expires: May-06-21 |
| <u>21D2116:</u> | NH3N-MRL Spike                    | Prepared: Apr-21-21 | Expires: May-21-21 |
| <u>21D2113:</u> | NH3N-WCS (4.00 mg/L)              | Prepared: Apr-21-21 | Expires: May-21-21 |
| <u>21D2114:</u> | NH3N-WCS (3 mg/L)                 | Prepared: Apr-21-21 | Expires: May-21-21 |
| <u>21D2115:</u> | NH3N-WCS (0.00 mg/L)              | Prepared: Apr-21-21 | Expires: May-21-21 |
| <u>21D2132:</u> | NH3N - WCS (0.1 mg/L)             | Prepared: Apr-21-21 | Expires: Apr-22-21 |
| <u>21D2133:</u> | NH3N - WCS (0.2 mg/L)             | Prepared: Apr-21-21 | Expires: Apr-22-21 |
| <u>21D2134:</u> | NH3N - WCS (0.4 mg/L)             | Prepared: Apr-21-21 | Expires: Apr-22-21 |
| <u>21D2135:</u> | NH3N - WCS (0.8 mg/L)             | Prepared: Apr-21-21 | Expires: Apr-22-21 |
| <u>21D2136:</u> | NH3N - WCS (2.0 mg/L)             | Prepared: Apr-21-21 | Expires: Apr-22-21 |
| <u>21B0403:</u> | NH3N-Sodium Phenolate Sol.        | Prepared: Feb-04-21 | Expires: Feb-04-22 |
| <u>21B0404:</u> | NH3N-5% EDTA Buffer Sol.          | Prepared: Feb-04-21 | Expires: Feb-04-22 |
| <u>21B0405:</u> | NH3N-SodiumNitroprusside          | Prepared: Feb-04-21 | Expires: Feb-04-22 |
| <u>21D2112:</u> | NH3NDistilled-ReceivingSol/BLK    | Prepared: Apr-21-21 | Expires: May-21-21 |
| <u>1D2117:</u>  | NH3N-Sodium Hypochlorite Solution | Prepared: Apr-21-21 | Expires: Apr-22-21 |

| Order | Container | Lab Number | Sample name <u>or</u><br>QC sample designation | Analysis | STD ID | Comments |
|-------|-----------|------------|------------------------------------------------|----------|--------|----------|
|-------|-----------|------------|------------------------------------------------|----------|--------|----------|

## Calibration results

Page 1 / 1

Ammonia\_2 Version number 1.3

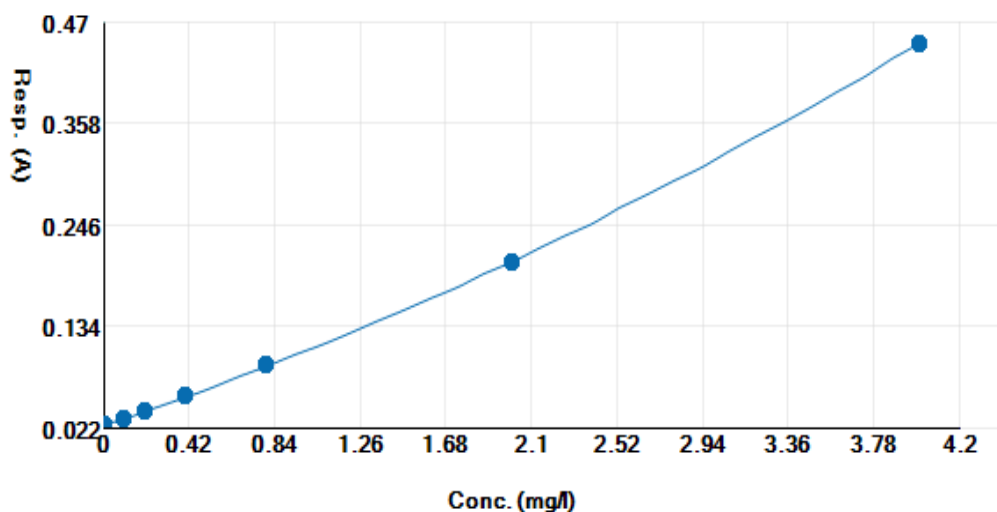
Date 4/21/2021 User NF  
 Time 1:33:09PM Software version: 7.0  
 Analyzer name DA-4

|           |                   |                   |          |
|-----------|-------------------|-------------------|----------|
| Test      | Ammonia_2         | Coeff. of deter.  | 0.999963 |
| Status    | Accepted          | Total factor      | 9.492    |
| Accepted  | 4/21/2021 1:33 PM |                   |          |
| Checked   | 4/21/2021 1:33 PM |                   |          |
| User name | NF                | Zero-order factor | 0.024    |
| Comment   |                   | 1st order factor  | 0.075    |
| Errors    |                   | 2nd order factor  | 0.008    |

| Cal/Ctrl | Response | Calc. conc. | Given conc. | Lot     | Errors |
|----------|----------|-------------|-------------|---------|--------|
| NH3-0    | 0.025    | 0.00193     | 0.00000     | Default |        |
| NH3-4    | 0.031    | 0.08354     | 0.10000     | Default |        |
| NH3-4    | 0.039    | 0.19632     | 0.20000     | Default |        |
| NH3-4    | 0.056    | 0.41064     | 0.40000     | Default |        |
| NH3-4    | 0.091    | 0.81538     | 0.80000     | Default |        |
| NH3-4    | 0.204    | 1.99057     | 2.00000     | Default |        |
| NH3-4    | 0.446    | 4.00138     | 4.00000     | Default |        |
| ICB      | 0.024    | -0.0110     | 0.0000      | Default |        |
| ICV      | 0.340    | 3.1868      | 3.0000      | Default |        |

REVIEWED  
 By NFUENTES at 3:37 pm, May 13, 2021

QC, Outside calibration Pass





## Results by Test

Date 4/21/2021 User NF  
Time 4:28:17PM Software version: 7.0

Test name Ammonia\_2

| Sample/ctrl ID | Test version | Result  | Unit | Note | Dil. 1 + | Status  | Errors                                            |
|----------------|--------------|---------|------|------|----------|---------|---------------------------------------------------|
| ICB            | 1.3          | 0.0104  | mg/l |      | 0.0      | man acc |                                                   |
| ICV            | 1.3          | 3.4429  | mg/l |      | 0.0      | man acc | QC, Rule 1 violated                               |
| B21D027-MRL1   | 1.3          | 0.1810  | mg/l |      | 0.0      | man acc | Data not used because failed CCV                  |
| B21D027-BLK1   | 1.3          | -0.0008 | mg/l |      | 0.0      | man acc | Outside calibration                               |
| B21D027-BS1    | 1.3          | 2.0617  | mg/l |      | 0.0      | man acc |                                                   |
| B21D027-BS2    | 1.3          | 2.1101  | mg/l |      | 0.0      | man acc |                                                   |
| ICB            | 1.3          | -0.0044 | mg/l |      | 0.0      | man acc | Outside calibration                               |
| ICV            | 1.3          | 3.1719  | mg/l |      | 0.0      | man acc | REVIEWED<br>By NFUENTES at 1:55 pm, Apr 22, 2021  |
| ICB            | 1.3          | -0.0122 | mg/l |      | 0.0      | man acc | Outside calibration Pass                          |
| ICV            | 1.3          | 3.2497  | mg/l |      | 0.0      | man acc | REVIEWED<br>By NFUENTES at 12:47 pm, May 13, 2021 |
| B21D027-MRL1   | 1.3          | 0.1833  | mg/l |      | 0.0      | man acc |                                                   |
| B21D027-BLK1   | 1.3          | 0.0006  | mg/l |      | 0.0      | man acc |                                                   |
| B21D027-BS1    | 1.3          | 2.0719  | mg/l |      | 0.0      | man acc |                                                   |
| B21D027-BS2    | 1.3          | 2.1404  | mg/l |      | 0.0      | man acc |                                                   |
| ICB            | 1.3          | -0.0062 | mg/l |      | 0.0      | man acc | Outside calibration Pass                          |
| ICV            | 1.3          | 3.2489  | mg/l |      | 0.0      | man acc | REVIEWED<br>By NFUENTES at 12:40 pm, May 13, 2021 |
| ICB            | 1.3          | -0.0042 | mg/l |      | 0.0      | man acc | Outside calibration Pass                          |
| ICV            | 1.3          | 3.2308  | mg/l |      | 0.0      | man acc | REVIEWED<br>By NFUENTES at 12:40 pm, May 13, 2021 |
| 2103010-01     | 1.3          | - D     | mg/l |      | 0.0      | aut rej | Dil. limit High, Outside calibration              |
| B21D027-DUP1   | 1.3          | - D     | mg/l |      | 0.0      | aut rej | Dil. limit High, Outside calibration              |
| B21D027-MS1    | 1.3          | - D     | mg/l |      | 0.0      | aut rej | Dil. limit High, Outside calibration              |
| 2103010-02     | 1.3          | - D     | mg/l |      | 0.0      | aut rej | Abs. high, Dil. limit High, Test limit High       |
| 2103010-03     | 1.3          | 3.0496  | mg/l |      | 0.0      | man acc |                                                   |
| 2103010-04     | 1.3          | 0.0041  | mg/l |      | 0.0      | man acc |                                                   |
| 2104004-01     | 1.3          | 0.5685  | mg/l |      | 0.0      | man acc | the samples were redistilled for missing MS spike |
| B21D027-DUP2   | 1.3          | -0.0326 | mg/l |      | 0.0      | man acc | Outside calibration Pass                          |
| B21D027-MS2    | 1.3          | -0.0108 | mg/l |      | 0.0      | man acc | Outside calibration Pass                          |
| 2104004-02     | 1.3          | 2.8548  | mg/l |      | 0.0      | man acc |                                                   |
| ICB            | 1.3          | 0.0140  | mg/l |      | 0.0      | man acc | REVIEWED<br>By NFUENTES at 1:56 pm, Apr 22, 2021  |
| ICV            | 1.3          | 3.2272  | mg/l |      | 0.0      | man acc |                                                   |
| 2103010-01     | 1.3          | 8.1130  | mg/l |      | 9.0      | man acc |                                                   |
| ICB            | 1.3          | -0.0071 | mg/l |      | 0.0      | man acc | Outside calibration Pass                          |

| Sample/ctrl ID | Test version | Result  | Unit | Note | Dil. 1 + | Status  | Errors                                                       |
|----------------|--------------|---------|------|------|----------|---------|--------------------------------------------------------------|
| ICV            | 1.3          | 3.2343  | mg/l |      | 0.0      | man acc |                                                              |
| B21D027-DUP1   | 1.3          | 7.7224  | mg/l |      | 9.0      | man acc |                                                              |
| B21D027-MS1    | 1.3          | 10.4219 | mg/l |      | 9.0      | man acc |                                                              |
| 2103010-02     | 1.3          | 26.5512 | mg/l |      | 9.0      | man acc | <div>REVIEWED<br/>By NFENTES at 12:45 pm, May 13, 2021</div> |
| ICB            | 1.3          | -0.0089 | mg/l |      | 0.0      | man acc | <del>Outside calibration</del> Pass                          |
| ICV            | 1.3          | 3.2126  | mg/l |      | 0.0      | man acc |                                                              |
| ICB            | 1.3          | -0.0157 | mg/l |      | 0.0      | man acc | Outside calibration                                          |
| ICV            | 1.3          | 3.2917  | mg/l |      | 0.0      | man acc | <div>REVIEWED<br/>By NFENTES at 3:09 pm, May 13, 2021</div>  |
| 2104004-01     | 1.3          | 0.5639  | mg/l |      | 0.0      | man acc | the samples were redistilled for missing MS spike            |
| B21D027-DUP2   | 1.3          | -0.0358 | mg/l |      | 0.0      | man acc | Outside calibration                                          |
| B21D027-MS2    | 1.3          | -0.0189 | mg/l |      | 0.0      | man acc | Outside calibration                                          |
| 2104004-02     | 1.3          | 2.7846  | mg/l |      | 0.0      | man acc |                                                              |
| ICB            | 1.3          | -0.0052 | mg/l |      | 0.0      | man acc | Outside calibration                                          |
| ICV            | 1.3          | 3.1575  | mg/l |      | 0.0      | man acc |                                                              |
| ICB            | 1.3          | -0.0048 | mg/l |      | 0.0      | man acc | Outside calibration                                          |
| ICV            | 1.3          | 3.2751  | mg/l |      | 0.0      | man acc |                                                              |
| 2104004-01     | 1.3          | 0.5947  | mg/l |      | 0.0      | man acc |                                                              |
| B21D027-DUP2   | 1.3          | -0.0270 | mg/l |      | 0.0      | man acc | Outside calibration                                          |
| B21D027-MS2    | 1.3          | 2.1400  | mg/l |      | 0.0      | man acc |                                                              |
| ICB            | 1.3          | -0.0088 | mg/l |      | 0.0      | man acc | Outside calibration                                          |
| ICV            | 1.3          | 3.2534  | mg/l |      | 0.0      | man acc | <div>REVIEWED<br/>By NFENTES at 1:56 pm, Apr 22, 2021</div>  |

D : diluted by the instrument

Date  
Time

4/21/2021 User NF  
4:29:41 PM Software version: 7.0

| Sample/ctrl ID | Pat/Ctr/cAl | Test name | Test type | Result        | Result unit | Result time     | STAT | Status | Errors     | Notes | Dilution 1 - Manual dil | Response | Blank resp | Main abs. | Blank abs. | Sample type   |
|----------------|-------------|-----------|-----------|---------------|-------------|-----------------|------|--------|------------|-------|-------------------------|----------|------------|-----------|------------|---------------|
| NH3-0          | A           | Ammonia_P |           | 0.00193 mg/l  |             | 4/21/2021 13:17 |      | MA     |            |       | 0                       | 0.02451  | -0.00021   | 0.02429   | -0.00021   |               |
| NH3-4          | A           | Ammonia_P |           | 0.08354 mg/l  |             | 4/21/2021 13:18 |      | MA     |            |       | 39                      | 0.03068  | -0.00011   | 0.03057   | -0.00011   |               |
| NH3-4          | A           | Ammonia_P |           | 0.19632 mg/l  |             | 4/21/2021 13:21 |      | MA     |            |       | 19                      | 0.03938  | -0.00027   | 0.03911   | -0.00027   |               |
| NH3-4          | A           | Ammonia_P |           | 0.41064 mg/l  |             | 4/21/2021 13:22 |      | MA     |            |       | 9                       | 0.05644  | -0.00012   | 0.05633   | -0.00012   |               |
| NH3-4          | A           | Ammonia_P |           | 0.81538 mg/l  |             | 4/21/2021 13:25 |      | MA     |            |       | 4                       | 0.09056  | -0.00033   | 0.09024   | -0.00033   |               |
| NH3-4          | A           | Ammonia_P |           | 1.99057 mg/l  |             | 4/21/2021 13:26 |      | MA     |            |       | 1                       | 0.20373  | -0.00027   | 0.20346   | -0.00027   |               |
| NH3-4          | A           | Ammonia_P |           | 4.00138 mg/l  |             | 4/21/2021 13:27 |      | MA     |            |       | 0                       | 0.44597  | -0.0001    | 0.44587   | -0.0001    |               |
| ICB            | C           | Ammonia_P |           | -0.01097 mg/l |             | 4/21/2021 13:28 |      | MA     | 27,30,     |       | 0                       | 0.02354  | -0.00026   | 0.02327   | -0.00026   |               |
| ICV            | C           | Ammonia_P |           | 3.18679 mg/l  |             | 4/21/2021 13:29 |      | MA     |            |       | 0                       | 0.34044  | -0.00007   | 0.34037   | -0.00007   |               |
| ICB            | C           | Ammonia_P |           | 0.01042 mg/l  |             | 4/21/2021 14:02 |      | MA     |            |       | 0                       | 0.02515  | -0.0003    | 0.02485   | -0.0003    |               |
| ICV            | C           | Ammonia_P |           | 3.44285 mg/l  |             | 4/21/2021 14:03 |      | MA     | 27,        |       | 0                       | 0.37253  | -0.00012   | 0.37241   | -0.00012   |               |
| B21D027-MRL1   | P           | Ammonia_P |           | 0.18099 mg/l  |             | 4/21/2021 14:03 |      | MA     |            |       | 0                       | 0.03819  | -0.00026   | 0.03792   | -0.00026   | Sample type 1 |
| B21D027-BLK1   | P           | Ammonia_P |           | -0.0008 mg/l  |             | 4/21/2021 14:04 |      | MA     | 30,        |       | 0                       | 0.0243   | -0.00009   | 0.02422   | -0.00009   | Sample type 1 |
| B21D027-BS1    | P           | Ammonia_P |           | 2.06165 mg/l  |             | 4/21/2021 14:05 |      | MA     |            |       | 0                       | 0.21125  | -0.0001    | 0.21115   | -0.0001    | Sample type 1 |
| B21D027-BS2    | P           | Ammonia_P |           | 2.11014 mg/l  |             | 4/21/2021 14:06 |      | MA     |            |       | 0                       | 0.21642  | -0.00006   | 0.21636   | -0.00006   | Sample type 1 |
| ICB            | C           | Ammonia_P |           | -0.00444 mg/l |             | 4/21/2021 14:07 |      | MA     | 30,        |       | 0                       | 0.02403  | -0.00031   | 0.02372   | -0.00031   |               |
| ICV            | C           | Ammonia_P |           | 3.17192 mg/l  |             | 4/21/2021 14:08 |      | MA     |            |       | 0                       | 0.33861  | -0.00001   | 0.3386    | -0.00001   |               |
| ICB            | C           | Ammonia_P |           | -0.01223 mg/l |             | 4/21/2021 14:27 |      | MA     | 30,        |       | 0                       | 0.02344  | -0.00006   | 0.02338   | -0.00006   |               |
| ICV            | C           | Ammonia_P |           | 3.24973 mg/l  |             | 4/21/2021 14:28 |      | MA     |            |       | 0                       | 0.34824  | 0.00008    | 0.34831   | 0.00008    |               |
| B21D027-MRL1   | P           | Ammonia_P |           | 0.1833 mg/l   |             | 4/21/2021 14:29 |      | MA     |            |       | 0                       | 0.03837  | -0.00008   | 0.03829   | -0.00008   | Sample type 1 |
| B21D027-BLK1   | P           | Ammonia_P |           | 0.00059 mg/l  |             | 4/21/2021 14:30 |      | MA     |            |       | 0                       | 0.02441  | -0.00003   | 0.02438   | -0.00003   | Sample type 1 |
| B21D027-BS1    | P           | Ammonia_P |           | 2.07191 mg/l  |             | 4/21/2021 14:30 |      | MA     |            |       | 0                       | 0.21234  | -0.00007   | 0.21227   | -0.00007   | Sample type 1 |
| B21D027-BS2    | P           | Ammonia_P |           | 2.14037 mg/l  |             | 4/21/2021 14:32 |      | MA     |            |       | 0                       | 0.21966  | -0.00031   | 0.21935   | -0.00031   | Sample type 1 |
| ICB            | C           | Ammonia_P |           | -0.00623 mg/l |             | 4/21/2021 14:33 |      | MA     | 30,        |       | 0                       | 0.02389  | -0.00009   | 0.0238    | -0.00009   |               |
| ICV            | C           | Ammonia_P |           | 3.24891 mg/l  |             | 4/21/2021 14:33 |      | MA     |            |       | 0                       | 0.34814  | -0.00016   | 0.34797   | -0.00016   |               |
| ICB            | C           | Ammonia_P |           | -0.00425 mg/l |             | 4/21/2021 14:52 |      | MA     | 30,        |       | 0                       | 0.02404  | -0.00015   | 0.02389   | -0.00015   |               |
| ICV            | C           | Ammonia_P |           | 3.23077 mg/l  |             | 4/21/2021 14:52 |      | MA     |            |       | 0                       | 0.34588  | -0.00022   | 0.34566   | -0.00022   |               |
| 2103010-01     | P           | Ammonia_P |           | 9.47375 mg/l  |             | 4/21/2021 14:53 |      | AR     | 19,30,     | R     | 0                       | 1.18695  | -0.00024   | 1.18672   | -0.00024   | Sample type 1 |
| B21D027-DUP1   | P           | Ammonia_P |           | 9.02109 mg/l  |             | 4/21/2021 14:54 |      | AR     | 19,30,     | R     | 0                       | 1.12566  | -0.00014   | 1.12552   | -0.00014   | Sample type 1 |
| B21D027-MS1    | P           | Ammonia_P |           | 12.40232 mg/l |             | 4/21/2021 14:55 |      | AR     | 19,30,     | R     | 0                       | 1.5835   | -0.00002   | 1.58348   | -0.00002   | Sample type 1 |
| 2103010-02     | P           | Ammonia_P |           | 70.53754 mg/l |             | 4/21/2021 14:56 |      | AR     | 3,19,21,30 | R     | 0                       | 9.45526  | 0.00011    | 9.45536   | 0.00011    | Sample type 1 |
| 2103010-03     | P           | Ammonia_P |           | 3.0496 mg/l   |             | 4/21/2021 14:57 |      | MA     |            |       | 0                       | 0.32366  | -0.00014   | 0.32352   | -0.00014   | Sample type 1 |
| 2103010-04     | P           | Ammonia_P |           | 0.00412 mg/l  |             | 4/21/2021 14:58 |      | MA     |            |       | 0                       | 0.02467  | -0.00002   | 0.02465   | -0.00002   | Sample type 1 |
| 2104004-01     | P           | Ammonia_P |           | 0.56849 mg/l  |             | 4/21/2021 14:59 |      | MA     |            |       | 0                       | 0.06945  | -0.00017   | 0.06929   | -0.00017   | Sample type 1 |
| B21D027-DUP2   | P           | Ammonia_P |           | -0.03264 mg/l |             | 4/21/2021 15:00 |      | MA     | 30,        |       | 0                       | 0.02191  | -0.00007   | 0.02184   | -0.00007   | Sample type 1 |
| B21D027-MS2    | P           | Ammonia_P |           | -0.01084 mg/l |             | 4/21/2021 15:01 |      | MA     | 30,        |       | 0                       | 0.02355  | -0.00008   | 0.02347   | -0.00008   | Sample type 1 |
| 2104004-02     | P           | Ammonia_P |           | 2.85484 mg/l  |             | 4/21/2021 15:02 |      | MA     |            |       | 0                       | 0.30033  | -0.00007   | 0.30026   | -0.00007   | Sample type 1 |
| ICB            | C           | Ammonia_P |           | 0.01402 mg/l  |             | 4/21/2021 15:03 |      | MA     |            |       | 0                       | 0.02542  | -0.00026   | 0.02516   | -0.00026   |               |
| ICV            | C           | Ammonia_P |           | 3.22719 mg/l  |             | 4/21/2021 15:04 |      | MA     |            |       | 0                       | 0.34544  | -0.00011   | 0.34533   | -0.00011   |               |
| 2103010-01     | P           | Ammonia_P |           | 8.11304 mg/l  |             | 4/21/2021 15:07 |      | MA     |            | R     | 9                       | 0.09021  | -0.00018   | 0.09003   | -0.00018   | Sample type 1 |
| ICB            | C           | Ammonia_P |           | -0.00707 mg/l |             | 4/21/2021 15:08 |      | MA     | 30,        |       | 0                       | 0.02383  | -0.00014   | 0.0237    | -0.00014   |               |
| ICV            | C           | Ammonia_P |           | 3.2343 mg/l   |             | 4/21/2021 15:09 |      | MA     |            |       | 0                       | 0.34632  | 0.00004    | 0.34636   | 0.00004    |               |
| B21D027-DUP1   | P           | Ammonia_P |           | 7.72236 mg/l  |             | 4/21/2021 15:11 |      | MA     |            | R     | 9                       | 0.08681  | -0.00001   | 0.08679   | -0.00001   | Sample type 1 |
| B21D027-MS1    | P           | Ammonia_P |           | 10.42187 mg/l |             | 4/21/2021 15:13 |      | MA     |            | R     | 9                       | 0.11077  | -0.0001    | 0.11068   | -0.0001    | Sample type 1 |
| 2103010-02     | P           | Ammonia_P |           | 26.55124 mg/l |             | 4/21/2021 15:14 |      | MA     |            | R     | 9                       | 0.277    | -0.00024   | 0.27675   | -0.00024   | Sample type 1 |
| ICB            | C           | Ammonia_P |           | -0.00891 mg/l |             | 4/21/2021 15:15 |      | MA     | 30,        |       | 0                       | 0.02369  | -0.00012   | 0.02357   | -0.00012   |               |
| ICV            | C           | Ammonia_P |           | 3.2126 mg/l   |             | 4/21/2021 15:16 |      | MA     |            |       | 0                       | 0.34363  | -0.00005   | 0.34358   | -0.00005   |               |



|              |   |           |               |                 |    |     |   |         |          |         |                        |
|--------------|---|-----------|---------------|-----------------|----|-----|---|---------|----------|---------|------------------------|
| ICB          | C | Ammonia_P | -0.01573 mg/l | 4/21/2021 15:42 | MA | 30, | 0 | 0.02318 | 0.00003  | 0.02321 | 0.00003                |
| ICV          | C | Ammonia_P | 3.29172 mg/l  | 4/21/2021 15:43 | MA |     | 0 | 0.35347 | -0.00006 | 0.35341 | -0.00006               |
| 2104004-01   | P | Ammonia_P | 0.56385 mg/l  | 4/21/2021 15:44 | MA |     | 0 | 0.06907 | -0.00003 | 0.06903 | -0.00003 Sample type 1 |
| B21D027-DUP2 | P | Ammonia_P | -0.03584 mg/l | 4/21/2021 15:45 | MA | 30, | 0 | 0.02166 | 0.00013  | 0.0218  | 0.00013 Sample type 1  |
| B21D027-MS2  | P | Ammonia_P | -0.01889 mg/l | 4/21/2021 15:46 | MA | 30, | 0 | 0.02294 | 0.00003  | 0.02297 | 0.00003 Sample type 1  |
| 2104004-02   | P | Ammonia_P | 2.78465 mg/l  | 4/21/2021 15:47 | MA |     | 0 | 0.29206 | -0.00015 | 0.2919  | -0.00015 Sample type 1 |
| ICB          | C | Ammonia_P | -0.00517 mg/l | 4/21/2021 15:48 | MA | 30, | 0 | 0.02397 | -0.0003  | 0.02367 | -0.0003                |
| ICV          | C | Ammonia_P | 3.15747 mg/l  | 4/21/2021 15:49 | MA |     | 0 | 0.33683 | 0.00005  | 0.33688 | 0.00005                |
| ICB          | C | Ammonia_P | -0.00477 mg/l | 4/21/2021 16:22 | MA | 30, | 0 | 0.024   | -0.00003 | 0.02397 | -0.00003               |
| ICV          | C | Ammonia_P | 3.27512 mg/l  | 4/21/2021 16:22 | MA |     | 0 | 0.3514  | 0.00001  | 0.35141 | 0.00001                |
| 2104004-01   | P | Ammonia_P | 0.59466 mg/l  | 4/21/2021 16:23 | MA |     | 0 | 0.07165 | -0.00002 | 0.07163 | -0.00002 Sample type 1 |
| B21D027-DUP2 | P | Ammonia_P | -0.02701 mg/l | 4/21/2021 16:24 | MA | 30, | 0 | 0.02233 | 0.00007  | 0.0224  | 0.00007 Sample type 1  |
| B21D027-MS2  | P | Ammonia_P | 2.13996 mg/l  | 4/21/2021 16:25 | MA |     | 0 | 0.21962 | 0.00001  | 0.21963 | 0.00001 Sample type 1  |
| ICB          | C | Ammonia_P | -0.00883 mg/l | 4/21/2021 16:26 | MA | 30, | 0 | 0.0237  | 0.00001  | 0.02371 | 0.00001                |
| ICV          | C | Ammonia_P | 3.25337 mg/l  | 4/21/2021 16:27 | MA |     | 0 | 0.34869 | -0.00004 | 0.34865 | -0.00004               |



A Waters Company

LIMS 19K1224

Table of Contents  
and LIMS 19K1223

# Certificate of Analysis

**PRODUCT:** 1000 mg/L Ammonia as N ( $\text{NH}_3\text{-N}$ )  
**CATALOG NUMBER:** 045 - 125 mL; 985 - 500 mL  
**LOT NUMBER:** 010519m  
**ISSUE DATE:** May 22, 2019  
**REVISION DATE:** Original  
  
**STARTING MATERIAL:** Ammonium Chloride ( $\text{NH}_4\text{Cl}$ )  
**CERTIFIED CONCENTRATION<sup>1</sup>:** 1000 mg/L  
**UNCERTAINTY<sup>2</sup>:** 1.2%  
**MATRIX:** 18 megohm deionized water  
**DENSITY:**  $1.0000 \pm 0.0016$  g/mL at 19.2°C and 753 mm Hg  
  
**TRACEABILITY<sup>3</sup>:** 101%  
**NIST/SRM:** 194a Ammonium Dihydrogen Phosphate  
**VERIFICATION METHOD:** Ion Selective Electrode (ISE)  
**STORAGE:** Store at 20-25°C

1. The **Certified Concentration** is the actual made-to concentration confirmed by ERA analytical verification.
2. The stated **Uncertainty** is the total propagated uncertainty at the 95% confidence interval. The uncertainty is based on the preparation of the product and includes uncertainty related to the starting material used and the volumetric and gravimetric measurements made. The method of calculating uncertainty is taken from the ISO Guide to the Expression of Uncertainty in Measurement (current version). The uncertainty applies to the product as supplied and does not take into account any required or optional dilutions and/or preparations the laboratory may perform while using this product.
3. Traceability  $((\% \text{ Recovery Certified Standard})/(\% \text{ Recovery NIST SRM})) \times 100$ .

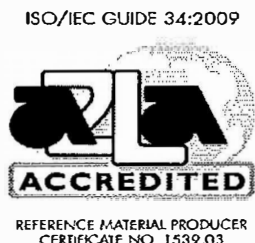
The traceability data shown were compiled by analyzing the ERA standards or their associated stock solutions against the applicable NIST SRMs. Where a NIST SRM is not available, the product is metrologically traceable through an unbroken chain of calibrations to NIST weights, each having stated uncertainties and utilizing measurement standards that are appropriate for the physical and/or chemical property being measured.

This standard **expires 5/6/2021**. The certified values are monitored and purchasers will be notified of any significant changes resulting in recertification or withdrawal of this certified reference material during the period of validity of this certificate.

This product is intended to be used as either a calibration standard or a quality control check of the entire analytical process for the analytes/matrix included in the standard.

If you have any questions or need technical assistance, please call ERA technical assistance at 1-800-372-0122 or email to [info@eraqc.com](mailto:info@eraqc.com)

Certifying Officer: Brian Miller - Product Line Manager



**REVIEWED**  
By AK at 10:38 am, Mar 02, 2021



## Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605  
Phone: (312) 353-8370 Fax: (312) 886-2591

### Analytical Standard Record

US EPA Region 5 LSASD Analytical Services Branch

21D2113

|                            |                                        |                     |                       |
|----------------------------|----------------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>NH<sub>3</sub>N-WCS (4.00 mg/L)</u> | <b>Expires:</b>     | May-21-21             |
| <b>Standard Type:</b>      | Other Solution                         | <b>Prepared:</b>    | Apr-21-21             |
| <b>Solvent:</b>            | reagent water                          | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Final Volume (mls):</b> | 50                                     | <b>Department:</b>  | A&I                   |
| <b>Vials:</b>              | 1                                      | <b>Last Edit:</b>   | Apr-21-21 09:06 by NF |
| <b>Vendor:</b>             | Absolute Grade                         |                     |                       |
| <b>Lot Number:</b>         | 102819                                 |                     |                       |

| Analyte                 | CAS Number | Concentration (ppm) |
|-------------------------|------------|---------------------|
| Ammonia as N            | NA         | 4                   |
| Total Kjeldahl Nitrogen | NA         | 4                   |

| Parent Standards used in this standard: |                                       |           |               |           |                       |       |
|-----------------------------------------|---------------------------------------|-----------|---------------|-----------|-----------------------|-------|
| Standard                                | Description                           | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
| 19K1901                                 | NH <sub>3</sub> N/TKN-SCS (1000 mg/L) | Nov-19-19 | ** Vendor **  | Oct-28-21 | Aug-27-20 10:20 by NF | 0.2   |
| 21B2306                                 | Pipette (Electronic) -- 50 -1,000 uL  | Feb-15-21 | Nidia Fuentes | Aug-31-21 | Apr-05-21 09:19 by AK | 0.2   |
| 20B0607                                 | Sulfuric Acid 9673-33                 | Feb-06-20 | ** Vendor **  | Jul-11-21 | Mar-02-20 14:42 by CB | 0.05  |

**REVIEWED**

*By AK at 1:57 pm, May 06, 2021*





Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605  
 Phone:(312)353-8370 Fax:(312)886-2591

**Analytical Standard Record**

**US EPA Region 5 LSASD Analytical Services Branch**

**21D2114**

|                            |                                     |                     |                       |
|----------------------------|-------------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>NH<sub>3</sub>N-WcS (3 mg/L)</u> | <b>Expires:</b>     | May-21-21             |
| <b>Standard Type:</b>      | Other Solution                      | <b>Prepared:</b>    | Apr-21-21             |
| <b>Solvent:</b>            | reagent water                       | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Final Volume (mls):</b> | 50                                  | <b>Department:</b>  | A&I                   |
| <b>Vials:</b>              | 1                                   | <b>Last Edit:</b>   | Apr-21-21 09:06 by NF |
| <b>Vendor:</b>             | ERA                                 |                     |                       |
| <b>Lot Number:</b>         | 010519m                             |                     |                       |

| Analyte      | CAS Number | Concentration (ppm) |
|--------------|------------|---------------------|
| Ammonia as N | NA         | 3                   |

**Parent Standards used in this standard:**

| Standard | Description                            | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
|----------|----------------------------------------|-----------|---------------|-----------|-----------------------|-------|
| 19K1223  | NH <sub>3</sub> N-StockControlStandard | Nov-12-19 | Nidia Fuentes | May-06-21 | Nov-12-19 13:58 by NF | 0.15  |
| 21B2306  | Pipette (Electronic) -- 50 -1,000 uL   | Feb-15-21 | Nidia Fuentes | Aug-31-21 | Apr-05-21 09:19 by AK | 0.15  |
| 20B0607  | Sulfuric Acid 9673-33                  | Feb-06-20 | ** Vendor **  | Jul-11-21 | Mar-02-20 14:42 by CB | 0.05  |

**REVIEWED**

**By AK at 10:36 am, May 07, 2021**



## Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605  
Phone: (312) 353-8370 Fax: (312) 886-2591

### Analytical Standard Record US EPA Region 5 LSASD Analytical Services Branch 21D2115

|                            |                                        |                     |                       |
|----------------------------|----------------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>NH<sub>3</sub>N-WCS (0.00 mg/L)</u> | <b>Expires:</b>     | May-21-21             |
| <b>Standard Type:</b>      | Other Solution                         | <b>Prepared:</b>    | Apr-21-21             |
| <b>Solvent:</b>            | reagent water                          | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Final Volume (mls):</b> | 1000                                   | <b>Department:</b>  | A&I                   |
| <b>Vials:</b>              | 1                                      | <b>Last Edit:</b>   | Apr-22-21 15:23 by NF |
| <b>Vendor:</b>             | see standards list                     |                     |                       |
| <b>Lot Number:</b>         | see standards list                     |                     |                       |

Same as 21D2112

**REVIEWED**  
**By AK at 1:14 pm, May 10, 2021**

| Analyte                 | CAS Number | Concentration (ppm) |
|-------------------------|------------|---------------------|
| Ammonia as N            | NA         | 0                   |
| Total Kjeldahl Nitrogen | NA         | 0                   |

| Parent Standards used in this standard: |                                       |           |               |           |                       |       |
|-----------------------------------------|---------------------------------------|-----------|---------------|-----------|-----------------------|-------|
| Standard                                | Description                           | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
| 19K1901                                 | NH <sub>3</sub> N/TKN-SCS (1000 mg/L) | Nov-19-19 | ** Vendor **  | Oct-28-21 | Aug-27-20 10:20 by NF | 0     |
| 21B2306                                 | Pipette (Electronic) -- 50 -1,000 uL  | Feb-15-21 | Nidia Fuentes | Aug-31-21 | Apr-05-21 09:19 by AK | 1     |
| 20B0607                                 | Sulfuric Acid 9673-33                 | Feb-06-20 | ** Vendor **  | Jul-11-21 | Mar-02-20 14:42 by CB | 1     |



Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605  
 Phone:(312)353-8370 Fax:(312)886-2591

**Analytical Standard Record**  
**US EPA Region 5 LSASD Analytical Services Branch**  
**21D2116**

|                            |                       |                     |                       |
|----------------------------|-----------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>NH3N-MRL Spike</u> | <b>Expires:</b>     | May-21-21             |
| <b>Standard Type:</b>      | Analyte Spike         | <b>Prepared:</b>    | Apr-21-21             |
| <b>Solvent:</b>            | reagent water         | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Final Volume (mls):</b> | 50                    | <b>Department:</b>  | A&I                   |
| <b>Vials:</b>              | 1                     | <b>Last Edit:</b>   | Apr-21-21 09:08 by NF |
| <b>Vendor:</b>             | Absolute Grade        |                     |                       |
| <b>Lot Number:</b>         | 102819                |                     |                       |

Same as WCS - 21D2113

**REVIEWED**  
*By AK at 1:58 pm, May 06, 2021*

| Analyte                 | CAS Number | Concentration (ppm) |
|-------------------------|------------|---------------------|
| Ammonia as N            | NA         | 4                   |
| Total Kjeldahl Nitrogen | NA         | 4                   |

| Parent Standards used in this standard: |                                      |           |               |           |                       |       |
|-----------------------------------------|--------------------------------------|-----------|---------------|-----------|-----------------------|-------|
| Standard                                | Description                          | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
| 19K1901                                 | NH3N/TKN-SCS (1000 mg/L)             | Nov-19-19 | ** Vendor **  | Oct-28-21 | Aug-27-20 10:20 by NF | 0.2   |
| 21B2306                                 | Pipette (Electronic) -- 50 -1,000 uL | Feb-15-21 | Nidia Fuentes | Aug-31-21 | Apr-05-21 09:19 by AK | 0.2   |
| 20B0607                                 | Sulfuric Acid 9673-33                | Feb-06-20 | ** Vendor **  | Jul-11-21 | Mar-02-20 14:42 by CB | 0.05  |





Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605  
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**Analytical Standard Record**

**US EPA Region 5 LSASD Analytical Services Branch**

**21D2132**

|                            |                              |                     |                       |
|----------------------------|------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>NH3N - WCS (0.1 mg/L)</u> | <b>Expires:</b>     | Apr-22-21             |
| <b>Standard Type:</b>      | Other Solution               | <b>Prepared:</b>    | Apr-21-21             |
| <b>Solvent:</b>            | BLANK:21D2115                | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Final Volume (mls):</b> | 2                            | <b>Department:</b>  | A&I                   |
| <b>Vials:</b>              | 1                            | <b>Last Edit:</b>   | Apr-22-21 15:13 by NF |
| <b>Vendor:</b>             | Absolute Grade               |                     |                       |
| <b>Lot Number:</b>         | 102819                       |                     |                       |

Prepared by instrument DA-4

**REVIEWED**  
*By AK at 12:31 pm, May 12, 2021*

| Analyte                 | CAS Number | Concentration (ppm) |
|-------------------------|------------|---------------------|
| Ammonia as N            | NA         | 0.1                 |
| Total Kjeldahl Nitrogen | NA         | 0.1                 |

| Parent Standards used in this standard: |                      |           |               |           |                       |       |
|-----------------------------------------|----------------------|-----------|---------------|-----------|-----------------------|-------|
| Standard                                | Description          | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
| 21D2113                                 | NH3N-WCS (4.00 mg/L) | Apr-21-21 | Nidia Fuentes | May-21-21 | Apr-21-21 09:06 by NF | 0.05  |



## Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605  
Phone: (312) 353-8370 Fax: (312) 886-2591

### Analytical Standard Record

US EPA Region 5 LSASD Analytical Services Branch

21D2133

|                            |                                         |                     |                       |
|----------------------------|-----------------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>NH<sub>3</sub>N - WCS (0.2 mg/L)</u> | <b>Expires:</b>     | Apr-22-21             |
| <b>Standard Type:</b>      | Other Solution                          | <b>Prepared:</b>    | Apr-21-21             |
| <b>Solvent:</b>            | BLANK: 21D2115                          | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Final Volume (mls):</b> | 2                                       | <b>Department:</b>  | A&I                   |
| <b>Vials:</b>              | 1                                       | <b>Last Edit:</b>   | Apr-22-21 15:14 by NF |
| <b>Vendor:</b>             | Absolute Grade                          |                     |                       |
| <b>Lot Number:</b>         | 102819                                  |                     |                       |

Prepared by instrument DA-4

**REVIEWED**  
**By AK at 12:31 pm, May 12, 2021**

| Analyte                 | CAS Number | Concentration (ppm) |
|-------------------------|------------|---------------------|
| Ammonia as N            | NA         | 0.2                 |
| Total Kjeldahl Nitrogen | NA         | 0.2                 |

| Parent Standards used in this standard: |                                   |           |               |           |                       |       |
|-----------------------------------------|-----------------------------------|-----------|---------------|-----------|-----------------------|-------|
| Standard                                | Description                       | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
| 21D2113                                 | NH <sub>3</sub> N-WCS (4.00 mg/L) | Apr-21-21 | Nidia Fuentes | May-21-21 | Apr-21-21 09:06 by NF | 0.1   |



Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

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**Analytical Standard Record**

**US EPA Region 5 LSASD Analytical Services Branch**

**21D2134**

|                            |                                         |                     |                       |
|----------------------------|-----------------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>NH<sub>3</sub>N - WCS (0.4 mg/L)</u> | <b>Expires:</b>     | Apr-22-21             |
| <b>Standard Type:</b>      | Other Solution                          | <b>Prepared:</b>    | Apr-21-21             |
| <b>Solvent:</b>            | BLANK: 21D2115                          | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Final Volume (mls):</b> | 2                                       | <b>Department:</b>  | A&I                   |
| <b>Vials:</b>              | 1                                       | <b>Last Edit:</b>   | May-13-21 15:31 by NF |
| <b>Vendor:</b>             | Absolute Grade                          |                     |                       |
| <b>Lot Number:</b>         | 102819                                  |                     |                       |

Prepared by instrument DA-4

**REVIEWED**

**By AK at 9:12 am, May 14, 2021**

| Analyte                 | CAS Number | Concentration (ppm) |
|-------------------------|------------|---------------------|
| Ammonia as N            | NA         | 0.4                 |
| Total Kjeldahl Nitrogen | NA         | 0.4                 |

| Parent Standards used in this standard: |                                   |           |               |           |                       |       |
|-----------------------------------------|-----------------------------------|-----------|---------------|-----------|-----------------------|-------|
| Standard                                | Description                       | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
| 21D2113                                 | NH <sub>3</sub> N-WCS (4.00 mg/L) | Apr-21-21 | Nidia Fuentes | May-21-21 | Apr-21-21 09:06 by NF | 0.2   |





Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605  
 Phone:(312)353-8370 Fax:(312)886-2591

**Analytical Standard Record**

**US EPA Region 5 LSASD Analytical Services Branch**

**21D2135**

**Description:** NH<sub>3</sub>N - WCS (0.8 mg/L)  
**Standard Type:** Other Solution  
**Solvent:** BLANK: 21D2115  
**Final Volume (mls):** 2  
**Vials:** 1  
**Vendor:** Absolute Grade  
**Lot Number:** 102819

**Expires:** Apr-22-21  
**Prepared:** Apr-21-21  
**Prepared By:** Nidia Fuentes  
**Department:** A&I  
**Last Edit:** Apr-22-21 15:16 by NF

Prepared by instrument DA-4

**REVIEWED**  
**By AK at 12:33 pm, May 12, 2021**

| Analyte                 | CAS Number | Concentration (ppm) |
|-------------------------|------------|---------------------|
| Ammonia as N            | NA         | 0.8                 |
| Total Kjeldahl Nitrogen | NA         | 0.8                 |

| Parent Standards used in this standard: |                                   |           |               |           |                       |       |
|-----------------------------------------|-----------------------------------|-----------|---------------|-----------|-----------------------|-------|
| Standard                                | Description                       | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
| 21D2113                                 | NH <sub>3</sub> N-WCS (4.00 mg/L) | Apr-21-21 | Nidia Fuentes | May-21-21 | Apr-21-21 09:06 by NF | 0.4   |



## Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605  
Phone: (312) 353-8370 Fax: (312) 886-2591

### Analytical Standard Record

US EPA Region 5 LSASD Analytical Services Branch

21D2136

|                            |                                         |                     |                       |
|----------------------------|-----------------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>NH<sub>3</sub>N - WCS (2.0 mg/L)</u> | <b>Expires:</b>     | Apr-22-21             |
| <b>Standard Type:</b>      | Other Solution                          | <b>Prepared:</b>    | Apr-21-21             |
| <b>Solvent:</b>            | Blank LIMS#: 21D2115                    | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Final Volume (mls):</b> | 2                                       | <b>Department:</b>  | A&I                   |
| <b>Vials:</b>              | 1                                       | <b>Last Edit:</b>   | Apr-22-21 15:17 by NF |
| <b>Vendor:</b>             | Absolute Grade                          |                     |                       |
| <b>Lot Number:</b>         | 102819                                  |                     |                       |

Prepared by instrument DA-4

**REVIEWED**

**By AK at 12:34 pm, May 12, 2021**

| Analyte                 | CAS Number | Concentration (ppm) |
|-------------------------|------------|---------------------|
| Ammonia as N            | NA         | 2                   |
| Total Kjeldahl Nitrogen | NA         | 2                   |

#### Parent Standards used in this standard:

| Standard | Description                       | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
|----------|-----------------------------------|-----------|---------------|-----------|-----------------------|-------|
| 21D2113  | NH <sub>3</sub> N-WCS (4.00 mg/L) | Apr-21-21 | Nidia Fuentes | May-21-21 | Apr-21-21 09:06 by NF | 1     |

# ANALYSIS REAGENTS/STANDARDS

21B0403





Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

Print Date:

2/4/2021

536 South Clark Street, Chicago, IL 60605  
 Phone: (312) 353-8370 Fax: (312) 886-2591

**Reagent Preparation Bench Sheet**Parameter / SOP #: Ammonia \ SOP AIG029B ver #7 #8Prepared by: Nidia FuentesReagent: NH3N-Sodium Phenolate Sol.

**REVIEWED**  
 By NFENTES at 8:51 am, Mar 03, 2021

Preparation Date: Feb-04-21LIMS ID: 21B0403Expiration Date: Feb-04-22

| Chemical Name (Formula) | LIMS ID | Mass or Volume<br>(specify units) |
|-------------------------|---------|-----------------------------------|
| Phenol (C6H6O)          | 19I0601 | 8.3275 g                          |
| Sodium Hydroxide (NaOH) | 20C1103 | 3.2465 g                          |
|                         |         |                                   |
|                         |         |                                   |
|                         |         |                                   |

Total Volume : 100 mL

Comments :

Balance #17

**REVIEWED**

By AK at 8:44 am, Mar 04, 2021

Analyst Signature:

# Balance Check

BALANCE ID: #17

DATE: 2/4/2021

ANALYST: Nidia Fuentes

WEIGHT SET ID: TROEMNER S/N: 4000020557

WGT SET # CONFIRMED: YES

WEIGHT SET 2 ID: \_\_\_\_\_

WGT SET # CONFIRMED: \_\_\_\_\_

INITIAL & DATE: 7/7 2/4/2021

\*NOTE: Confirm # of weights in weight set before and after use above. # of weights in weight sets are listed at bottom of page. Create IR if find that weights are missing. Note any weights that are missing in the comments field below and contact QAO to remove weight(s) from Qualtrax records.

| Analytical Balance Tolerance Limits |                   |          |          |
|-------------------------------------|-------------------|----------|----------|
| Standard Weight (g)                 | Actual Weight (g) | LCL (g)  | UCL (g)  |
| 0.0100                              | 0.0100            | 0.0099   | 0.0101   |
| 0.0200                              |                   | 0.0199   | 0.0201   |
| 0.0200*                             |                   | 0.0199   | 0.0201   |
| 0.0500                              | 0.0500            | 0.0499   | 0.0501   |
| 0.1000                              |                   | 0.0999   | 0.1001   |
| 0.2000                              |                   | 0.1999   | 0.2001   |
| 0.2000*                             |                   | 0.1999   | 0.2001   |
| 0.5000                              |                   | 0.4999   | 0.5001   |
| 1.0000                              | 0.9999            | 0.9999   | 1.0001   |
| 2.0000                              |                   | 1.9999   | 2.0001   |
| 2.0000*                             |                   | 1.9999   | 2.0001   |
| 5.0000                              | 5.0000            | 4.9999   | 5.0001   |
| 10.0000                             | 10.0000           | 9.9999   | 10.0001  |
| 20.0000                             | 20.0000           | 19.9999  | 20.0001  |
| 20.0000*                            |                   | 19.9999  | 20.0001  |
| 50.0000                             | 50.0000           | 49.9999  | 50.0001  |
| 100.0000                            | 100.0000          | 99.9997  | 100.0003 |
| 200.0000                            |                   | 199.9995 | 200.0005 |

| Top-Loading Balance Tolerance Limits |                   |         |         |
|--------------------------------------|-------------------|---------|---------|
| Standard Weight (g)                  | Actual Weight (g) | LCL (g) | UCL (g) |
| 0.01                                 |                   | 0.00    | 0.02    |
| 0.02                                 |                   | 0.01    | 0.03    |
| 0.02*                                |                   | 0.01    | 0.03    |
| 0.05                                 |                   | 0.04    | 0.06    |
| 0.10                                 |                   | 0.09    | 0.11    |
| 0.20                                 |                   | 0.19    | 0.21    |
| 0.20*                                |                   | 0.19    | 0.21    |
| 0.50                                 |                   | 0.49    | 0.51    |
| 1.00                                 |                   | 0.99    | 1.01    |
| 2.00                                 |                   | 1.99    | 2.01    |
| 2.00*                                |                   | 1.99    | 2.01    |
| 5.00                                 |                   | 4.99    | 5.01    |
| 10.00                                |                   | 9.99    | 10.01   |
| 20.00                                |                   | 19.99   | 20.01   |
| 20.00*                               |                   | 19.99   | 20.01   |
| 50.00                                |                   | 49.99   | 50.01   |
| 100.00                               |                   | 99.99   | 100.01  |
| 200.00                               |                   | 199.99  | 200.01  |
| 300.00                               |                   | 299.99  | 300.01  |
| 500.00                               |                   | 499.99  | 500.01  |
| 1000.00                              |                   | 999.99  | 1000.01 |

**Weight Sets:**

TROEMNER S/N: 4000017548: 21 weights

TROEMNER S/N: 4000020557: 16 weights

Denver Inst Co S/N: 01-25360-3: 1 weight

TROEMNER S/N: 06679: 5 weights

TROEMNER S/N: 400026116: 22 weights

COMMENTS:

# ANALYSIS REAGENTS/STANDARDS

21B0404





Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

Print Date:

2/4/2021

536 South Clark Street, Chicago, IL 60605  
 Phone: (312) 353-8370 Fax: (312) 886-2591

**Reagent Preparation Bench Sheet**Parameter / SOP #: NH3N (Distilled)/AIG029B v7 8Prepared by: Nidia FuentesReagent: NH3N-5% EDTA Buffer Sol.

**REVIEWED**  
 By NFUENTES at 8:54 am, Mar 03, 2021

Preparation Date: Feb-04-21LIMS ID: 21B0404Expiration Date: Feb-04-22

| Chemical Name (Formula)                 | LIMS ID                                                 | Mass or Volume (specify units) |
|-----------------------------------------|---------------------------------------------------------|--------------------------------|
| Disodium dihydrogen EDTA (Na2EDTA.2H2O) | 19J0107                                                 | 5.5033 g                       |
| Sodium hydroxide (NaOH)                 | <del>17K0806</del><br>20C1103                           | 0.5535 g                       |
|                                         | <b>REVIEWED</b><br>By NFUENTES at 8:55 am, Mar 03, 2021 |                                |
|                                         |                                                         |                                |
|                                         |                                                         |                                |

Total Volume : 100 mL

Comments :

Balance #17

**REVIEWED**

By AK at 8:49 am, Mar 04, 2021

Analyst Signature:

# Balance Check

BALANCE ID: #17

DATE: 2/4/2021

ANALYST: Nidia Fuentes

WEIGHT SET ID: TROEMNER S/N: 4000020557

WGT SET # CONFIRMED: YES

WEIGHT SET 2 ID: \_\_\_\_\_

WGT SET # CONFIRMED: \_\_\_\_\_

INITIAL & DATE: NF 2/4/2021

\*NOTE: Confirm # of weights in weight set before and after use above. # of weights in weight sets are listed at bottom of page. Create IR if find that weights are missing. Note any weights that are missing in the comments field below and contact QAO to remove weight(s) from Qualtrax records.

| Analytical Balance Tolerance Limits |                   |          |          |
|-------------------------------------|-------------------|----------|----------|
| Standard Weight (g)                 | Actual Weight (g) | LCL (g)  | UCL (g)  |
| 0.0100                              | 0.0100            | 0.0099   | 0.0101   |
| 0.0200                              |                   | 0.0199   | 0.0201   |
| 0.0200*                             |                   | 0.0199   | 0.0201   |
| 0.0500                              | 0.0500            | 0.0499   | 0.0501   |
| 0.1000                              |                   | 0.0999   | 0.1001   |
| 0.2000                              |                   | 0.1999   | 0.2001   |
| 0.2000*                             |                   | 0.1999   | 0.2001   |
| 0.5000                              |                   | 0.4999   | 0.5001   |
| 1.0000                              | 0.9999            | 0.9999   | 1.0001   |
| 2.0000                              |                   | 1.9999   | 2.0001   |
| 2.0000*                             |                   | 1.9999   | 2.0001   |
| 5.0000                              | 5.0000            | 4.9999   | 5.0001   |
| 10.0000                             | 10.0000           | 9.9999   | 10.0001  |
| 20.0000                             | 20.0000           | 19.9999  | 20.0001  |
| 20.0000*                            |                   | 19.9999  | 20.0001  |
| 50.0000                             | 50.0000           | 49.9999  | 50.0001  |
| 100.0000                            | 100.0000          | 99.9997  | 100.0003 |
| 200.0000                            |                   | 199.9995 | 200.0005 |

| Top-Loading Balance Tolerance Limits |                   |         |         |
|--------------------------------------|-------------------|---------|---------|
| Standard Weight (g)                  | Actual Weight (g) | LCL (g) | UCL (g) |
| 0.01                                 |                   | 0.00    | 0.02    |
| 0.02                                 |                   | 0.01    | 0.03    |
| 0.02*                                |                   | 0.01    | 0.03    |
| 0.05                                 |                   | 0.04    | 0.06    |
| 0.10                                 |                   | 0.09    | 0.11    |
| 0.20                                 |                   | 0.19    | 0.21    |
| 0.20*                                |                   | 0.19    | 0.21    |
| 0.50                                 |                   | 0.49    | 0.51    |
| 1.00                                 |                   | 0.99    | 1.01    |
| 2.00                                 |                   | 1.99    | 2.01    |
| 2.00*                                |                   | 1.99    | 2.01    |
| 5.00                                 |                   | 4.99    | 5.01    |
| 10.00                                |                   | 9.99    | 10.01   |
| 20.00                                |                   | 19.99   | 20.01   |
| 20.00*                               |                   | 19.99   | 20.01   |
| 50.00                                |                   | 49.99   | 50.01   |
| 100.00                               |                   | 99.99   | 100.01  |
| 200.00                               |                   | 199.99  | 200.01  |
| 300.00                               |                   | 299.99  | 300.01  |
| 500.00                               |                   | 499.99  | 500.01  |
| 1000.00                              |                   | 999.99  | 1000.01 |

**Weight Sets:**

TROEMNER S/N: 4000017548: 21 weights

TROEMNER S/N: 4000020557: 16 weights

Denver Inst Co S/N: 01-25360-3: 1 weight

TROEMNER S/N: 06679: 5 weights

TROEMNER S/N: 400026116: 22 weights

COMMENTS:

# ANALYSIS REAGENTS/STANDARDS

21B0405





Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

**Reagent Preparation Bench Sheet**

Parameter / SOP #: NH3N/AIG029B V8

Prepared by: Nidia Fuentes

Reagent: NH3N-SodiumNitroprusside

Preparation Date: Feb-04-21

LIMS ID: 21B0405

Expiration Date: Feb-04-22

| Chemical Name (Formula)                  | LIMS ID | Mass or Volume<br>(specify units) |
|------------------------------------------|---------|-----------------------------------|
| Sodium Nitroprusside (Na2Fe(CN)5NO.2H2O) | 19F1901 | 0.0535 g                          |
|                                          |         |                                   |
|                                          |         |                                   |
|                                          |         |                                   |
|                                          |         |                                   |

Total Volume : 100 mL

Comments :

Balance #17

**REVIEWED**

By AK at 8:31 am, Mar 04, 2021

Analyst Signature:

*Nidia Fuentes*

# Balance Check

BALANCE ID: #17

DATE: 2/4/2021

ANALYST: Nidia Fuentes

WEIGHT SET ID: TROEMNER S/N: 4000020557

WGT SET # CONFIRMED: YES

WEIGHT SET 2 ID: \_\_\_\_\_

WGT SET # CONFIRMED: \_\_\_\_\_

INITIAL & DATE: MF 2/4/2021

\*NOTE: Confirm # of weights in weight set before and after use above. # of weights in weight sets are listed at bottom of page. Create IR if find that weights are missing. Note any weights that are missing in the comments field below and contact QAO to remove weight(s) from Qualtrax records.

| Analytical Balance Tolerance Limits |                   |          |          |
|-------------------------------------|-------------------|----------|----------|
| Standard Weight (g)                 | Actual Weight (g) | LCL (g)  | UCL (g)  |
| 0.0100                              | 0.0100            | 0.0099   | 0.0101   |
| 0.0200                              |                   | 0.0199   | 0.0201   |
| 0.0200*                             |                   | 0.0199   | 0.0201   |
| 0.0500                              | 0.0500            | 0.0499   | 0.0501   |
| 0.1000                              |                   | 0.0999   | 0.1001   |
| 0.2000                              |                   | 0.1999   | 0.2001   |
| 0.2000*                             |                   | 0.1999   | 0.2001   |
| 0.5000                              |                   | 0.4999   | 0.5001   |
| 1.0000                              | 0.9999            | 0.9999   | 1.0001   |
| 2.0000                              |                   | 1.9999   | 2.0001   |
| 2.0000*                             |                   | 1.9999   | 2.0001   |
| 5.0000                              | 5.0000            | 4.9999   | 5.0001   |
| 10.0000                             | 10.0000           | 9.9999   | 10.0001  |
| 20.0000                             | 20.0000           | 19.9999  | 20.0001  |
| 20.0000*                            |                   | 19.9999  | 20.0001  |
| 50.0000                             | 50.0000           | 49.9999  | 50.0001  |
| 100.0000                            | 100.0000          | 99.9997  | 100.0003 |
| 200.0000                            |                   | 199.9995 | 200.0005 |

| Top-Loading Balance Tolerance Limits |                   |         |         |
|--------------------------------------|-------------------|---------|---------|
| Standard Weight (g)                  | Actual Weight (g) | LCL (g) | UCL (g) |
| 0.01                                 |                   | 0.00    | 0.02    |
| 0.02                                 |                   | 0.01    | 0.03    |
| 0.02*                                |                   | 0.01    | 0.03    |
| 0.05                                 |                   | 0.04    | 0.06    |
| 0.10                                 |                   | 0.09    | 0.11    |
| 0.20                                 |                   | 0.19    | 0.21    |
| 0.20*                                |                   | 0.19    | 0.21    |
| 0.50                                 |                   | 0.49    | 0.51    |
| 1.00                                 |                   | 0.99    | 1.01    |
| 2.00                                 |                   | 1.99    | 2.01    |
| 2.00*                                |                   | 1.99    | 2.01    |
| 5.00                                 |                   | 4.99    | 5.01    |
| 10.00                                |                   | 9.99    | 10.01   |
| 20.00                                |                   | 19.99   | 20.01   |
| 20.00*                               |                   | 19.99   | 20.01   |
| 50.00                                |                   | 49.99   | 50.01   |
| 100.00                               |                   | 99.99   | 100.01  |
| 200.00                               |                   | 199.99  | 200.01  |
| 300.00                               |                   | 299.99  | 300.01  |
| 500.00                               |                   | 499.99  | 500.01  |
| 1000.00                              |                   | 999.99  | 1000.01 |

**Weight Sets:**

TROEMNER S/N: 4000017548: 21 weights

TROEMNER S/N: 4000020557: 16 weights

Denver Inst Co S/N: 01-25360-3: 1 weight

TROEMNER S/N: 06679: 5 weights

TROEMNER S/N: 400026116: 22 weights

COMMENTS:

# ANALYSIS REAGENTS/STANDARDS

21D2112





Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

**Reagent Preparation Bench Sheet**

Print Date: 4/26/2021

The benchsheet inadvertently not printed  
on the day it was prepared

**REVIEWED**  
By NFUENTES at 11:39 am, Apr 26, 2021

Parameter / SOP #: NH3N Distilled/AIG029B v8 9

Prepared by: Nidia Fuentes

Reagent: NH3NDistilled-ReceivingSol/BLK

**REVIEWED**  
By NFUENTES at 1:28 pm, May 10, 2021

Preparation Date: Apr-21-21

LIMS ID: 21D2112

Expiration Date: May-21-21

| Chemical Name (Formula) | LIMS ID | Mass or Volume<br>(specify units) |
|-------------------------|---------|-----------------------------------|
| Sulfuric Acid (H2SO4)   | 20B0607 | 1 mL                              |
|                         |         |                                   |
|                         |         |                                   |
|                         |         |                                   |
|                         |         |                                   |

Total Volume : 1000 mL

**Comments :**

See user defined fields for details

**REVIEWED**  
By AK at 1:28 pm, May 10, 2021

Analyst Signature:

*Nidia Fuentes*

# ANALYSIS REAGENTS/STANDARDS

21D2117



# Environmental Protection Agency Region 5

## Chicago Regional Laboratory

Print Date:

4/21/2021

536 South Clark Street, Chicago, IL 60605  
 Phone:(312)353-8370 Fax:(312)886-2591

### Reagent Preparation Bench Sheet

**REVIEWED**  
 By NFUENTES at 9:40 pm, May 13, 2021

Parameter / SOP #: NH3/AIG029B v8 9Prepared by: Nidia FuentesReagent: NH3N-Sodium Hypochlorite SolutionPreparation Date: Apr-21-21LIMS ID: 21D2117Expiration Date: Apr-22-21

| Chemical Name (Formula)         | LIMS ID | Mass or Volume<br>(specify units) |
|---------------------------------|---------|-----------------------------------|
| Sodium hypochlorite 5% (NaOCl ) | 21C0923 | 5 mL                              |
|                                 |         |                                   |
|                                 |         |                                   |
|                                 |         |                                   |
|                                 |         |                                   |

Total Volume : 10 mL

Comments :

**REVIEWED**

By AK at 9:13 am, May 14, 2021

Analyst Signature:

*Nidia Fuentes*





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5 ANALYTICAL SERVICES BRANCH LABORATORY  
536 SOUTH CLARK STREET (LAB-10C)  
CHICAGO, ILLINOIS 60605

**ELECTRONIC LABORATORY DATA PACKAGE  
FINAL LEVEL IV  
COVER PAGE**

|                                      |               |
|--------------------------------------|---------------|
| LIMS Work order(s):                  | 2103010       |
| Primary Analyst:                     | Nidia Fuentes |
| Analysis:                            | Solids, TDS   |
| Date:                                | May 14, 2021  |
| Data Reporting Qualtrax Workflow ID: | 25035         |

Digital Signature of Primary Analyst:

|  |
|--|
|  |
|--|

**Digital Signature Agreement:** By signing above the primary analyst understands and agrees that they will be held legally bound, obligated, and responsible for the use of their digital signature as they would be by using their hand-written signature.



## Table of Contents

---

Client Project Name: Deardorff (BA-01-21)  
 Work Order Number: 2103010

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**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY****US EPA Region 5 LSASD Analytical Services Branch****536 SOUTH CLARK STREET****CHICAGO, ILLINOIS 60605**

**Date:** 5/14/2021

**Title:** ASB Data Report for Deardorff

**To:** Water Division, US EPA Region 5  
77 West Jackson Boulevard  
Chicago, IL 60604

**From:** Nidia Fuentes, Chemist  
fuentes.nidia@epa.gov  
US EPA Region 5 LSASD Analytical Services Branch

The results reported in this document apply to the samples as received and relate only to the items tested. The data transmitted under this cover memo successfully passed the data review process and applicable Analytical Services Branch (ASB) laboratory Standard Operating Procedures. In accordance with the EPA QA/G-8 *Guidance on Environmental Data Verification and Data Validation*, ASB performs data verification on all the data generated internally. ASB does not perform data validation or quality assessment procedures.

This report was reviewed and the information provided herein accurately represents the analysis performed.

---

*Please contact the analyst with any technical report issues, Amanda Wroble at (312)-353-0375 for sample project concerns, and Robert Snyder at (312)-353-9083 with data transmittal questions. Thank you.*

**Attached are Results for: Deardorff**

---

**Analyses included in this report:**

Solids, TDS

Report Name: 2103010 Solids, TDS FINAL May 14 21 0742



**Environmental Protection Agency Region 5**  
**US EPA Region 5 LSASD Analytical Services Branch**

536 South Clark Street, Chicago, IL 60605  
 Phone:(312)353-8370 Fax:(312)886-2591

Water Division, US EPA Region 5  
 77 West Jackson Boulevard  
 Chicago IL, 60604

Project: Deardorff  
 Project Number: BA-01-21  
 Project Manager: Ben Atkinson

**Reported:**  
 May-14-21 07:42

**Accredited Analyses included in this Report**



**Method:** *SM 2540 C in Water*

**Analysis:** *Solids, TDS*

**Analyte**

**Certifications**

| Analyte                | Certifications     |
|------------------------|--------------------|
| Total Dissolved Solids | ISO/IEC 17025:2017 |

*Analytes not listed above are not accredited by ANAB.*





## Environmental Protection Agency Region 5

### US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605  
 Phone:(312)353-8370 Fax:(312)886-2591

Water Division, US EPA Region 5  
 77 West Jackson Boulevard  
 Chicago IL, 60604

Project: Deardorff  
 Project Number: BA-01-21  
 Project Manager: Ben Atkinson

**Reported:**  
 May-14-21 07:42

## ANALYSIS CASE NARRATIVE

### Analysis List

#### Solids, TDS

Analyst: Nidia Fuentes  
 Phone #: 312-353-9079

## General Information

### Samples analyzed:

| <u>Sample</u> | <u>Analysis List</u> |
|---------------|----------------------|
| 2103010-01    | Solids, TDS          |
| 2103010-02    | Solids, TDS          |
| 2103010-03    | Solids, TDS          |
| 2103010-04    | Solids, TDS          |

### Holding times:

Holding time was not meet. Samples will be flagged as J or UJ and H: Holding time exceeded for sample preparation and/or analysis; Target analyte concentrations and/or reporting limits may not be accurate because of holding time.

See client contact 24470.

## Sample Analysis and Results

The samples were analyzed using ASB SOP AIG017, Version #7. The samples were stored in the refrigerator at all times, except when in use. The data reported herein meets any requirements referenced in the previously mentioned SOP and Sampling QAPP titled "General Field Sampling Plan for AFO Inspections" and dated "FY 2021", except for those listed in the Quality Control section.

### SOP Based on:

Method List  
 SM 2540 C

## Quality Control

All quality control audits were within ASB limits, except for listed above.



# Environmental Protection Agency Region 5

## Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605  
 Phone:(312)353-8370 Fax:(312)886-2591

### WORK ORDER

Printed: 3/30/2021 1:30:52PM

**2103010**

### US EPA Region 5 LSASD Analytical Services Branch

**Client:** Water Division, US EPA Region 5

**Project:** Deardorff

**Project Manager:** Angela Ockrassa Davis

**Project Number:** BA-01-21

#### Report To:

Ben Atkinson  
 Water Division, US EPA Region 5

77 West Jackson Boulevard  
 Chicago, IL 60604

Phone: (312) 353-2004  
 Fax: (312) 886-2001

Date Due: May-14-21 15:00 (45 day TAT)

Received By: Robert Snyder

Logged In By: Robert Snyder

Date Received: Mar-30-21 10:08

Date Logged In: Mar-30-21 11:31

|                    |     |                                                              |
|--------------------|-----|--------------------------------------------------------------|
| Sample tags/labels | Yes | <b>Work Order Comments:</b><br>pH paper used in SC = 18D1901 |
| Seals Intact       | Yes |                                                              |
| Received on ice    | Yes |                                                              |
| Paperwork Included | Yes |                                                              |

#### Cooler(s) information:

Default Cooler - 0.40 C

**Sample ID:** [2103010-01](#)

**Sampled:** [Mar-26-21 10:16](#)

**Matrix:** [Water](#)

**Sample Name:** [S01](#)

**Sample Location/Comments:** [Pasture outlet](#)

#### **Sample Comments:**

| Analysis                                  | Hold time (days) | Expires         | Comments |
|-------------------------------------------|------------------|-----------------|----------|
| Ammonia N DA, Distilled                   | 28               | Apr-23-21 10:16 | pH = 1   |
| Nitrate-Nitrite N DA, Enzymatic reduction | 28               | Apr-23-21 10:16 | pH = 1   |
| Solids, TDS                               | 7                | Apr-02-21 10:16 | pH = 7   |
| Solids, TSS                               | 7                | Apr-02-21 10:16 | pH = 7   |
| TKN DA                                    | 28               | Apr-23-21 10:16 | pH = 1   |
| Total Phosphorus DA                       | 28               | Apr-23-21 10:16 | pH = 1   |

**Sample ID:** [2103010-02](#)

**Sampled:** [Mar-26-21 10:24](#)

**Matrix:** [Water](#)

**Sample Name:** [S02](#)

**Sample Location/Comments:** [Leachate inlet](#)

#### **Sample Comments:**

| Analysis                                  | Hold time (days) | Expires         | Comments |
|-------------------------------------------|------------------|-----------------|----------|
| Ammonia N DA, Distilled                   | 28               | Apr-23-21 10:24 | pH = 1   |
| Nitrate-Nitrite N DA, Enzymatic reduction | 28               | Apr-23-21 10:24 | pH = 1   |
| Solids, TDS                               | 7                | Apr-02-21 10:24 | pH = 7   |
| Solids, TSS                               | 7                | Apr-02-21 10:24 | pH = 7   |

## WORK ORDER

Printed: 3/30/2021 1:30:52PM

2103010

## US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5

Project Manager: Angela Ockrassa Davis

Project: Deardorff

Project Number: BA-01-21

Sample ID: [2103010-02](#) Sampled: [Mar-26-21 10:24](#) Matrix: [Water](#)Sample Name: [S02](#) Sample Location/Comments: [Leachate inlet](#)

## Sample Comments:

| Analysis            | Hold time (days) | Expires         | Comments |
|---------------------|------------------|-----------------|----------|
| TKN DA              | 28               | Apr-23-21 10:24 | pH = 1   |
| Total Phosphorus DA | 28               | Apr-23-21 10:24 | pH = 1   |

Sample ID: [2103010-03](#) Sampled: [Mar-26-21 11:47](#) Matrix: [Water](#)Sample Name: [S03](#) Sample Location/Comments: [Leachate outlet](#)

## Sample Comments:

| Analysis                                  | Hold time (days) | Expires         | Comments |
|-------------------------------------------|------------------|-----------------|----------|
| Ammonia N DA, Distilled                   | 28               | Apr-23-21 11:47 | pH = 1   |
| Nitrate-Nitrite N DA, Enzymatic reduction | 28               | Apr-23-21 11:47 | pH = 1   |
| Solids, TDS                               | 7                | Apr-02-21 11:47 | pH = 7   |
| Solids, TSS                               | 7                | Apr-02-21 11:47 | pH = 7   |
| TKN DA                                    | 28               | Apr-23-21 11:47 | pH = 1   |
| Total Phosphorus DA                       | 28               | Apr-23-21 11:47 | pH = 1   |

Sample ID: [2103010-04](#) Sampled: [Mar-26-21 16:10](#) Matrix: [Water](#)Sample Name: [B01](#) Sample Location/Comments: [Blank](#)

## Sample Comments:

| Analysis                                  | Hold time (days) | Expires         | Comments |
|-------------------------------------------|------------------|-----------------|----------|
| Ammonia N DA, Distilled                   | 28               | Apr-23-21 16:10 | pH = 1   |
| Nitrate-Nitrite N DA, Enzymatic reduction | 28               | Apr-23-21 16:10 | pH = 1   |
| Solids, TDS                               | 7                | Apr-02-21 16:10 | pH = 5   |
| Solids, TSS                               | 7                | Apr-02-21 16:10 | pH = 5   |
| TKN DA                                    | 28               | Apr-23-21 16:10 | pH = 1   |
| Total Phosphorus DA                       | 28               | Apr-23-21 16:10 | pH = 1   |

## WORK ORDER

Printed: 3/30/2021 1:30:52PM

|         |
|---------|
| 2103010 |
|---------|

## US EPA Region 5 LSASD Analytical Services Branch

|                                                |                                               |
|------------------------------------------------|-----------------------------------------------|
| <b>Client:</b> Water Division, US EPA Region 5 | <b>Project Manager:</b> Angela Ockrassa Davis |
| <b>Project:</b> Deardorff                      | <b>Project Number:</b> BA-01-21               |

---

Reviewed By

Date





## Environmental Protection Agency Region 5

### US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605  
Phone: (312) 353-8370 Fax: (312) 886-2591

Water Division, US EPA Region 5  
77 West Jackson Boulevard  
Chicago IL, 60604

Project: Deardorff  
Project Number: BA-01-21  
Project Manager: Ben Atkinson

**Reported:**  
May-14-21 07:42

### Dissolved Solids, SM 2540C (modified)

### US EPA Region 5 LSASD Analytical Services Branch

**S01 (2103010-01)                      Matrix: Water                      Sampled: Mar-26-21 10:16                      Received: Mar-30-21 10:08**

| Analyte                       | Result     | Flags /<br>Qualifiers | MDL | Reporting<br>Limit | Units | Dilution | Batch   | Prepared  | Analyzed  |
|-------------------------------|------------|-----------------------|-----|--------------------|-------|----------|---------|-----------|-----------|
| <b>Total Dissolved Solids</b> | <b>794</b> | (H), J                | 16  | 20                 | mg/L  | 1        | B21D009 | Apr-07-21 | Apr-07-21 |

**S02 (2103010-02)                      Matrix: Water                      Sampled: Mar-26-21 10:24                      Received: Mar-30-21 10:08**

| Analyte                       | Result      | Flags /<br>Qualifiers | MDL | Reporting<br>Limit | Units | Dilution | Batch   | Prepared  | Analyzed  |
|-------------------------------|-------------|-----------------------|-----|--------------------|-------|----------|---------|-----------|-----------|
| <b>Total Dissolved Solids</b> | <b>1270</b> | (H), J                | 16  | 20                 | mg/L  | 1        | B21D009 | Apr-07-21 | Apr-07-21 |

**S03 (2103010-03)                      Matrix: Water                      Sampled: Mar-26-21 11:47                      Received: Mar-30-21 10:08**

| Analyte                       | Result     | Flags /<br>Qualifiers | MDL | Reporting<br>Limit | Units | Dilution | Batch   | Prepared  | Analyzed  |
|-------------------------------|------------|-----------------------|-----|--------------------|-------|----------|---------|-----------|-----------|
| <b>Total Dissolved Solids</b> | <b>550</b> | (H), J                | 16  | 20                 | mg/L  | 1        | B21D009 | Apr-07-21 | Apr-07-21 |

**B01 (2103010-04)                      Matrix: Water                      Sampled: Mar-26-21 16:10                      Received: Mar-30-21 10:08**

| Analyte                       | Result   | Flags /<br>Qualifiers | MDL | Reporting<br>Limit | Units | Dilution | Batch   | Prepared  | Analyzed  |
|-------------------------------|----------|-----------------------|-----|--------------------|-------|----------|---------|-----------|-----------|
| <b>Total Dissolved Solids</b> | <b>U</b> | (H), UJ               | 16  | 20                 | mg/L  | 1        | B21D009 | Apr-07-21 | Apr-07-21 |



**Environmental Protection Agency Region 5**  
**US EPA Region 5 LSASD Analytical Services Branch**

536 South Clark Street, Chicago, IL 60605  
 Phone:(312)353-8370 Fax:(312)886-2591

Water Division, US EPA Region 5  
 77 West Jackson Boulevard  
 Chicago IL, 60604

Project: Deardorff  
 Project Number: BA-01-21  
 Project Manager: Ben Atkinson

**Reported:**  
 May-14-21 07:42

**Notes and Definitions**

|     |                                                                                                                                         |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------|
| UJ  | The analyte was not detected at or above the reported limit. The reported limit is an estimate.                                         |
| J   | The identification of the analyte is acceptable; the reported value is an estimate.                                                     |
| (H) | Holding time exceeded for sample preparation and/or analysis; Target analyte concentrations and/or reporting limits may not be accurate |
| U   | Not Detected                                                                                                                            |
| NR  | Not Reported                                                                                                                            |
| Q   | QC limit Exceeded                                                                                                                       |



**Environmental Protection Agency  
US EPA Region 5 LSASD Analytical Services Branch**

536 South Clark Street, Chicago, IL 60605  
Phone: (312) 353-8370 Fax: (312) 886-2591

## Quality Control Summary

**Date:** 5/14/2021

**Analyst:** Nidia Fuentes

**Project:** Deardorff

**Analyte:** Total Dissolved Solids

**Analysis:** Solids, TDS

| QC Sample Name                     | Result | Units | Flags /<br>Qualifiers | MDL | Reporting<br>Limit | Spike<br>Level | Source<br>Result | % REC<br>or abs<br>diff (pH) | % REC or<br>abs diff<br>(pH) Limits | % RPD<br>or abs<br>diff (pH) | %RPD<br>or abs<br>diff (pH)<br>Limits |
|------------------------------------|--------|-------|-----------------------|-----|--------------------|----------------|------------------|------------------------------|-------------------------------------|------------------------------|---------------------------------------|
| B21D009-BLK1                       | U      | mg/L  |                       | 16  | 20                 |                |                  |                              |                                     |                              |                                       |
| B21D009-DUP1<br>Source: 2103010-01 | 770    | mg/L  |                       | 16  | 20                 |                | 794              |                              |                                     | 3                            | 10                                    |
| B21D009-SRM1                       | 422    | mg/L  |                       |     |                    | 416.0          |                  | 101%                         | 84.8-109.6                          |                              |                                       |

### Notes and Definitions

|     |                                                                                                                                         |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------|
| UJ  | The analyte was not detected at or above the reported limit. The reported limit is an estimate.                                         |
| J   | The identification of the analyte is acceptable; the reported value is an estimate.                                                     |
| (H) | Holding time exceeded for sample preparation and/or analysis; Target analyte concentrations and/or reporting limits may not be accurate |
| U   | Not Detected                                                                                                                            |
| NR  | Not Reported                                                                                                                            |
| Q   | QC limit Exceeded                                                                                                                       |

*Nidia Fuentes*

Nidia Fuentes



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5 LSASD ANALYTICAL SERVICE BRANCH  
536 SOUTH CLARK STREET  
CHICAGO, ILLINOIS 60605

### Data Verification Checklist

|                      |                   |                  |           |
|----------------------|-------------------|------------------|-----------|
| <b>Work:</b>         | 2103010           | <b>Project:</b>  | Deardorff |
| <b>Analysis:</b>     | Solids, TDS       |                  |           |
| <b>CRL SOP Used:</b> | AIG017 Version #7 | <b>Batch ID:</b> | B21D009   |

### General Information

| Question # | Question                                                                                                                                                                                                                                                                         | Analyst Response (YES/ NO/ NA) |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 1          | Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?                                                                                                                                                                                      | YES                            |
| 2          | Was customer contact communication included?                                                                                                                                                                                                                                     | YES                            |
|            | Notes/Comments: ID 24470                                                                                                                                                                                                                                                         |                                |
| 3          | Are all field sample ID numbers cross-referenced to the laboratory ID numbers?                                                                                                                                                                                                   | YES                            |
| 4          | Were all samples prepared and analyzed within holding times?                                                                                                                                                                                                                     | NO                             |
|            | Notes/Comments: Sample 2103010-01 failed hold criteria for Solids, TDS. Sample 2103010-02 failed hold criteria for Solids, TDS. Sample 2103010-03 failed hold criteria for Solids, TDS. Sample 2103010-04 failed hold criteria for Solids, TDS. Sampled->Prepared [Day] > 7 days |                                |

### Sample Results

| Question # | Question                                                                                     | Analyst Response (YES/ NO/ NA) |
|------------|----------------------------------------------------------------------------------------------|--------------------------------|
| 5          | Were calculations checked?                                                                   | YES                            |
| 6          | Were all analyte results checked?                                                            | YES                            |
| 7          | Were all results for soil and sediment samples reported on a dry weight basis?               | NA                             |
| 8          | Were % moisture (or solids) reported for all soil and sediment samples?                      | NA                             |
| 9          | Other than those results < RL, were all other raw values bracketed by calibration standards? | YES                            |
| 10         | Are the RLs for each method analyte included in the laboratory data package?                 | YES                            |
| 11         | Are MDLs/RLs adjusted for dilutions?                                                         | NA                             |
| 12         | Were the raw data (for example, chromatograms, spectral data) reviewed?                      | YES                            |
| 13         | Were data associated with manual integrations flagged on the raw data?                       | NA                             |

### Standards

| Question # | Question                                                                                                                             | Analyst Response (YES/ NO/ NA) |
|------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 14         | Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources as specified in the analytical SOP? | YES                            |
| 15         | Were standard/reagent preparations checked (preparation date, expiration date, parent standard IDs, etc.), if applicable?            | YES                            |



Work: 2103010

Project: Deardorff

**Batch Quality Control**

| Question # | Question                                                                                                                      | Analyst Response (YES/ NO/ NA) |
|------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 16         | Were appropriate type(s) of blanks analyzed?                                                                                  | YES                            |
| 17         | Were blanks analyzed at the appropriate frequency?                                                                            | YES                            |
| 18         | Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures? | YES                            |
| 19         | Were blank concentrations $\leq$ MDL or RL, as applicable in the analytical SOP?                                              | YES                            |
| 20         | Was each LCS/SRM taken through the entire analytical procedure, including prep and cleanup steps?                             | YES                            |
| 21         | Were LCSs/SRMs analyzed at the required frequency?                                                                            | YES                            |
| 22         | Were LCS/SRM %Rs within the laboratory QC limits or other acceptance criteria?                                                | YES                            |
| 23         | Were the project/method specified analytes included in the MS?                                                                | NA                             |
| 24         | Were MS analyzed at the appropriate frequency?                                                                                | NA                             |
| 25         | Were MS %Rs within the laboratory QC limits?                                                                                  | NA                             |
| 26         | Were appropriate analytical duplicates analyzed for each matrix?                                                              | YES                            |
| 27         | Were analytical duplicates analyzed at the appropriate frequency?                                                             | YES                            |
| 28         | Were RPDs or relative standard deviations within the laboratory QC limits or other acceptance criteria?                       | YES                            |
| 29         | Were RLs analyzed at the appropriate frequency?                                                                               | NA                             |
| 30         | Were RL recoveries within the laboratory QC limits?                                                                           | NA                             |

**Calibration**

| Question # | Question                                                                                       | Analyst Response (YES/ NO/ NA) |
|------------|------------------------------------------------------------------------------------------------|--------------------------------|
| 31         | Were calibration correlation coefficient or other acceptance criteria met?                     | YES                            |
| 32         | Was the number of calibration standards recommended in the method used for all analytes?       | NA                             |
| 33         | Were all points generated between the lowest and highest standard used to calculate the curve? | NA                             |
| 34         | Are calibration data available for all instruments used?                                       | YES                            |

**Calibration Verification**

| Question # | Question                                                                                                                  | Analyst Response (YES/ NO/ NA) |
|------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 35         | Was the absolute value of the analyte concentration in the ICB/CCB $\leq$ MDL or RL, as applicable in the analytical SOP? | NA                             |
| 36         | Was the calibration curve verified for each analyte?                                                                      | NA                             |
| 37         | Has the calibration curve been verified using an appropriate second source standard?                                      | NA                             |

Work: 2103010

Project: Deardorff

**Calibration Verification**

| Question # | Question                                                | Analyst Response (YES/ NO/ NA) |
|------------|---------------------------------------------------------|--------------------------------|
| 38         | Were ICV/CCV analyzed at the method-required frequency? | NA                             |
| 39         | Were ICV/CCV %R within the laboratory QC limits?        | NA                             |

**Quality Control**

| Question # | Question                                                                                              | Analyst Response (YES/ NO/ NA) |
|------------|-------------------------------------------------------------------------------------------------------|--------------------------------|
| 40         | QC limits in LIMS checked against the SOP?                                                            | YES                            |
| 41         | Were percent differences, recoveries, and the linearity within the QC limits specified in the method? | YES                            |
| 42         | Were QC charts checked if a QC audit, excluding matrix QC (MS or DUP), was out of limit?              | NA                             |

**Supporting Data**

| Question # | Question                                                                                                       | Analyst Response (YES/ NO/ NA) |
|------------|----------------------------------------------------------------------------------------------------------------|--------------------------------|
| 43         | Were support equipment data (balance verification, data logs, logbook entries, etc.) included in data package? | YES                            |
| 44         | Were approved spreadsheet(s) used?                                                                             | YES                            |

**Document Verification**

| Question # | Question                                                                                                                                                                                      | Analyst Response (YES/ NO/ NA) |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 45         | Is the MDL or RL study up-to-date for each reported analyte?                                                                                                                                  | YES                            |
| 46         | Is documentation of the analyst's capability up-to-date and on file?<br><i>Notes/Comments: ID 23382</i>                                                                                       | YES                            |
| 47         | Are the procedures for compound/analyte identification documented?                                                                                                                            | YES                            |
| 48         | Are laboratory SOPs current and on file for the method performed?                                                                                                                             | YES                            |
| 49         | Were data evaluated against project QAPP or Sample Plan, any special requests in the sample schedule, and documented in case narrative?                                                       | YES                            |
| 50         | Were electronic pathways checked (add pathway and files below)?<br><i>Notes/Comments: J:\Vol1\Projects (New File Structure)\Deardorff\1. A&amp;I\NFuentes\Balance #17\TDS\4_08_21\B12D009</i> | YES                            |

**Accreditation**

| Question # | Question                      | Analyst Response (YES/ NO/ NA) |
|------------|-------------------------------|--------------------------------|
| 51         | ANAB logo used appropriately? | YES                            |

**REVIEWED*****By NFUENTES at 9:37 am, May 13, 2021***

Analyst's Signature and Date\*:

**Work:** 2103010**Project:** Deardorff**REVIEWED***By AK at 10:33 am, May 13, 2021***Reviewer's Signature and Date\*:****\*Reviewer Concurrs with Analyst Responses****Additional Notes/Comments (if applicable):**

# **Solids, TDS**



# BATCH

B21D009



Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

Date: 4/7/2021

**Batch Number: B21D0009**  
**Analyses Included On This Benchsheet**  
**Solids, TDS**

**RESIDUE, FILTERABLE (TDS)**

Prepared Date: Apr-07-21  
Analyst (initials): NF

| Crucible ID | Sample Number | Sample Volume (mL) | Spike ID | Crucible Tare Weight (g) | Weight of Dried Crucible + Sample (g) |            |       | Source Sample | Comments |
|-------------|---------------|--------------------|----------|--------------------------|---------------------------------------|------------|-------|---------------|----------|
|             |               |                    |          |                          | Initial                               | 2 (if app) | Final |               |          |
| 15          | 2103010-01    | 50                 |          | 54.4507                  |                                       |            |       |               | pH = 7   |
| 3           | 2103010-02    | 50                 |          | 56.0964                  |                                       |            |       |               | pH = 7   |
| B13         | 2103010-03    | 50                 |          | 41.2612                  |                                       |            |       |               | pH = 7   |
| 9           | 2103010-04    | 50                 |          | 51.6496                  |                                       |            |       |               | pH = 5   |
| 2           | B21D009-BLK1  | 50                 |          | 54.2524                  |                                       |            |       | -             |          |
| #7          | B21D009-DUP1  | 50                 | 20K0522  | 45.7775                  |                                       |            |       | 2103010-01    |          |
| STD         | B21D009-SRM1  | 50                 | 21B2322  | 58.3517                  |                                       |            |       | -             |          |

Balance ID Number: #17 REVIEWED By NF UENTES at 4:12 pm, May 12, 2021 Overnight Drying Date/Time IN - OUT: 04/07/2021 2:00PM REVIEWED By NF UENTES at 4:16 pm, May 12, 2021

Oven ID Number: #10 Dry Cycle #1 Date/Time IN - OUT: 04/07/21 8:02am - 9:02am REVIEWED By NF UENTES at 1:07 am, Apr 08, 2021

Dry Cycle #2 Date/Time IN - OUT: 02-04-21 10:21 am - 11:22 am REVIEWED By NF UENTES at 11:01 am, Apr 08, 2021

Lab Comments:



# Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

Date: 4/7/2021

## PREPARATION REAGENTS/STANDARDS/PIPETTES:

20K0522

~~21H2322~~

<sup>2</sup>

19J0121

TDS- SRM (Minerals)

Filters - ProWeigh

NOV-05-20

Prepared: ~~Feb-23-21~~

Prepared: Oct-01-19

DEC-05-22

Expires: ~~Apr-01-23~~

Expires: Oct-30-26

REVIEWED  
By NFUENTES at 4:27 pm, May 12, 2021

REVIEWED  
By NFUENTES at 4:21 pm, May 12, 2021

REVIEWED  
By NFUENTES at 4:22 pm, May 12, 2021

REVIEWED  
By NFUENTES at 11:01 am, Apr 08, 2021

ich Comments:

# Balance Check

BALANCE ID: #17

DATE: 4/7/2021

ANALYST: Nidia Fuentes

WEIGHT SET ID: TROEMNER S/N: 400026116

WGT SET # CONFIRMED: YES

WEIGHT SET 2 ID: \_\_\_\_\_

WGT SET # CONFIRMED: \_\_\_\_\_

INITIAL & DATE: MF 4/7/2021

\*NOTE: Confirm # of weights in weight set before and after use above. # of weights in weight sets are listed at bottom of page. Create IR if find that weights are missing. Note any weights that are missing in the comments field below and contact QAO to remove weight(s) from Qualtrax records.

| Analytical Balance Tolerance Limits |                   |          |          |
|-------------------------------------|-------------------|----------|----------|
| Standard Weight (g)                 | Actual Weight (g) | LCL (g)  | UCL (g)  |
| 0.0100                              | 0.0099            | 0.0099   | 0.0101   |
| 0.0200                              |                   | 0.0199   | 0.0201   |
| 0.0200*                             |                   | 0.0199   | 0.0201   |
| 0.0500                              |                   | 0.0499   | 0.0501   |
| 0.1000                              | 0.0999            | 0.0999   | 0.1001   |
| 0.2000                              |                   | 0.1999   | 0.2001   |
| 0.2000*                             |                   | 0.1999   | 0.2001   |
| 0.5000                              | 0.5000            | 0.4999   | 0.5001   |
| 1.0000                              | 0.9999            | 0.9999   | 1.0001   |
| 2.0000                              |                   | 1.9999   | 2.0001   |
| 2.0000*                             |                   | 1.9999   | 2.0001   |
| 5.0000                              | 5.0000            | 4.9999   | 5.0001   |
| 10.0000                             | 10.0000           | 9.9999   | 10.0001  |
| 20.0000                             | 20.0001           | 19.9999  | 20.0001  |
| 20.0000*                            |                   | 19.9999  | 20.0001  |
| 50.0000                             | 49.9999           | 49.9999  | 50.0001  |
| 100.0000                            | 100.0000          | 99.9997  | 100.0003 |
| 200.0000                            | 199.9997          | 199.9995 | 200.0005 |

| Top-Loading Balance Tolerance Limits |                   |         |         |
|--------------------------------------|-------------------|---------|---------|
| Standard Weight (g)                  | Actual Weight (g) | LCL (g) | UCL (g) |
| 0.01                                 |                   | 0.00    | 0.02    |
| 0.02                                 |                   | 0.01    | 0.03    |
| 0.02*                                |                   | 0.01    | 0.03    |
| 0.05                                 |                   | 0.04    | 0.06    |
| 0.10                                 |                   | 0.09    | 0.11    |
| 0.20                                 |                   | 0.19    | 0.21    |
| 0.20*                                |                   | 0.19    | 0.21    |
| 0.50                                 |                   | 0.49    | 0.51    |
| 1.00                                 |                   | 0.99    | 1.01    |
| 2.00                                 |                   | 1.99    | 2.01    |
| 2.00*                                |                   | 1.99    | 2.01    |
| 5.00                                 |                   | 4.99    | 5.01    |
| 10.00                                |                   | 9.99    | 10.01   |
| 20.00                                |                   | 19.99   | 20.01   |
| 20.00*                               |                   | 19.99   | 20.01   |
| 50.00                                |                   | 49.99   | 50.01   |
| 100.00                               |                   | 99.99   | 100.01  |
| 200.00                               |                   | 199.99  | 200.01  |
| 300.00                               |                   | 299.99  | 300.01  |
| 500.00                               |                   | 499.99  | 500.01  |
| 1000.00                              |                   | 999.99  | 1000.01 |

**Weight Sets:**

TROEMNER S/N: 4000017548: 21 weights

TROEMNER S/N: 4000020557: 21 weights

Denver Inst Co S/N: 01-25360-3A: 1 weight

TROEMNER S/N: 06679: 5 weights

TROEMNER S/N: 400026116: 22 weights

COMMENTS:





Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

Date: 4/8/2021

RESIDUE, FILTERABLE (TDS)

**Batch Number: B21D0009**  
**Analyses Included On This Benchsheet**  
**Solids, TDS**

Prepared Date: Apr-07-21

Analyst (initials): NF

| Crucible ID | Sample Number | Sample Volume (mL) | Spike ID | Crucible Tare Weight (g) | Weight of Dried Crucible + Sample (g) |            |         | Source Sample | Comments |
|-------------|---------------|--------------------|----------|--------------------------|---------------------------------------|------------|---------|---------------|----------|
|             |               |                    |          |                          | Initial                               | 2 (if app) | Final   |               |          |
| 15          | 2103010-01    | 50                 |          | 54.4507                  | 54.4906                               |            | 54.4904 |               | pH = 7   |
| 3           | 2103010-02    | 50                 |          | 56.0964                  | 56.1580                               | 56.1605    | 56.1600 |               | pH = 7   |
| B13         | 2103010-03    | 50                 |          | 41.2612                  | 41.2890                               |            | 41.2887 |               | pH = 7   |
| 9           | 2103010-04    | 50                 |          | 51.6496                  | 51.6501                               |            | 51.6500 |               | pH = 5   |
| 2           | B21D009-BLK1  | 50                 |          | 54.2524                  | 54.2527                               |            | 54.2526 | -             |          |
| #7          | B21D009-DUP1  | 50                 |          | 45.7775                  | 45.8164                               |            | 45.8160 | 2103010-01    |          |
| STD         | B21D009-SRM1  | 50                 | 20K0522  | 58.3517                  | 58.3730                               |            | 58.3728 | -             |          |

Balance ID Number: #17

Oven ID Number: #10

Overnight Drying Date/Time IN - OUT: 4/7/2021 2:00pm - 4/8/21 7:58am

Dry Cycle #1 Date/Time IN - OUT: 04/08/21 8:13am - 9:14am

Dry Cycle #2 Date/Time IN - OUT: 04/08/21 10:39am - 11:39am

Dry Cycle #3 Date/time IN - OUT:

04/08/21 1:01 pm - 2:07 pm

REVIEWED  
By NFUENTES at 10:31 am, May 13, 2021

REVIEWED  
By NFUENTES at 10:29 am, May 13, 2021

ich Comments:



Environmental Protection Agency Region 5

# Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

Date: 4/8/2021

**PREPARATION REAGENTS/STANDARDS/PIPETTES:**

|                 |                     |                     |                    |
|-----------------|---------------------|---------------------|--------------------|
| <u>20K0522:</u> | TDS- SRM (Minerals) | Prepared: Nov-05-20 | Expires: Dec-05-22 |
| <u>19J0122:</u> | Filters - ProWeigh  | Prepared: Oct-01-19 | Expires: Oct-30-26 |

ich Comments:

## Balance Check

BALANCE ID: #17

DATE: 4/8/2021

ANALYST: Nidia Fuentes

WEIGHT SET ID: TROEMNER S/N: 400026116

WGT SET # CONFIRMED: YES

WEIGHT SET 2 ID:

WGT SET # CONFIRMED:

INITIAL & DATE: 77 4/8/2021

\*NOTE: Confirm # of weights in weight set before and after use above. # of weights in weight sets are listed at bottom of page. Create IR if find that weights are missing. Note any weights that are missing in the comments field below and contact QAO to remove weight(s) from Qualtrax records.

| Analytical Balance Tolerance Limits |                   |          |          |
|-------------------------------------|-------------------|----------|----------|
| Standard Weight (g)                 | Actual Weight (g) | LCL (g)  | UCL (g)  |
| 0.0100                              | 0.0100            | 0.0099   | 0.0101   |
| 0.0200                              |                   | 0.0199   | 0.0201   |
| 0.0200*                             |                   | 0.0199   | 0.0201   |
| 0.0500                              |                   | 0.0499   | 0.0501   |
| 0.1000                              | 0.1000            | 0.0999   | 0.1001   |
| 0.2000                              |                   | 0.1999   | 0.2001   |
| 0.2000*                             |                   | 0.1999   | 0.2001   |
| 0.5000                              |                   | 0.4999   | 0.5001   |
| 1.0000                              | 1.0000            | 0.9999   | 1.0001   |
| 2.0000                              |                   | 1.9999   | 2.0001   |
| 2.0000*                             |                   | 1.9999   | 2.0001   |
| 5.0000                              | 5.0000            | 4.9999   | 5.0001   |
| 10.0000                             | 9.9999            | 9.9999   | 10.0001  |
| 20.0000                             | 20.0000           | 19.9999  | 20.0001  |
| 20.0000*                            |                   | 19.9999  | 20.0001  |
| 50.0000                             | 50.0001           | 49.9999  | 50.0001  |
| 100.0000                            | 100.0000          | 99.9997  | 100.0003 |
| 200.0000                            | 199.9998          | 199.9995 | 200.0005 |

| Top-Loading Balance Tolerance Limits |                   |         |         |
|--------------------------------------|-------------------|---------|---------|
| Standard Weight (g)                  | Actual Weight (g) | LCL (g) | UCL (g) |
| 0.01                                 |                   | 0.00    | 0.02    |
| 0.02                                 |                   | 0.01    | 0.03    |
| 0.02*                                |                   | 0.01    | 0.03    |
| 0.05                                 |                   | 0.04    | 0.06    |
| 0.10                                 |                   | 0.09    | 0.11    |
| 0.20                                 |                   | 0.19    | 0.21    |
| 0.20*                                |                   | 0.19    | 0.21    |
| 0.50                                 |                   | 0.49    | 0.51    |
| 1.00                                 |                   | 0.99    | 1.01    |
| 2.00                                 |                   | 1.99    | 2.01    |
| 2.00*                                |                   | 1.99    | 2.01    |
| 5.00                                 |                   | 4.99    | 5.01    |
| 10.00                                |                   | 9.99    | 10.01   |
| 20.00                                |                   | 19.99   | 20.01   |
| 20.00*                               |                   | 19.99   | 20.01   |
| 50.00                                |                   | 49.99   | 50.01   |
| 100.00                               |                   | 99.99   | 100.01  |
| 200.00                               |                   | 199.99  | 200.01  |
| 300.00                               |                   | 299.99  | 300.01  |
| 500.00                               |                   | 499.99  | 500.01  |
| 1000.00                              |                   | 999.99  | 1000.01 |

**Weight Sets:**

TROEMNER S/N: 4000017548: 21 weights

TROEMNER S/N: 4000020557: 21 weights

Denver Inst Co S/N: 01-25360-3A: 1 weight

TROEMNER S/N: 06679: 5 weights

TROEMNER S/N: 400026116: 22 weights

COMMENTS:

## LABORATORY NOTEBOOK

Thermo Scientific OvenHera therm OMS100

S.#: 41807868

OVEN #10

ROOM: 1033

Received Date: Unknown

In-service Date: 8/27/2015



42

PROJECT

Notebook No. \_\_\_\_\_

Continued from Page \_\_\_\_\_

| <u>Date</u> | <u>Time</u> | <u>Set</u> | <u>Read</u> | <u>ELPRD</u> | <u>Analyst</u> | <u>Comment</u> |
|-------------|-------------|------------|-------------|--------------|----------------|----------------|
| 3/22/2021   | 12:45 PM    | 104C       | 104L        | 104.6C       | NT             | in TSS         |
|             | 1:45 PM     | 104C       | 104L        | 104.9C       | NT             | out            |
| 3/22/21     | 3:02 PM     | 104C       | 104L        | 104.0C       | NT             | in TSS         |
| ↓           | 4:04 PM     | 104C       | 104L        | 104.9C       | NT             | out TSS        |
| 4/7/2021    | 10:10 AM    | 180C       | 180C        | 181.1C       | NT             | drying         |
| NT          | 11:12 AM    | 180C       | 180C        | 180.8C       | NT             | crushed        |
|             | 2:00 PM     | 104C       | 104L        | 104.2C       | NT             | TSS            |
| 4/8/2021    | 7:58 AM     | 104C       | 104L        | 104.7C       | NT             | TSS out        |
|             | 8:13 AM     | 180C       | 180C        | 180.3C       | NT             | in             |
|             | 9:14 AM     | 180C       | 180C        | 180.5C       | NT             | out            |
|             | 10:39 AM    | 180C       | 180C        | 180.1C       | NT             | in             |
|             | 11:39 AM    | 180C       | 180C        | 180.6C       | NT             | out            |
|             | 1:01 PM     | 180C       | 180C        | 180C         | NT             | one sample     |
| ↓           | 2:07 PM     | 180C       | 180C        | 180.3C       | NT             | out            |
| 4/12/2021   | 10:54 AM    | 104C       | 104L        | 104.4C       | NT             | in TSS         |
|             | 11:59 AM    | 104C       | 104C        | 104.7C       | NT             | out            |
|             | 1:30 PM     | 104C       | 104L        | 104.1C       | NT             | in             |
| ↓           | 2:30 PM     | 104C       | 104C        | 104.7C       | NT             | out            |
| 4/13/2021   | 7:50 AM     | 104C       | 104C        |              | NT             | one filter     |

Continued on Page \_\_\_\_\_

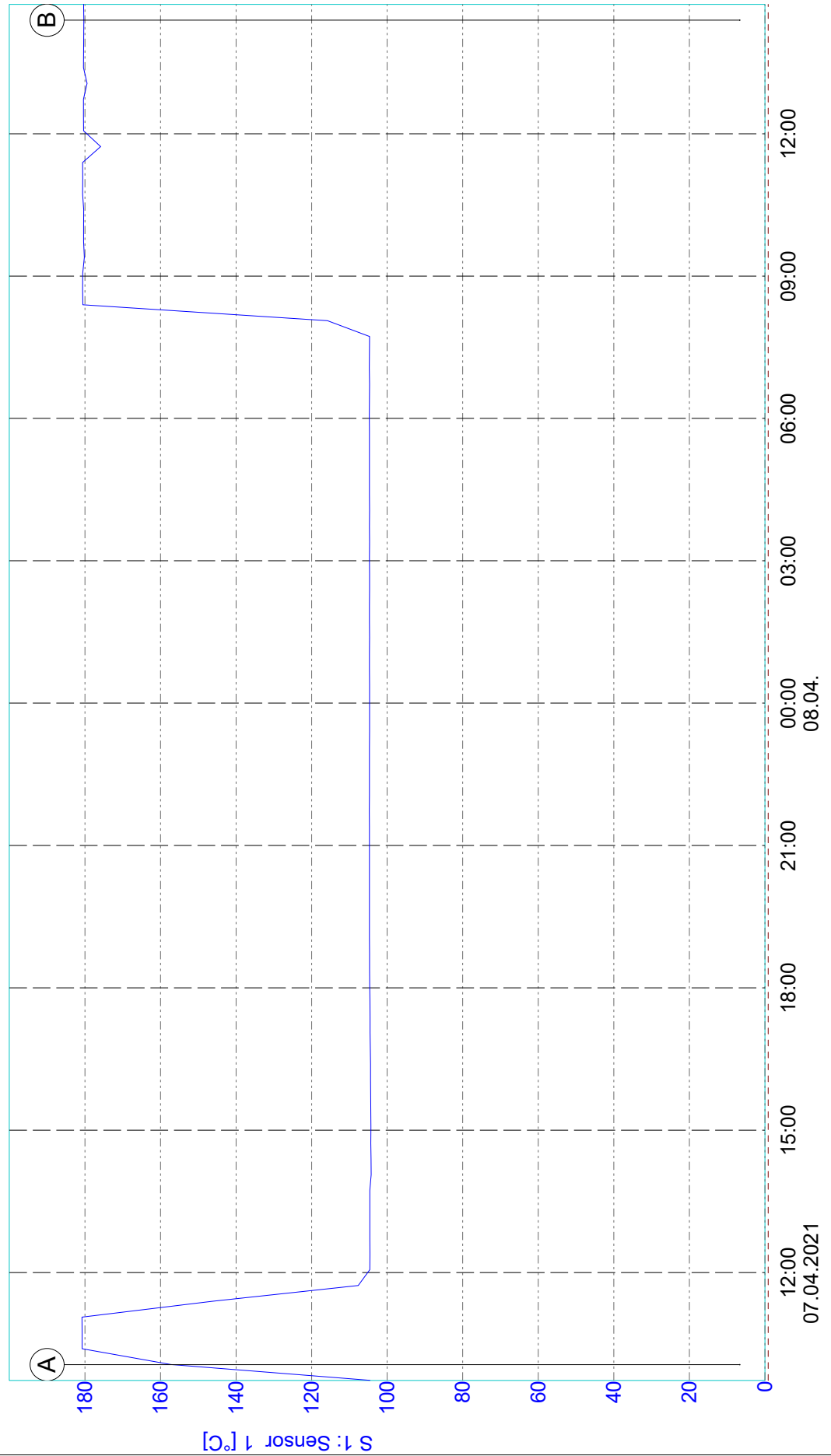
Read and Understood By \_\_\_\_\_

Signed \_\_\_\_\_

Date \_\_\_\_\_

Signed \_\_\_\_\_

Date \_\_\_\_\_



ECOLOG-NET LA8 ID:303801 - elproLOG ANALYZE 3.64.01

Date of Reading: 21.04.2021 07:39:53

Log Interval: 20 min

Module Tag: S1=Oven 10, S2=Oven 9, S3=Oven 11, S4=Oven 12, S5 - S8=Open

Data Description:

C:\Users\Esantiag\OneDrive - Environmental Protection Agency (EPA)\Desktop\elpro\303801\_S1=Oven 10, S2=Oven -20210421-01.MDF

Start 07.04.2021 10:03:35

END 08.04.2021 14:23:35

DATE:DAY/MONTH/YEAR



|      | Date       | Time     | Sensor 1   | Sensor 2  | Sensor 3  | Sensor 4  | Info |
|------|------------|----------|------------|-----------|-----------|-----------|------|
| 999  | 07.04.2021 | 09:43:35 | +104.54 °C | +20.61 °C | +22.1 °C  | +22.26 °C |      |
| 1000 | 07.04.2021 | 10:03:35 | +157.18 °C | +20.78 °C | +22.3 °C  | +22.36 °C |      |
| 1001 | 07.04.2021 | 10:23:35 | +180.73 °C | +20.88 °C | +22.1 °C  | +22.46 °C |      |
| 1002 | 07.04.2021 | 10:43:35 | +180.73 °C | +20.98 °C | +22.3 °C  | +22.59 °C |      |
| 1003 | 07.04.2021 | 11:03:35 | +180.76 °C | +21.01 °C | +22.3 °C  | +22.66 °C |      |
| 1004 | 07.04.2021 | 11:23:35 | +146.32 °C | +21.05 °C | +22.5 °C  | +22.76 °C |      |
| 1005 | 07.04.2021 | 11:43:35 | +107.63 °C | +21.08 °C | +22.3 °C  | +22.80 °C |      |
| 1006 | 07.04.2021 | 12:03:35 | +104.57 °C | +21.08 °C | +22.5 °C  | +22.83 °C |      |
| 1007 | 07.04.2021 | 12:23:35 | +104.54 °C | +21.08 °C | +22.5 °C  | +22.86 °C |      |
| 1008 | 07.04.2021 | 12:43:35 | +104.57 °C | +21.08 °C | +22.5 °C  | +22.90 °C |      |
| 1009 | 07.04.2021 | 13:03:35 | +104.57 °C | +21.11 °C | +22.5 °C  | +22.93 °C |      |
| 1010 | 07.04.2021 | 13:23:35 | +104.57 °C | +21.11 °C | +22.6 °C  | +23.00 °C |      |
| 1011 | 07.04.2021 | 13:43:35 | +104.57 °C | +21.15 °C | +246.7 °C | +23.06 °C |      |
| 1012 | 07.04.2021 | 14:03:35 | +104.20 °C | +21.18 °C | +453.2 °C | +23.17 °C |      |
| 1013 | 07.04.2021 | 14:23:35 | +104.24 °C | +21.25 °C | +450.7 °C | +23.30 °C |      |
| 1014 | 07.04.2021 | 14:43:35 | +104.30 °C | +21.31 °C | +450.9 °C | +23.40 °C |      |
| 1015 | 07.04.2021 | 15:03:35 | +104.27 °C | +21.35 °C | +451.0 °C | +23.54 °C |      |
| 1016 | 07.04.2021 | 15:23:35 | +104.30 °C | +21.38 °C | +450.0 °C | +23.64 °C |      |
| 1017 | 07.04.2021 | 15:43:35 | +104.34 °C | +21.38 °C | +450.0 °C | +23.74 °C |      |
| 1018 | 07.04.2021 | 16:03:35 | +104.37 °C | +21.35 °C | +450.0 °C | +23.80 °C |      |
| 1019 | 07.04.2021 | 16:23:35 | +104.37 °C | +21.31 °C | +450.2 °C | +23.87 °C |      |
| 1020 | 07.04.2021 | 16:43:35 | +104.44 °C | +21.28 °C | +450.2 °C | +23.91 °C |      |
| 1021 | 07.04.2021 | 17:03:35 | +104.50 °C | +21.25 °C | +450.2 °C | +23.91 °C |      |
| 1022 | 07.04.2021 | 17:23:35 | +104.50 °C | +21.21 °C | +450.2 °C | +23.94 °C |      |
| 1023 | 07.04.2021 | 17:43:35 | +104.54 °C | +21.18 °C | +450.0 °C | +23.94 °C |      |

ECOLOG-NET LA8 ID:303801 - elproLOG ANALYZE 3.64.01

Date of Reading: 21.04.2021 07:39:53

Log Interval: 20 min

Module Tag: S1=Oven 10, S2=Oven 9, S3=Oven 11, S4=Oven 12, S5 - S8=Open

Data Description:

C:\Users\Esantiag\OneDrive - Environmental Protection Agency (EPA)\Desktop\elpro\303801\_S1=Oven 10, S2=Oven -20210421-01.MDF

Start 07.04.2021 10:03:35

END 08.04.2021 14:23:35

Date: DAY/MONTH/YEAR



|      | Date       | Time     | Sensor 1   | Sensor 2  | Sensor 3  | Sensor 4  | Info |
|------|------------|----------|------------|-----------|-----------|-----------|------|
| 1024 | 07.04.2021 | 18:03:35 | +104.61 °C | +21.15 °C | +450.2 °C | +23.94 °C |      |
| 1025 | 07.04.2021 | 18:23:35 | +104.64 °C | +21.11 °C | +450.2 °C | +23.94 °C |      |
| 1026 | 07.04.2021 | 18:43:35 | +104.64 °C | +21.08 °C | +450.2 °C | +23.94 °C |      |
| 1027 | 07.04.2021 | 19:03:35 | +104.67 °C | +21.08 °C | +450.2 °C | +23.94 °C |      |
| 1028 | 07.04.2021 | 19:23:35 | +104.67 °C | +21.05 °C | +450.0 °C | +23.94 °C |      |
| 1029 | 07.04.2021 | 19:43:35 | +104.67 °C | +21.01 °C | +450.2 °C | +23.87 °C |      |
| 1030 | 07.04.2021 | 20:03:35 | +104.67 °C | +20.94 °C | +450.0 °C | +23.80 °C |      |
| 1031 | 07.04.2021 | 20:23:35 | +104.67 °C | +20.91 °C | +450.0 °C | +23.74 °C |      |
| 1032 | 07.04.2021 | 20:43:35 | +104.67 °C | +20.84 °C | +450.0 °C | +23.64 °C |      |
| 1033 | 07.04.2021 | 21:03:35 | +104.67 °C | +20.78 °C | +450.2 °C | +23.57 °C |      |
| 1034 | 07.04.2021 | 21:23:35 | +104.67 °C | +20.74 °C | +450.2 °C | +23.50 °C |      |
| 1035 | 07.04.2021 | 21:43:35 | +104.71 °C | +20.74 °C | +450.4 °C | +23.43 °C |      |
| 1036 | 07.04.2021 | 22:03:35 | +104.67 °C | +20.81 °C | +450.2 °C | +23.40 °C |      |
| 1037 | 07.04.2021 | 22:23:35 | +104.67 °C | +20.81 °C | +450.2 °C | +23.40 °C |      |
| 1038 | 07.04.2021 | 22:43:35 | +104.67 °C | +20.81 °C | +450.2 °C | +23.37 °C |      |
| 1039 | 07.04.2021 | 23:03:35 | +104.67 °C | +20.81 °C | +450.4 °C | +23.37 °C |      |
| 1040 | 07.04.2021 | 23:23:35 | +104.64 °C | +20.78 °C | +450.4 °C | +23.33 °C |      |
| 1041 | 07.04.2021 | 23:43:35 | +104.64 °C | +20.81 °C | +450.4 °C | +23.33 °C |      |
| 1042 | 08.04.2021 | 00:03:35 | +104.64 °C | +20.78 °C | +450.2 °C | +23.30 °C |      |
| 1043 | 08.04.2021 | 00:23:35 | +104.64 °C | +20.74 °C | +450.2 °C | +23.27 °C |      |
| 1044 | 08.04.2021 | 00:43:35 | +104.67 °C | +20.74 °C | +450.4 °C | +23.23 °C |      |
| 1045 | 08.04.2021 | 01:03:35 | +104.67 °C | +20.68 °C | +450.2 °C | +23.20 °C |      |
| 1046 | 08.04.2021 | 01:23:35 | +104.64 °C | +20.64 °C | +450.2 °C | +23.13 °C |      |
| 1047 | 08.04.2021 | 01:43:35 | +104.67 °C | +20.57 °C | +450.0 °C | +23.10 °C |      |
| 1048 | 08.04.2021 | 02:03:35 | +104.67 °C | +20.47 °C | +450.0 °C | +23.03 °C |      |



ECOLOG-NET LA8 ID:303801 - elproLOG ANALYZE 3.64.01

Date of Reading: 21.04.2021 07:39:53

Log Interval: 20 min

Module Tag: S1=Oven 10, S2=Oven 9, S3=Oven 11, S4=Oven 12, S5 - S8=Open

Data Description:

C:\Users\Esantiag\OneDrive - Environmental Protection Agency (EPA)\Desktop\elpro\303801\_S1=Oven 10, S2=Oven -20210421-01.MDF

Start 07.04.2021 10:03:35

END 08.04.2021 14:23:35

Date: DAY/MONTH/YEAR



|      | Date       | Time     | Sensor 1   | Sensor 2  | Sensor 3  | Sensor 4  | Info |
|------|------------|----------|------------|-----------|-----------|-----------|------|
| 1049 | 08.04.2021 | 02:23:35 | +104.64 °C | +20.41 °C | +450.2 °C | +22.96 °C |      |
| 1050 | 08.04.2021 | 02:43:35 | +104.64 °C | +20.34 °C | +450.0 °C | +22.90 °C |      |
| 1051 | 08.04.2021 | 03:03:35 | +104.67 °C | +20.27 °C | +450.2 °C | +22.86 °C |      |
| 1052 | 08.04.2021 | 03:23:35 | +104.64 °C | +20.20 °C | +450.0 °C | +22.80 °C |      |
| 1053 | 08.04.2021 | 03:43:35 | +104.67 °C | +20.14 °C | +450.2 °C | +22.73 °C |      |
| 1054 | 08.04.2021 | 04:03:35 | +104.64 °C | +20.10 °C | +450.2 °C | +22.69 °C |      |
| 1055 | 08.04.2021 | 04:23:35 | +104.67 °C | +20.04 °C | +450.2 °C | +22.66 °C |      |
| 1056 | 08.04.2021 | 04:43:35 | +104.67 °C | +20.00 °C | +450.2 °C | +22.63 °C |      |
| 1057 | 08.04.2021 | 05:03:35 | +104.67 °C | +19.97 °C | +450.2 °C | +22.56 °C |      |
| 1058 | 08.04.2021 | 05:23:35 | +104.67 °C | +19.97 °C | +450.2 °C | +22.53 °C |      |
| 1059 | 08.04.2021 | 05:43:35 | +104.67 °C | +19.97 °C | +450.2 °C | +22.49 °C |      |
| 1060 | 08.04.2021 | 06:03:35 | +104.71 °C | +19.97 °C | +450.4 °C | +22.49 °C |      |
| 1061 | 08.04.2021 | 06:23:35 | +104.67 °C | +20.00 °C | +450.4 °C | +22.46 °C |      |
| 1062 | 08.04.2021 | 06:43:35 | +104.64 °C | +20.07 °C | +450.4 °C | +22.49 °C |      |
| 1063 | 08.04.2021 | 07:03:35 | +104.71 °C | +20.17 °C | +450.4 °C | +22.56 °C |      |
| 1064 | 08.04.2021 | 07:23:35 | +104.67 °C | +20.24 °C | +450.4 °C | +22.63 °C |      |
| 1065 | 08.04.2021 | 07:43:35 | +104.64 °C | +20.31 °C | +450.2 °C | +22.69 °C |      |
| 1066 | 08.04.2021 | 08:03:35 | +115.77 °C | +20.37 °C | +450.4 °C | +22.73 °C |      |
| 1067 | 08.04.2021 | 08:23:35 | +180.53 °C | +20.44 °C | +450.9 °C | +22.80 °C |      |
| 1068 | 08.04.2021 | 08:43:35 | +180.60 °C | +20.47 °C | +423.1 °C | +22.83 °C |      |
| 1069 | 08.04.2021 | 09:03:35 | +180.56 °C | +20.57 °C | +396.7 °C | +22.90 °C |      |
| 1070 | 08.04.2021 | 09:23:35 | +180.13 °C | +20.64 °C | +370.6 °C | +22.93 °C |      |
| 1071 | 08.04.2021 | 09:43:35 | +180.33 °C | +20.68 °C | +345.9 °C | +22.96 °C |      |
| 1072 | 08.04.2021 | 10:03:35 | +180.33 °C | +20.71 °C | +323.2 °C | +23.00 °C |      |
| 1073 | 08.04.2021 | 10:23:35 | +180.29 °C | +20.74 °C | +302.0 °C | +23.03 °C |      |

ECOLOG-NET LA8 ID:303801 - elproLOG ANALYZE 3.64.01

Date of Reading: 21.04.2021 07:39:53

Log Interval: 20 min

Module Tag: S1=Oven 10, S2=Oven 9, S3=Oven 11, S4=Oven 12, S5 - S8=Open

Data Description:

C:\Users\Esantiag\OneDrive - Environmental Protection Agency (EPA)\Desktop\elpro\303801\_S1=Oven 10, S2=Oven -20210421-01.MDF

Start 07.04.2021 10:03:35

END 08.04.2021 14:23:35

Date: DAY/MONTH/YEAR



|      | Date       | Time     | Sensor 1   | Sensor 2  | Sensor 3  | Sensor 4  | Info |
|------|------------|----------|------------|-----------|-----------|-----------|------|
| 1074 | 08.04.2021 | 10:43:35 | +180.60 °C | +20.78 °C | +282.2 °C | +23.06 °C |      |
| 1075 | 08.04.2021 | 11:03:35 | +180.56 °C | +20.78 °C | +264.0 °C | +23.10 °C |      |
| 1076 | 08.04.2021 | 11:23:35 | +180.60 °C | +20.78 °C | +247.0 °C | +23.10 °C |      |
| 1077 | 08.04.2021 | 11:43:35 | +175.82 °C | +20.78 °C | +231.4 °C | +23.10 °C |      |
| 1078 | 08.04.2021 | 12:03:35 | +180.33 °C | +20.74 °C | +216.7 °C | +23.10 °C |      |
| 1079 | 08.04.2021 | 12:23:35 | +180.36 °C | +20.74 °C | +203.3 °C | +23.06 °C |      |
| 1080 | 08.04.2021 | 12:43:35 | +180.36 °C | +20.74 °C | +191.0 °C | +23.10 °C |      |
| 1081 | 08.04.2021 | 13:03:35 | +179.39 °C | +20.74 °C | +179.6 °C | +23.06 °C |      |
| 1082 | 08.04.2021 | 13:23:35 | +180.36 °C | +20.74 °C | +169.1 °C | +23.10 °C |      |
| 1083 | 08.04.2021 | 13:43:35 | +180.33 °C | +20.74 °C | +159.2 °C | +23.10 °C |      |
| 1084 | 08.04.2021 | 14:03:35 | +180.29 °C | +20.74 °C | +150.3 °C | +23.10 °C |      |
| 1085 | 08.04.2021 | 14:23:35 | +180.26 °C | +20.74 °C | +141.9 °C | +23.13 °C |      |
| 1086 | 08.04.2021 | 14:43:35 | +180.33 °C | +20.78 °C | +134.2 °C | +23.17 °C |      |

# BATCH REAGENTS

19J0122



Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605  
 Phone:(312)353-8370 Fax:(312)886-2591

**Analytical Standard Record**

**US EPA Region 5 LSASD Analytical Services Branch**

**19J0122**

|                            |                               |                     |                       |
|----------------------------|-------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>Filters - ProWeigh</u>     | <b>Expires:</b>     | Oct-30-26             |
| <b>Standard Type:</b>      | Other Solution                | <b>Prepared:</b>    | Oct-01-19             |
| <b>Solvent:</b>            | NA                            | <b>Prepared By:</b> | ** Vendor **          |
| <b>Final Volume (mls):</b> | 1                             | <b>Department:</b>  | A&I                   |
| <b>Vials:</b>              | 1                             | <b>Last Edit:</b>   | Oct-01-19 16:33 by FA |
| <b>Vendor:</b>             | Environmental Express         |                     |                       |
| <b>Lot Number:</b>         | 600022-9154-R2, Box ID 102XNW |                     |                       |

Environmental Express ProWeigh Filters, Part # F93447MM-X. DoubleWeigh Filters for TSS, 47mm, 100pk.  
 No expiration date is stated by the vendor.

| Analyte | CAS Number | Concentration (ppm) |
|---------|------------|---------------------|
|---------|------------|---------------------|

**REVIEWED**

*By AK at 10:23 am, May 06, 2021*



| Box ID | ID    | Weight 1 | Lot    |
|--------|-------|----------|--------|
| 102XNW | eSLI1 | 0.1192   | 600022 |
| 102XNW | eSLI2 | 0.1201   | 600022 |
| 102XNW | eSLI3 | 0.1195   | 600022 |
| 102XNW | eSLI4 | 0.1196   | 600022 |
| 102XNW | eSLI5 | 0.1189   | 600022 |
| 102XNW | eSLI6 | 0.1196   | 600022 |
| 102XNW | eSLI7 | 0.1185   | 600022 |
| 102XNW | eSLI8 | 0.118    | 600022 |
| 102XNW | eSLI9 | 0.118    | 600022 |
| 102XNW | eSLIA | 0.1172   | 600022 |
| 102XNW | eSLIB | 0.1183   | 600022 |
| 102XNW | eSLIC | 0.1183   | 600022 |
| 102XNW | eSLID | 0.1172   | 600022 |
| 102XNW | eSLIE | 0.1191   | 600022 |
| 102XNW | eSLIF | 0.1199   | 600022 |
| 102XNW | eSLIG | 0.1197   | 600022 |
| 102XNW | eSLIH | 0.1186   | 600022 |
| 102XNW | eSLII | 0.1186   | 600022 |
| 102XNW | eSLIJ | 0.117    | 600022 |
| 102XNW | eSLIK | 0.1185   | 600022 |
| 102XNW | eSLIL | 0.1181   | 600022 |
| 102XNW | eSLIM | 0.1183   | 600022 |
| 102XNW | eSLIN | 0.1178   | 600022 |
| 102XNW | eSLIP | 0.1194   | 600022 |
| 102XNW | eSLIQ | 0.1203   | 600022 |
| 102XNW | eSLJG | 0.1189   | 600022 |
| 102XNW | eSLJH | 0.1199   | 600022 |
| 102XNW | eSLJI | 0.1178   | 600022 |
| 102XNW | eSLJJ | 0.1203   | 600022 |
| 102XNW | eSLJK | 0.1191   | 600022 |
| 102XNW | eSLJL | 0.1174   | 600022 |
| 102XNW | eSLJM | 0.1181   | 600022 |
| 102XNW | eSLJN | 0.1181   | 600022 |
| 102XNW | eSLJP | 0.1189   | 600022 |
| 102XNW | eSLJQ | 0.1188   | 600022 |
| 102XNW | eSLJR | 0.1189   | 600022 |
| 102XNW | eSLJS | 0.1188   | 600022 |
| 102XNW | eSLJT | 0.1202   | 600022 |
| 102XNW | eSLJU | 0.1168   | 600022 |
| 102XNW | eSLJV | 0.119    | 600022 |
| 102XNW | eSLJW | 0.1172   | 600022 |
| 102XNW | eSLJX | 0.1189   | 600022 |
| 102XNW | eSLJY | 0.1178   | 600022 |
| 102XNW | eSLJZ | 0.1187   | 600022 |
| 102XNW | eSLK0 | 0.1196   | 600022 |
| 102XNW | eSLK1 | 0.1183   | 600022 |

|        |       |        |        |
|--------|-------|--------|--------|
| 102XNW | eSLK2 | 0.118  | 600022 |
| 102XNW | eSLK3 | 0.1178 | 600022 |
| 102XNW | eSLK4 | 0.1196 | 600022 |
| 102XNW | eSLK5 | 0.1196 | 600022 |
| 102XNW | eSLK6 | 0.119  | 600022 |
| 102XNW | eSLK7 | 0.1177 | 600022 |
| 102XNW | eSLK8 | 0.1194 | 600022 |
| 102XNW | eSLK9 | 0.1195 | 600022 |
| 102XNW | eSLKA | 0.1166 | 600022 |
| 102XNW | eSLKB | 0.1182 | 600022 |
| 102XNW | eSLKC | 0.1182 | 600022 |
| 102XNW | eSLKD | 0.1193 | 600022 |
| 102XNW | eSLKE | 0.1195 | 600022 |
| 102XNW | eSLKF | 0.1187 | 600022 |
| 102XNW | eSLKG | 0.1193 | 600022 |
| 102XNW | eSLKH | 0.1182 | 600022 |
| 102XNW | eSLKI | 0.1194 | 600022 |
| 102XNW | eSLKJ | 0.1191 | 600022 |
| 102XNW | eSLKK | 0.1202 | 600022 |
| 102XNW | eSLKL | 0.1199 | 600022 |
| 102XNW | eSLKM | 0.1191 | 600022 |
| 102XNW | eSLKN | 0.1195 | 600022 |
| 102XNW | eSLKP | 0.1171 | 600022 |
| 102XNW | eSLKQ | 0.1181 | 600022 |
| 102XNW | eSLKR | 0.1183 | 600022 |
| 102XNW | eSLKS | 0.1187 | 600022 |
| 102XNW | eSLKT | 0.1196 | 600022 |
| 102XNW | eSLKU | 0.1191 | 600022 |
| 102XNW | eSLKV | 0.1193 | 600022 |
| 102XNW | eSLZG | 0.12   | 600022 |
| 102XNW | eSLZH | 0.1185 | 600022 |
| 102XNW | eSLZI | 0.12   | 600022 |
| 102XNW | eSLZJ | 0.1203 | 600022 |
| 102XNW | eSLZK | 0.1191 | 600022 |
| 102XNW | eSLZL | 0.1203 | 600022 |
| 102XNW | eSLZM | 0.1187 | 600022 |
| 102XNW | eSLZN | 0.1193 | 600022 |
| 102XNW | eSLZP | 0.1185 | 600022 |
| 102XNW | eSLZQ | 0.1179 | 600022 |
| 102XNW | eSLZR | 0.1178 | 600022 |
| 102XNW | eSLZS | 0.1173 | 600022 |
| 102XNW | eSLZT | 0.1181 | 600022 |
| 102XNW | eSLZU | 0.1178 | 600022 |
| 102XNW | eSLZV | 0.1193 | 600022 |
| 102XNW | eSLZW | 0.1187 | 600022 |
| 102XNW | eSLZX | 0.12   | 600022 |
| 102XNW | eSLZY | 0.1198 | 600022 |

|        |       |        |        |
|--------|-------|--------|--------|
| 102XNW | eSLZZ | 0.1189 | 600022 |
| 102XNW | eSM00 | 0.1178 | 600022 |
| 102XNW | eSM01 | 0.1178 | 600022 |
| 102XNW | eSM02 | 0.1191 | 600022 |
| 102XNW | eSM03 | 0.119  | 600022 |
| 102XNW | eSM04 | 0.1193 | 600022 |
| 102XNW | eSM05 | 0.119  | 600022 |



A Waters Company

**REVIEWED**

By AK at 2:03 pm, Dec 09, 2020

Certified Reference Material

# **▪ Certificate of Analysis ▪**

**Product:** WatR™ Pollution Minerals  
**Catalog Number:** 506  
**Lot No.** P295-506  
**Certificate Issue Date:** November 19, 2019  
**Expiration Date:** December 05, 2022  
**Revision Number:** Original

LIMS  
 20K0522

Product use instructions are included as part of the certification packet and are paginated separately from this Certificate of Analysis. Please reference the product use instructions for catalog #506 revision 090119.

## **CERTIFICATION**

| Parameter                       | Certified Value <sup>1</sup> | Uncertainty <sup>2</sup> | QC Performance Acceptance Limits <sup>3</sup> | PT Performance Acceptance Limits <sup>4</sup> |
|---------------------------------|------------------------------|--------------------------|-----------------------------------------------|-----------------------------------------------|
|                                 | mg/L                         | %                        | 90.2 mg/L                                     | mg/L                                          |
| Alkalinity as CaCO <sub>3</sub> | 133                          | 1.40                     | <del>90.3%</del> 120 - 144 <del>108.3%</del>  | 113 - 153                                     |
| Chloride                        | 41.3                         | 3.54                     | 37.5 - 44.6                                   | 35.6 - 47.1                                   |
| Conductivity at 25°C (µmhos/cm) | 455                          | 1.21                     | 431 - 482                                     | 410 - 500                                     |
| Fluoride                        | 2.78                         | 4.75                     | 2.33 - 3.09                                   | 2.24 - 3.21                                   |
| Potassium                       | 28.9                         | 2.24                     | 25.1 - 32.1                                   | 23.1 - 34.7                                   |
| Sodium                          | 88.7                         | 1.78                     | 78.4 - 97.6                                   | 71.0 - 106                                    |
| Sulfate                         | 28.5                         | 3.40                     | 23.9 - 31.6                                   | 22.9 - 33.0                                   |
| Total Dissolved Solids at 180°C | 416                          | 2.08                     | <del>84.9%</del> 353 - 457 <del>109.9%</del>  | 371 - 461                                     |
| Total Solids at 105°C           | 433                          | 3.47                     | 375 - 481                                     | 388 - 478                                     |

## **ANALYTICAL VERIFICATION**

| Parameter                       | Certified Value <sup>1</sup> | Proficiency Testing Study |                       | NIST Traceability |                         |          |
|---------------------------------|------------------------------|---------------------------|-----------------------|-------------------|-------------------------|----------|
|                                 |                              | Mean                      | Recovery <sup>5</sup> | n                 | SRM Number <sup>6</sup> | Recovery |
|                                 | mg/L                         | mg/L                      | %                     |                   |                         | %        |
| Alkalinity as CaCO <sub>3</sub> | 133                          | 133                       | 99.9                  | 33                | 187f                    | 100      |
| Chloride                        | 41.3                         | 41.3                      | 99.9                  | 47                | 3182                    | 99.9     |
| Conductivity at 25°C (µmhos/cm) | 455                          | 449                       | 98.6                  | 47                | 999c                    | 98.0     |
| Fluoride                        | 2.78                         | 2.69                      | 96.7                  | 31                | 3183                    | 98.0     |
| Potassium                       | 28.9                         | 28.0                      | 97.0                  | 34                | 3141a                   | 97.7     |
| Sodium                          | 88.7                         | 85.4                      | 96.2                  | 34                | 3152a                   | 97.9     |
| Sulfate                         | 28.5                         | 28.7                      | 101                   | 39                | 3181                    | 96.4     |
| Total Dissolved Solids at 180°C | 416                          | 409                       | 98.4                  | 18                | 999c                    | 100      |
| Total Solids at 105°C           | 433                          | 433                       | 100                   | 14                | 999c                    | 99.5     |

Page 1 of 2 Lot: P295-506

16341 Table Mountain Pkwy ▪ Golden, CO 80403 ▪ T: 800.372.0122 ▪ 303.431.8454 ▪ [www.eraqc.com](http://www.eraqc.com)



**ID 24470****Current Step is** [Close](#)**Initiated by** Amanda Wroble**Initiate Client Contact by** Amanda Wroble on 4/6/2021 11:25:30 AM**Send for Notification; Close Contact by** Amanda Wroble on 4/6/2021 11:29:51 AM**Launched Workflow** Record Disposition (ID: [24472](#)) on 4/6/2021 11:29:56 AM**Record Disposition Launched; Close Contact by** Workflow Action Executor on 4/6/2021 11:29:56 AM**Close****CC - Type**

Select all that apply.

Client Notification/Consent

**Short Title**

CC and/or NCR short title

Deardorff - TSS TDS holding time exceedance

**CC - Contact Summary**

If no action is requested, type N/A.

| Contact Date | Client Name and Affiliation | Project and/or Work Order | Contact Description                                                                                                                                                            | Action Request |
|--------------|-----------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| 4/6/2021     | Ben Atkinson, ECAD/WECAB    | Deardorff, 2103010        | The client was notified that the TSS and TDS samples were/will be analyzed outside of holding time and will be flagged for the exceedance.<br><br>See attached correspondence. |                |

**CC - Contact Attachment**

24471 Deardorff\_TSS TDS holding time exceedance\_040621.pdf

24471 Deardorff\_TSS TDS holding time exceedance\_040621.pdf

**CC - Affected Personnel**

Select all group members that apply.

4. ASB Sample Coordinator(598)

ASB Group - A&amp;I (592)

1. ASB QA Officer(600)

4. ASB Sample Coordinator(598)

ASB Group - A&amp;I (592)

1. ASB QA Officer(600)

**CC - Action Summary**

ONE GROUP MEMBER ONLY: Complete the appropriate fields below and select SAVE CHANGES. Once the client has accepted the action or requested action of another group, choose the appropriate route. Choose ADDITIONAL AFFECTED PERSONNEL only if an action is requested of another group. If no additional action is requested, type N/A.

| Action Date | Action Description | Additional Action Request |
|-------------|--------------------|---------------------------|
|             |                    |                           |

**CC - Action Attachment**

**CC - Additional Affected Personnel**

ONLY IF actions are requested of another group, select all group members that apply.

**CC - Additional Action Summary**

ONE GROUP MEMBER ONLY: Complete the appropriate fields below and select SAVE CHANGES. Once the client has accepted the action, choose the CLOSE CONTACT route. If an action is requested of another group, choose CLOSE CONTACT route and initiate a new client contact.

| Additional Action Date | Additional Action Description |
|------------------------|-------------------------------|
|                        |                               |

**CC - Additional Action Attachment**

**CC - Wait for Disposition Date**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5 ANALYTICAL SERVICES BRANCH LABORATORY  
536 SOUTH CLARK STREET (LAB-10C)  
CHICAGO, ILLINOIS 60605

**ELECTRONIC LABORATORY DATA PACKAGE  
FINAL LEVEL IV  
COVER PAGE**

|                                      |               |
|--------------------------------------|---------------|
| LIMS Work order(s):                  | 2103010       |
| Primary Analyst:                     | Nidia Fuentes |
| Analysis:                            | TKN DA        |
| Date:                                | May 03, 2021  |
| Data Reporting Qualtrax Workflow ID: | 24876         |

Digital Signature of Primary Analyst:

|  |
|--|
|  |
|--|

**Digital Signature Agreement:** By signing above the primary analyst understands and agrees that they will be held legally bound, obligated, and responsible for the use of their digital signature as they would be by using their hand-written signature.



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 Work Order Number: 2103010

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**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY****US EPA Region 5 LSASD Analytical Services Branch****536 SOUTH CLARK STREET****CHICAGO, ILLINOIS 60605**

**Date:** 5/3/2021

**Title:** ASB Data Report for Deardorff

**To:** Water Division, US EPA Region 5  
77 West Jackson Boulevard  
Chicago, IL 60604

**From:** Nidia Fuentes, Chemist  
fuentes.nidia@epa.gov  
US EPA Region 5 LSASD Analytical Services Branch

The results reported in this document apply to the samples as received and relate only to the items tested. The data transmitted under this cover memo successfully passed the data review process and applicable Analytical Services Branch (ASB) laboratory Standard Operating Procedures. In accordance with the EPA QA/G-8 *Guidance on Environmental Data Verification and Data Validation*, ASB performs data verification on all the data generated internally. ASB does not perform data validation or quality assessment procedures.

This report was reviewed and the information provided herein accurately represents the analysis performed.

*Please contact the analyst with any technical report issues, Amanda Wroble at (312)-353-0375 for sample project concerns, and Robert Snyder at (312)-353-9083 with data transmittal questions. Thank you.*

**Attached are Results for: Deardorff**

---

**Analyses included in this report:**

TKN DA

Report Name: 2103010 TKN DA FINAL May 03 21 0826



**Environmental Protection Agency Region 5**  
**US EPA Region 5 LSASD Analytical Services Branch**

536 South Clark Street, Chicago, IL 60605  
 Phone:(312)353-8370 Fax:(312)886-2591

Water Division, US EPA Region 5  
 77 West Jackson Boulevard  
 Chicago IL, 60604

Project: Deardorff  
 Project Number: BA-01-21  
 Project Manager: Ben Atkinson

**Reported:**  
 May-03-21 08:26

**Accredited Analyses included in this Report**



**Method:** EPA 351.2 in Water

**Analysis:** TKN DA

**Analyte**

**Certifications**

Total Kjeldahl Nitrogen

ISO/IEC 17025:2017

**Analytes not listed above are not accredited by ANAB.**



## Environmental Protection Agency Region 5

### US EPA Region 5 LSASD Analytical Services Branch

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Water Division, US EPA Region 5  
 77 West Jackson Boulevard  
 Chicago IL, 60604

Project: Deardorff  
 Project Number: BA-01-21  
 Project Manager: Ben Atkinson

**Reported:**  
 May-03-21 08:26

## ANALYSIS CASE NARRATIVE

### Analysis List

#### TKN DA

Analyst: Nidia Fuentes  
 Phone #: 312-353-9079

## General Information

### Samples analyzed:

| <u>Sample</u> | <u>Analysis List</u> |
|---------------|----------------------|
| 2103010-01    | TKN DA               |
| 2103010-02    | TKN DA               |
| 2103010-03    | TKN DA               |
| 2103010-04    | TKN DA               |

### Holding times:

All holding times were met.

## Sample Analysis and Results

The samples were analyzed using ASB SOP AIG035B, Version #8. The samples were stored in the refrigerator at all times, except when in use. The data reported herein meets any requirements referenced in the previously mentioned SOP and Sampling QAPP titled "General Field Sampling Plan for AFO Inspections" and dated "FY 2021", except for those listed in the Quality Control section.

Additionally, Pen & Ink document Qualtrax ID 24510 (Adjusting the preparation of Hypochlorite solution by assay using a weaker sodium hypochlorite reagent.) was used. This situation does not affect the quality of the data.

### SOP Based on:

Method List  
 EPA 351.2

## Quality Control

All quality control audits were within ASB limits, except for matrix spike.

Sample 2103010-01 (S01) matrix spike recovery (81%) was below the QC limit of 90 - 110%, no flag is apply because sample spike concentration was diluted out.



**Environmental Protection Agency Region 5**  
**US EPA Region 5 LSASD Analytical Services Branch**

536 South Clark Street, Chicago, IL 60605  
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Water Division, US EPA Region 5  
77 West Jackson Boulevard  
Chicago IL, 60604

Project: Deardorff  
Project Number: BA-01-21  
Project Manager: Ben Atkinson

**Reported:**  
May-03-21 08:26





# Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

## WORK ORDER

Printed: 3/30/2021 1:30:52PM

**2103010**

## US EPA Region 5 LSASD Analytical Services Branch

**Client:** Water Division, US EPA Region 5  
**Project:** Deardorff

**Project Manager:** Angela Ockrassa Davis  
**Project Number:** BA-01-21

### Report To:

Ben Atkinson  
Water Division, US EPA Region 5

77 West Jackson Boulevard  
Chicago, IL 60604

Phone: (312) 353-2004  
Fax: (312) 886-2001

Date Due: May-14-21 15:00 (45 day TAT)

Received By: Robert Snyder

Logged In By: Robert Snyder

Date Received: Mar-30-21 10:08

Date Logged In: Mar-30-21 11:31

|                    |     |                                                              |
|--------------------|-----|--------------------------------------------------------------|
| Sample tags/labels | Yes | <b>Work Order Comments:</b><br>pH paper used in SC = 18D1901 |
| Seals Intact       | Yes |                                                              |
| Received on ice    | Yes |                                                              |
| Paperwork Included | Yes |                                                              |

### Cooler(s) information:

Default Cooler - 0.40 C

**Sample ID:** [2103010-01](#)

**Sampled:** [Mar-26-21 10:16](#)

**Matrix:** [Water](#)

**Sample Name:** [S01](#)

**Sample Location/Comments:** [Pasture outlet](#)

### Sample Comments:

| Analysis                                  | Hold time (days) | Expires         | Comments |
|-------------------------------------------|------------------|-----------------|----------|
| Ammonia N DA, Distilled                   | 28               | Apr-23-21 10:16 | pH = 1   |
| Nitrate-Nitrite N DA, Enzymatic reduction | 28               | Apr-23-21 10:16 | pH = 1   |
| Solids, TDS                               | 7                | Apr-02-21 10:16 | pH = 7   |
| Solids, TSS                               | 7                | Apr-02-21 10:16 | pH = 7   |
| TKN DA                                    | 28               | Apr-23-21 10:16 | pH = 1   |
| Total Phosphorus DA                       | 28               | Apr-23-21 10:16 | pH = 1   |

**Sample ID:** [2103010-02](#)

**Sampled:** [Mar-26-21 10:24](#)

**Matrix:** [Water](#)

**Sample Name:** [S02](#)

**Sample Location/Comments:** [Leachate inlet](#)

### Sample Comments:

| Analysis                                  | Hold time (days) | Expires         | Comments |
|-------------------------------------------|------------------|-----------------|----------|
| Ammonia N DA, Distilled                   | 28               | Apr-23-21 10:24 | pH = 1   |
| Nitrate-Nitrite N DA, Enzymatic reduction | 28               | Apr-23-21 10:24 | pH = 1   |
| Solids, TDS                               | 7                | Apr-02-21 10:24 | pH = 7   |
| Solids, TSS                               | 7                | Apr-02-21 10:24 | pH = 7   |

## WORK ORDER

Printed: 3/30/2021 1:30:52PM

2103010

## US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5

Project Manager: Angela Ockrassa Davis

Project: Deardorff

Project Number: BA-01-21

Sample ID: [2103010-02](#) Sampled: [Mar-26-21 10:24](#) Matrix: [Water](#)Sample Name: [S02](#) Sample Location/Comments: [Leachate inlet](#)

## Sample Comments:

| Analysis            | Hold time (days) | Expires         | Comments |
|---------------------|------------------|-----------------|----------|
| TKN DA              | 28               | Apr-23-21 10:24 | pH = 1   |
| Total Phosphorus DA | 28               | Apr-23-21 10:24 | pH = 1   |

Sample ID: [2103010-03](#) Sampled: [Mar-26-21 11:47](#) Matrix: [Water](#)Sample Name: [S03](#) Sample Location/Comments: [Leachate outlet](#)

## Sample Comments:

| Analysis                                  | Hold time (days) | Expires         | Comments |
|-------------------------------------------|------------------|-----------------|----------|
| Ammonia N DA, Distilled                   | 28               | Apr-23-21 11:47 | pH = 1   |
| Nitrate-Nitrite N DA, Enzymatic reduction | 28               | Apr-23-21 11:47 | pH = 1   |
| Solids, TDS                               | 7                | Apr-02-21 11:47 | pH = 7   |
| Solids, TSS                               | 7                | Apr-02-21 11:47 | pH = 7   |
| TKN DA                                    | 28               | Apr-23-21 11:47 | pH = 1   |
| Total Phosphorus DA                       | 28               | Apr-23-21 11:47 | pH = 1   |

Sample ID: [2103010-04](#) Sampled: [Mar-26-21 16:10](#) Matrix: [Water](#)Sample Name: [B01](#) Sample Location/Comments: [Blank](#)

## Sample Comments:

| Analysis                                  | Hold time (days) | Expires         | Comments |
|-------------------------------------------|------------------|-----------------|----------|
| Ammonia N DA, Distilled                   | 28               | Apr-23-21 16:10 | pH = 1   |
| Nitrate-Nitrite N DA, Enzymatic reduction | 28               | Apr-23-21 16:10 | pH = 1   |
| Solids, TDS                               | 7                | Apr-02-21 16:10 | pH = 5   |
| Solids, TSS                               | 7                | Apr-02-21 16:10 | pH = 5   |
| TKN DA                                    | 28               | Apr-23-21 16:10 | pH = 1   |
| Total Phosphorus DA                       | 28               | Apr-23-21 16:10 | pH = 1   |

## WORK ORDER

Printed: 3/30/2021 1:30:52PM

**2103010****US EPA Region 5 LSASD Analytical Services Branch**

**Client:** Water Division, US EPA Region 5  
**Project:** Deardorff

**Project Manager:** Angela Ockrassa Davis  
**Project Number:** BA-01-21

---

Reviewed By

Date



## Environmental Protection Agency Region 5

### US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605  
 Phone:(312)353-8370 Fax:(312)886-2591

Water Division, US EPA Region 5  
 77 West Jackson Boulevard  
 Chicago IL, 60604

Project: Deardorff  
 Project Number: BA-01-21  
 Project Manager: Ben Atkinson

**Reported:**  
 May-03-21 08:26

### Total Kjeldahl Nitrogen, EPA 351.2 (modified)

### US EPA Region 5 LSASD Analytical Services Branch

**S01 (2103010-01) Matrix: Water Sampled: Mar-26-21 10:16 Received: Mar-30-21 10:08**

| Analyte                        | Result      | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Units | Dilution | Batch   | Prepared  | Analyzed  |
|--------------------------------|-------------|-----------------------|------|--------------------|-------|----------|---------|-----------|-----------|
| <b>Total Kjeldahl Nitrogen</b> | <b>16.7</b> |                       | 3.00 | 5.00               | mg/L  | 10       | B21D011 | Apr-07-21 | Apr-08-21 |

**S02 (2103010-02) Matrix: Water Sampled: Mar-26-21 10:24 Received: Mar-30-21 10:08**

| Analyte                        | Result      | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Units | Dilution | Batch   | Prepared  | Analyzed  |
|--------------------------------|-------------|-----------------------|------|--------------------|-------|----------|---------|-----------|-----------|
| <b>Total Kjeldahl Nitrogen</b> | <b>67.2</b> |                       | 3.00 | 5.00               | mg/L  | 10       | B21D011 | Apr-07-21 | Apr-08-21 |

**S03 (2103010-03) Matrix: Water Sampled: Mar-26-21 11:47 Received: Mar-30-21 10:08**

| Analyte                        | Result      | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Units | Dilution | Batch   | Prepared  | Analyzed  |
|--------------------------------|-------------|-----------------------|------|--------------------|-------|----------|---------|-----------|-----------|
| <b>Total Kjeldahl Nitrogen</b> | <b>9.22</b> |                       | 0.30 | 0.50               | mg/L  | 1        | B21D011 | Apr-07-21 | Apr-08-21 |

**B01 (2103010-04) Matrix: Water Sampled: Mar-26-21 16:10 Received: Mar-30-21 10:08**

| Analyte                        | Result   | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Units | Dilution | Batch   | Prepared  | Analyzed  |
|--------------------------------|----------|-----------------------|------|--------------------|-------|----------|---------|-----------|-----------|
| <b>Total Kjeldahl Nitrogen</b> | <b>U</b> |                       | 0.30 | 0.50               | mg/L  | 1        | B21D011 | Apr-07-21 | Apr-08-21 |





**Environmental Protection Agency Region 5**  
**US EPA Region 5 LSASD Analytical Services Branch**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

Water Division, US EPA Region 5  
77 West Jackson Boulevard  
Chicago IL, 60604

Project: Deardorff  
Project Number: BA-01-21  
Project Manager: Ben Atkinson

**Reported:**  
May-03-21 08:26

**Notes and Definitions**

U Not Detected  
NR Not Reported  
Q QC limit Exceeded



**Environmental Protection Agency  
US EPA Region 5 LSASD Analytical Services Branch**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

## Quality Control Summary

**Date:** 5/3/2021

**Analyst:** Nidia Fuentes

**Project:** Deardorff

**Analyte:** Total Kjeldahl Nitrogen

**Analysis:** TKN DA

| QC Sample Name | Result | Units | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Spike<br>Level | Source<br>Result | % REC<br>or abs<br>diff (pH) | % REC or<br>abs diff<br>(pH) Limits | % RPD<br>or abs<br>diff (pH) | %RPD<br>or abs<br>diff (pH)<br>Limits |
|----------------|--------|-------|-----------------------|------|--------------------|----------------|------------------|------------------------------|-------------------------------------|------------------------------|---------------------------------------|
| 21D0802-CAL1   | 0.16   | mg/L  |                       | 0.30 | 0.50               | 0.000          |                  | %                            |                                     |                              |                                       |
| 21D0802-CAL2   | 0.34   | mg/L  |                       | 0.30 | 0.50               | 0.2500         |                  | 135%                         |                                     |                              |                                       |
| 21D0802-CAL3   | 0.52   | mg/L  |                       | 0.30 | 0.50               | 0.5000         |                  | 104%                         |                                     |                              |                                       |
| 21D0802-CAL4   | 0.91   | mg/L  |                       | 0.30 | 0.50               | 1.000          |                  | 91%                          |                                     |                              |                                       |
| 21D0802-CAL5   | 1.85   | mg/L  |                       | 0.30 | 0.50               | 2.000          |                  | 92%                          |                                     |                              |                                       |
| 21D0802-CAL6   | 2.37   | mg/L  |                       | 0.30 | 0.50               | 2.500          |                  | 95%                          |                                     |                              |                                       |
| 21D0802-CAL7   | 5.14   | mg/L  |                       | 0.30 | 0.50               | 5.000          |                  | 103%                         |                                     |                              |                                       |
| 21D0802-CAL8   | 9.98   | mg/L  |                       | 0.30 | 0.50               | 10.00          |                  | 100%                         |                                     |                              |                                       |
| 21D0802-CCB1   | 0.25   | mg/L  |                       | 0.30 | 0.50               |                |                  |                              |                                     |                              |                                       |
| 21D0802-CCB2   | 0.25   | mg/L  |                       | 0.30 | 0.50               |                |                  |                              |                                     |                              |                                       |
| 21D0802-CCB3   | 0.27   | mg/L  |                       | 0.30 | 0.50               |                |                  |                              |                                     |                              |                                       |
| 21D0802-CCB4   | 0.27   | mg/L  |                       | 0.30 | 0.50               |                |                  |                              |                                     |                              |                                       |
| 21D0802-CCB5   | 0.29   | mg/L  |                       | 0.30 | 0.50               |                |                  |                              |                                     |                              |                                       |
| 21D0802-CCB6   | 0.16   | mg/L  |                       | 0.30 | 0.50               |                |                  |                              |                                     |                              |                                       |
| 21D0802-CCV1   | 5.33   | mg/L  |                       | 0.30 | 0.50               | 5.000          |                  | 107%                         | 90-110                              |                              |                                       |
| 21D0802-CCV2   | 5.36   | mg/L  |                       | 0.30 | 0.50               | 5.000          |                  | 107%                         | 90-110                              |                              |                                       |
| 21D0802-CCV3   | 5.41   | mg/L  |                       | 0.30 | 0.50               | 5.000          |                  | 108%                         | 90-110                              |                              |                                       |
| 21D0802-CCV4   | 5.37   | mg/L  |                       | 0.30 | 0.50               | 5.000          |                  | 107%                         | 90-110                              |                              |                                       |
| 21D0802-CCV5   | 5.47   | mg/L  |                       | 0.30 | 0.50               | 5.000          |                  | 109%                         | 90-110                              |                              |                                       |

Report Name: 2103010 TKN DA FINAL May 03 21 0826



**Environmental Protection Agency  
US EPA Region 5 LSASD Analytical Services Branch**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

## Quality Control Summary

**Date:** 5/3/2021

**Analyst:** Nidia Fuentes

**Project:** Deardorff

**Analyte:** Total Kjeldahl Nitrogen

**Analysis:** TKN DA

| QC Sample Name                     | Result | Units | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Spike<br>Level | Source<br>Result | % REC<br>or abs<br>diff (pH) | % REC or<br>abs diff<br>(pH) Limits | % RPD<br>or abs<br>diff (pH) | %RPD<br>or abs<br>diff (pH)<br>Limits |
|------------------------------------|--------|-------|-----------------------|------|--------------------|----------------|------------------|------------------------------|-------------------------------------|------------------------------|---------------------------------------|
| 21D0802-CCV6                       | 5.31   | mg/L  |                       | 0.30 | 0.50               | 5.000          |                  | 106%                         | 90-110                              |                              |                                       |
| 21D0802-ICB1                       | 0.24   | mg/L  |                       | 0.30 | 0.50               |                |                  |                              |                                     |                              |                                       |
| 21D0802-ICV1                       | 5.32   | mg/L  |                       | 0.30 | 0.50               | 5.000          |                  | 106%                         | 90-110                              |                              |                                       |
| B21D011-BLK1                       | U      | mg/L  |                       | 0.30 | 0.50               |                |                  |                              |                                     |                              |                                       |
| B21D011-BS1                        | 2.03   | mg/L  |                       | 0.30 | 0.50               | 2.000          |                  | 101%                         | 90-110                              |                              |                                       |
| B21D011-DUP2<br>Source: 2103010-01 | 16.2   | mg/L  |                       | 3.00 | 5.00               |                | 16.7             |                              |                                     | 3                            | 24                                    |
| B21D011-MRL1                       | 0.56   | mg/L  |                       |      |                    | 0.5000         |                  | 112%                         | 74-153                              |                              |                                       |
| B21D011-MS2<br>Source: 2103010-01  | 18.3   | mg/L  | Q                     | 3.00 | 5.00               | 2.000          | 16.7             | 81%                          | 90-110                              |                              |                                       |

### Notes and Definitions

U Not Detected  
NR Not Reported  
Q QC limit Exceeded

B21D011-MS2      TKN DA      Total Kjeldahl Nitrogen      Q

Nidia Fuentes



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
 REGION 5 LSASD ANALYTICAL SERVICE BRANCH  
 536 SOUTH CLARK STREET  
 CHICAGO, ILLINOIS 60605

### Data Verification Checklist

|                                         |                           |
|-----------------------------------------|---------------------------|
| <b>Work:</b> 2103010                    | <b>Project:</b> Deardorff |
| <b>Analysis:</b> TKN DA                 |                           |
| <b>CRL SOP Used:</b> AIG035B Version #8 | <b>Batch ID:</b> B21D011  |

### General Information

| Question # | Question                                                                                    | Analyst Response (YES/ NO/ NA) |
|------------|---------------------------------------------------------------------------------------------|--------------------------------|
| 1          | Did samples meet the laboratory's standard conditions of sample acceptability upon receipt? | YES                            |
| 2          | Was customer contact communication included?                                                | NA                             |
| 3          | Are all field sample ID numbers cross-referenced to the laboratory ID numbers?              | YES                            |
| 4          | Were all samples prepared and analyzed within holding times?                                | YES                            |

### Sample Results

| Question # | Question                                                                                     | Analyst Response (YES/ NO/ NA) |
|------------|----------------------------------------------------------------------------------------------|--------------------------------|
| 5          | Were calculations checked?                                                                   | YES                            |
| 6          | Were all analyte results checked?                                                            | YES                            |
| 7          | Were all results for soil and sediment samples reported on a dry weight basis?               | NA                             |
| 8          | Were % moisture (or solids) reported for all soil and sediment samples?                      | NA                             |
| 9          | Other than those results < RL, were all other raw values bracketed by calibration standards? | YES                            |
| 10         | Are the RLs for each method analyte included in the laboratory data package?                 | YES                            |
| 11         | Are MDLs/RLs adjusted for dilutions?                                                         | YES                            |
| 12         | Were the raw data (for example, chromatograms, spectral data) reviewed?                      | YES                            |
| 13         | Were data associated with manual integrations flagged on the raw data?                       | NA                             |

### Standards

| Question # | Question                                                                                                                             | Analyst Response (YES/ NO/ NA) |
|------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 14         | Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources as specified in the analytical SOP? | YES                            |
| 15         | Were standard/reagent preparations checked (preparation date, expiration date, parent standard IDs, etc.), if applicable?            | YES                            |

### Batch Quality Control



Work: 2103010

Project: Deardorff

**Batch Quality Control**

| Question # | Question                                                                                                                                                                                                      | Analyst Response (YES/ NO/ NA) |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 16         | Were appropriate type(s) of blanks analyzed?                                                                                                                                                                  | YES                            |
| 17         | Were blanks analyzed at the appropriate frequency?                                                                                                                                                            | YES                            |
| 18         | Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?                                                                                 | YES                            |
| 19         | Were blank concentrations $\leq$ MDL or RL, as applicable in the analytical SOP?                                                                                                                              | YES                            |
| 20         | Was each LCS/SRM taken through the entire analytical procedure, including prep and cleanup steps?                                                                                                             | YES                            |
| 21         | Were LCSs/SRMs analyzed at the required frequency?                                                                                                                                                            | YES                            |
| 22         | Were LCS/SRM %Rs within the laboratory QC limits or other acceptance criteria?                                                                                                                                | YES                            |
| 23         | Were the project/method specified analytes included in the MS?                                                                                                                                                | YES                            |
| 24         | Were MS analyzed at the appropriate frequency?                                                                                                                                                                | YES                            |
| 25         | Were MS %Rs within the laboratory QC limits?<br><br>Notes/Comments: Matrix Spike Recovery for Total Kjeldahl Nitrogen (81%) was outside acceptance limits (90-110) in B21D011-MS2 for TKN DA<br>See narrative | NO                             |
| 26         | Were appropriate analytical duplicates analyzed for each matrix?                                                                                                                                              | YES                            |
| 27         | Were analytical duplicates analyzed at the appropriate frequency?                                                                                                                                             | YES                            |
| 28         | Were RPDs or relative standard deviations within the laboratory QC limits or other acceptance criteria?                                                                                                       | YES                            |
| 29         | Were RLs analyzed at the appropriate frequency?                                                                                                                                                               | YES                            |
| 30         | Were RL recoveries within the laboratory QC limits?                                                                                                                                                           | YES                            |

**Calibration**

| Question # | Question                                                                                       | Analyst Response (YES/ NO/ NA) |
|------------|------------------------------------------------------------------------------------------------|--------------------------------|
| 31         | Were calibration correlation coefficient or other acceptance criteria met?                     | YES                            |
| 32         | Was the number of calibration standards recommended in the method used for all analytes?       | YES                            |
| 33         | Were all points generated between the lowest and highest standard used to calculate the curve? | YES                            |
| 34         | Are calibration data available for all instruments used?                                       | YES                            |

**Calibration Verification**

| Question # | Question                                                                                                                  | Analyst Response (YES/ NO/ NA) |
|------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 35         | Was the absolute value of the analyte concentration in the ICB/CCB $\leq$ MDL or RL, as applicable in the analytical SOP? | YES                            |
| 36         | Was the calibration curve verified for each analyte?                                                                      | YES                            |

Work: 2103010

Project: Deardorff

**Calibration Verification**

| Question # | Question                                                                             | Analyst Response (YES/ NO/ NA) |
|------------|--------------------------------------------------------------------------------------|--------------------------------|
| 37         | Has the calibration curve been verified using an appropriate second source standard? | YES                            |
| 38         | Were ICV/CCV analyzed at the method-required frequency?                              | YES                            |
| 39         | Were ICV/CCV %R within the laboratory QC limits?                                     | YES                            |

**Quality Control**

| Question # | Question                                                                                                                                                 | Analyst Response (YES/ NO/ NA) |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 40         | QC limits in LIMS checked against the SOP?                                                                                                               | YES                            |
| 41         | Were percent differences, recoveries, and the linearity within the QC limits specified in the method?<br>Refer to #25                                    | NO                             |
| 42         | Were QC charts checked if a QC audit, excluding matrix QC (MS or DUP), was out of limit?<br><div>REVIEWED<br/>By NFUENTES at 8:40 am, Apr 19, 2021</div> | NA <del>YES</del>              |

**Supporting Data**

| Question # | Question                                                                                                       | Analyst Response (YES/ NO/ NA) |
|------------|----------------------------------------------------------------------------------------------------------------|--------------------------------|
| 43         | Were support equipment data (balance verification, data logs, logbook entries, etc.) included in data package? | YES                            |
| 44         | Were approved spreadsheet(s) used?                                                                             | YES                            |

**Document Verification**

| Question # | Question                                                                                                                                                                                | Analyst Response (YES/ NO/ NA) |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 45         | Is the MDL or RL study up-to-date for each reported analyte?                                                                                                                            | YES                            |
| 46         | Is documentation of the analyst's capability up-to-date and on file?<br>ID 24425                                                                                                        | YES                            |
| 47         | Are the procedures for compound/analyte identification documented?                                                                                                                      | YES                            |
| 48         | Are laboratory SOPs current and on file for the method performed?                                                                                                                       | YES                            |
| 49         | Were data evaluated against project QAPP or Sample Plan, any special requests in the sample schedule, and documented in case narrative?                                                 | YES                            |
| 50         | Were electronic pathways checked (add pathway and files below)?<br><br>Notes/Comments: J:\Vol1\Projects (New File Structure)\Deardorff\1.<br>A&I\NFuentes\DA3\04082021-TPTKN\ARC_70.bak | YES                            |

**Accreditation**

| Question # | Question                      | Analyst Response (YES/ NO/ NA) |
|------------|-------------------------------|--------------------------------|
| 51         | ANAB logo used appropriately? | YES                            |

**Work:** 2103010**Project:** Deardorff**Analyst's Signature and Date\*:**

**REVIEWED**  
By NFENTES at 12:26 pm, Apr 12, 2021

**Reviewer's Signature and Date\*:**

**REVIEWED**  
By AK at 7:04 am, May 03, 2021

**\*Reviewer Concurs with Analyst Responses****Additional Notes/Comments (if applicable):**

**TKN DA**



# BATCH

B21D011



# Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

Date: 4/7/2021

Prepared Date: Apr-07-21

Analyst (initials): NF

## TP/TKN DIGESTION LOG

**Batch Number: B21D011**

**Analyses Included On This Benchsheet**

**TKN DA**

| Position # | Sample Number | Source ID<br>(MS and DUP only) | Spike ID | Spike Volume<br>(uL) | Spike Final<br>Volume (mL)<br>(MRL, BS, MS only) | Sample Volume<br>(mL) | Comments |
|------------|---------------|--------------------------------|----------|----------------------|--------------------------------------------------|-----------------------|----------|
| 17         | 2103007-01    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 21         | 2103007-02    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 22         | 2103007-03    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 23         | 2103007-04    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 24         | 2103007-05    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 25         | 2103007-06    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 26         | 2103007-07    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 27         | 2103007-08    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 28         | 2103007-09    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 29         | 2103010-01    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 33         | 2103010-02    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 34         | 2103010-03    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 35         | 2103010-04    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 13         | B21D011-BLK1  |                                |          |                      |                                                  | 10                    |          |



## Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

## TP/TKN DIGESTION LOG

Batch Number: B21D011

Prepared Date: Apr-07-21

Analyst (initials): NF

Analyses Included On This Benchsheet

TKN DA

| Position # | Sample Number | Source ID<br>(MS and DUP only) | Spike ID | Spike Volume<br>(uL) | Spike Final<br>Volume (mL)<br>(MRL, BS, MS only) | Sample Volume<br>(mL) | Comments |
|------------|---------------|--------------------------------|----------|----------------------|--------------------------------------------------|-----------------------|----------|
| 12         | B21D011-BS1   |                                | 19K1902  | 20                   | 10                                               | 10                    |          |
| 18         | B21D011-DUP1  | 2103007-01                     |          |                      |                                                  | 10                    |          |
| 30         | B21D011-DUP2  | 2103010-01                     |          |                      |                                                  | 10                    |          |
| 11         | B21D011-MRL1  |                                | 21D0710  |                      |                                                  | 10                    |          |
| 20         | B21D011-MS1   | 2103007-01                     | 19K1902  | 20                   | 10                                               | 10                    |          |
| 32         | B21D011-MS2   | 2103010-01                     | 19K1902  | 20                   | 10                                               | 10                    |          |

Batch Comments:

## PREPARATION REAGENTS/STANDARDS/PIPETTES:

|          |                                        |                     |                                                                                          |
|----------|----------------------------------------|---------------------|------------------------------------------------------------------------------------------|
| 19K1902: | TKN-Spike Mix (1000 mg/L)              | Prepared: Nov-19-19 | Expires: Oct-28-21                                                                       |
| 21D0710: | TKN - MRL (0.50 mg N/L)                | Prepared: Apr-07-21 | Expires: May-07-21<br><small>REVIEWED<br/>By: MUEENTES at 12:41 pm, Apr 12, 2021</small> |
| 21B2306: | Pipette (Electronic) – 50 -1,000 uL    | Prepared: Feb-15-21 | Expires: Aug-31-21                                                                       |
| 21B2307: | Pipette (Electronic) – 200 -5000 uL    | Prepared: Feb-15-21 | Expires: Aug-31-21                                                                       |
| 21B2308: | Pipette (Electronic) – 500 - 10,000 uL | Prepared: Feb-15-21 | Expires: Aug-31-21                                                                       |
| 11B2309: | Pipette (Electronic) – 5 - 100 uL      | Prepared: Feb-15-21 | Expires: Aug-31-21                                                                       |
| 11C0906: | TP/TKN Digestion Solution              | Prepared: Mar-09-21 | Expires: Mar-09-22                                                                       |



# Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

## TP/TKN DIGESTION LOG

Batch Number: B21D011

Prepared Date: Apr-07-21

Analyst (initials): NF

Analyses Included On This Benchsheet

TKN DA

### Hot Block ID: #9

Block Digital Temp 1 Reading (°C) - Start - Stop Time/

200C-11:50 AM -12:50 PM/

Block Digital Temp 2 Reading (°C) - Start - Stop Time:

380C-12:50 PM - 2:20 PM

|             |         |    |    |    |    |    |    |
|-------------|---------|----|----|----|----|----|----|
| 33          | 34      | 35 | 36 | 37 | 38 | 39 | 40 |
|             |         |    |    |    |    | DB | DB |
| 25          | 26      | 27 | 28 | 29 | 30 | 31 | 32 |
|             |         |    |    |    |    |    |    |
| 17          | 18      | 19 | 20 | 21 | 22 | 23 | 24 |
|             |         |    |    |    |    |    |    |
| 9           | 10      | 11 | 12 | 13 | 14 | 15 | 16 |
| TKN         | TKN     |    |    |    |    |    |    |
| Calibration | ICV/CCV |    |    |    |    |    |    |
| 1           | 2       | 3  | 4  | 5  | 6  | 7  | 8  |

DB= Dilution Blank



# BATCH REAGENTS

21B2306



# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - P-4136

| CUSTOMER DETAILS |                   |  |  | Asset#            | P-4136                                      |
|------------------|-------------------|--|--|-------------------|---------------------------------------------|
| Customer         | EPA               |  |  | Serial Number     | 424801A                                     |
| Contact          | Angela Ockrassa   |  |  | Pipette Model     | Eppendorf Xplorer/E 1000ul,V,100-1000ul,1ch |
| Location         | A&I               |  |  | Calibration Date  | 15-Feb-2021                                 |
| Address          | 536 S. Clark St.  |  |  | Next Due Date     | 31-Aug-2021                                 |
|                  | Chicago, IL 60605 |  |  | Technician        | Nishat K                                    |
| Telephone        | 312-353-7445      |  |  | Report Print Date | 15-Feb-2021                                 |

| ENVIRONMENTAL CONDITIONS |       |                                  |         |                               |         |
|--------------------------|-------|----------------------------------|---------|-------------------------------|---------|
| Water Temperature °C     | 21.10 | Barometric Pressure kPa          | 100.10  | Z Factor (cm <sup>3</sup> /g) | 1.00308 |
| Relative Humidity (%)    | 41.00 | Air Density (g/cm <sup>3</sup> ) | 0.00119 | Liquid Density (gm/ml)        | 0.9980  |

| STANDARD EQUIPMENT                   |               |                  |               |
|--------------------------------------|---------------|------------------|---------------|
| Standard                             | Serial Number | Calibration Date | Next Due Date |
| ST2-Mettler Balance AX205DR/0.00001g | 1122303954    | 14-Jan-2021      | 31-Jan-2022   |
| Digital Barometer                    | 200303896     | 19-May-2020      | 31-May-2022   |
| Digital Thermometer                  | 200303896     | 19-May-2020      | 31-May-2022   |
| Thermocouple w/Probe                 | 200311521     | 23-May-2020      | 31-May-2022   |

| Calibration Data - As Found |    |         |         |          |            |         |             |         |        |        |               |               |
|-----------------------------|----|---------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|---------------|
|                             |    |         |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight | Sample Volume |
| Volume (uL)                 | Ch | Mean    | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          | (uL)          |
| 100.00                      | 1  | 100.41  | 0.19197 | 0.60     | 0.40544    | 3.00000 | 0.19119     | 0.60000 | Passed |        |               |               |
|                             |    |         |         |          |            |         |             |         |        | 1      | 100.14000     | 100.44807     |
|                             |    |         |         |          |            |         |             |         |        | 2      | 99.87000      | 100.17724     |
|                             |    |         |         |          |            |         |             |         |        | 3      | 100.05000     | 100.35779     |
|                             |    |         |         |          |            |         |             |         |        | 4      | 100.33000     | 100.63865     |
| 1000.00                     | 1  | 1003.42 | 0.11597 | 5.66     | 0.34224    | 0.60000 | 0.01156     | 0.20000 | Passed |        |               |               |
|                             |    |         |         |          |            |         |             |         |        | 1      | 1000.37000    | 1003.44752    |
|                             |    |         |         |          |            |         |             |         |        | 2      | 1000.45000    | 1003.52777    |
|                             |    |         |         |          |            |         |             |         |        | 3      | 1000.18000    | 1003.25694    |
|                             |    |         |         |          |            |         |             |         |        | 4      | 1000.38000    | 1003.45755    |

| Calibration Data - As Calibrated |    |         |         |          |            |         |             |         |        |        |               |               |
|----------------------------------|----|---------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|---------------|
|                                  |    |         |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight | Sample Volume |
| Volume (uL)                      | Ch | Mean    | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          | (uL)          |
| 100.00                           | 1  | 100.44  | 0.27671 | 0.63     | 0.44305    | 3.00000 | 0.27549     | 0.60000 | Passed |        |               |               |
|                                  |    |         |         |          |            |         |             |         |        | 1      | 100.54000     | 100.84930     |
|                                  |    |         |         |          |            |         |             |         |        | 2      | 99.96000      | 100.26752     |
|                                  |    |         |         |          |            |         |             |         |        | 3      | 100.08000     | 100.38788     |
|                                  |    |         |         |          |            |         |             |         |        | 4      | 99.96000      | 100.26752     |
| 1000.00                          | 1  | 1002.71 | 0.70565 | 5.70     | 0.27078    | 0.60000 | 0.07037     | 0.20000 | Passed |        |               |               |
|                                  |    |         |         |          |            |         |             |         |        | 1      | 999.85000     | 1002.92592    |
|                                  |    |         |         |          |            |         |             |         |        | 2      | 999.90000     | 1002.97607    |
|                                  |    |         |         |          |            |         |             |         |        | 3      | 1000.18000    | 1003.25694    |
|                                  |    |         |         |          |            |         |             |         |        | 4      | 998.60000     | 1001.67208    |



# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - P-4136

Comment Cleaned/Checked

1. PASS grade denotes that pipette meets OEM/ISO 8655 specifications. This pipette was calibrated gravimetrically using Standard Operating Procedure (NSOP), De-Ionized Water, Manufacturer/Generic Pipette tips and a Mettler Analytical Balance. All the standard equipment used to calibrate pipettes are certified at regular intervals traceable to National Institute of Standards and Technology (NIST). The test procedures comply to ISO/IEC 17025 guidelines.
2. As a standard practice, Multi-Channel pipettes are checked & calibrated at one random channel only, all other channels are verified. Multi-Channel (All) includes verification and data capturing on all channels.
3. Calibration and Measurement Capability (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. Calibration and Measurement Capabilities represent expanded uncertainties expressed at approximately the 95% level of confidence, usually using a coverage factor of  $k=2$ . The actual measurement uncertainty of a specific calibration performed by a laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.
4. The results above relate only to the item calibrated. This report shall not be reproduced except in full, without the written approval of Novamed Inc.
5. All Syringes are checked and verified at 3% of inaccuracy and imprecision specifications.

Technician

Date

15-Feb-2021

QC Designee

Review Date

15-Feb-2021

**REVIEWED**

By AK at 1:03 pm, Feb 18, 2021

# BATCH REAGENTS

21B2307



# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - Y-6609

| CUSTOMER DETAILS |                   |  |  | Asset#            | Y-6609                                      |
|------------------|-------------------|--|--|-------------------|---------------------------------------------|
| Customer         | EPA               |  |  | Serial Number     | J13539G                                     |
| Contact          | Angela Ockrassa   |  |  | Pipette Model     | Eppendorf Xplorer Plus/E 5ml,V, 0.2-5ml,1ch |
| Location         | A&I               |  |  | Calibration Date  | 15-Feb-2021                                 |
| Address          | 536 S. Clark St.  |  |  | Next Due Date     | 31-Aug-2021                                 |
|                  | Chicago, IL 60605 |  |  | Technician        | Nishat K                                    |
| Telephone        | 312-353-7445      |  |  | Report Print Date | 15-Feb-2021                                 |

| ENVIRONMENTAL CONDITIONS |       |                         |         |                        |         |
|--------------------------|-------|-------------------------|---------|------------------------|---------|
| Water Temperature °C     | 21.10 | Barometric Pressure kPa | 100.10  | Z Factor (cm3/g)       | 1.00308 |
| Relative Humidity (%)    | 41.00 | Air Density (g/cm3)     | 0.00119 | Liquid Density (gm/ml) | 0.9980  |

| STANDARD EQUIPMENT                   |               |                  |               |
|--------------------------------------|---------------|------------------|---------------|
| Standard                             | Serial Number | Calibration Date | Next Due Date |
| ST2-Mettler Balance AX205DR/0.00001g | 1122303954    | 14-Jan-2021      | 31-Jan-2022   |
| Digital Barometer                    | 200303896     | 19-May-2020      | 31-May-2022   |
| Digital Thermometer                  | 200303896     | 19-May-2020      | 31-May-2022   |
| Thermocouple w/Probe                 | 200311521     | 23-May-2020      | 31-May-2022   |

| Calibration Data - As Found |    |         |         |          |            |         |             |         |        |        |               |               |
|-----------------------------|----|---------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|---------------|
|                             |    |         |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight | Sample Volume |
| Volume (uL)                 | Ch | Mean    | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          | (uL)          |
| 500.00                      | 1  | 504.78  | 1.90663 | 3.43     | 0.95663    | 3.00000 | 0.37771     | 0.60000 | Passed |        |               |               |
|                             |    |         |         |          |            |         |             |         |        | 1      | 501.45000     | 502.99265     |
|                             |    |         |         |          |            |         |             |         |        | 2      | 505.84000     | 507.39616     |
|                             |    |         |         |          |            |         |             |         |        | 3      | 503.34000     | 504.88847     |
|                             |    |         |         |          |            |         |             |         |        | 4      | 502.31000     | 503.85530     |
| 5000.00                     | 1  | 5009.37 | 1.66219 | 28.28    | 0.18737    | 0.60000 | 0.03318     | 0.15000 | Passed |        |               |               |
|                             |    |         |         |          |            |         |             |         |        | 1      | 4994.51000    | 5009.87502    |
|                             |    |         |         |          |            |         |             |         |        | 2      | 4992.97000    | 5008.33029    |
|                             |    |         |         |          |            |         |             |         |        | 3      | 4996.11000    | 5011.47995    |
|                             |    |         |         |          |            |         |             |         |        | 4      | 4992.43000    | 5007.78862    |

| Calibration Data - As Calibrated |    |         |         |          |            |         |             |         |        |        |               |               |
|----------------------------------|----|---------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|---------------|
|                                  |    |         |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight | Sample Volume |
| Volume (uL)                      | Ch | Mean    | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          | (uL)          |
| 500.00                           | 1  | 504.63  | 1.18568 | 3.08     | 0.92603    | 3.00000 | 0.23496     | 0.60000 | Passed |        |               |               |
|                                  |    |         |         |          |            |         |             |         |        | 1      | 503.58000     | 505.12920     |
|                                  |    |         |         |          |            |         |             |         |        | 2      | 504.00000     | 505.55050     |
|                                  |    |         |         |          |            |         |             |         |        | 3      | 501.35000     | 502.89234     |
|                                  |    |         |         |          |            |         |             |         |        | 4      | 503.40000     | 504.94865     |
| 5000.00                          | 1  | 5012.32 | 1.13501 | 28.28    | 0.24640    | 0.60000 | 0.02264     | 0.15000 | Passed |        |               |               |
|                                  |    |         |         |          |            |         |             |         |        | 1      | 4996.35000    | 5011.72068    |
|                                  |    |         |         |          |            |         |             |         |        | 2      | 4996.50000    | 5011.87115    |
|                                  |    |         |         |          |            |         |             |         |        | 3      | 4998.64000    | 5014.01773    |
|                                  |    |         |         |          |            |         |             |         |        | 4      | 4996.30000    | 5011.67053    |





# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - Y-6609

Comment Cleaned/Checked/Calibrated

1. PASS grade denotes that pipette meets OEM/ISO 8655 specifications. This pipette was calibrated gravimetrically using Standard Operating Procedure (NSOP), De-Ionized Water, Manufacturer/Generic Pipette tips and a Mettler Analytical Balance. All the standard equipment used to calibrate pipettes are certified at regular intervals traceable to National Institute of Standards and Technology (NIST). The test procedures comply to ISO/IEC 17025 guidelines.
2. As a standard practice, Multi-Channel pipettes are checked & calibrated at one random channel only, all other channels are verified. Multi-Channel (All) includes verification and data capturing on all channels.
3. Calibration and Measurement Capability (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. Calibration and Measurement Capabilities represent expanded uncertainties expressed at approximately the 95% level of confidence, usually using a coverage factor of  $k=2$ . The actual measurement uncertainty of a specific calibration performed by a laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.
4. The results above relate only to the item calibrated. This report shall not be reproduced except in full, without the written approval of Novamed Inc.
5. All Syringes are checked and verified at 3% of inaccuracy and imprecision specifications.

Technician

Date

15-Feb-2021

QC Designee

Review Date

15-Feb-2021

**REVIEWED**

By AK at 12:58 pm, Feb 18, 2021

# BATCH REAGENTS

21B2308



# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - P-4146

| CUSTOMER DETAILS |                   |  |  | Asset#            | P-4146                                  |
|------------------|-------------------|--|--|-------------------|-----------------------------------------|
| Customer         | EPA               |  |  | Serial Number     | 424660A                                 |
| Contact          | Angela Ockrassa   |  |  | Pipette Model     | Eppendorf Xplorer/E 10ml,V,0.5-10ml,1ch |
| Location         | A&I               |  |  | Calibration Date  | 15-Feb-2021                             |
| Address          | 536 S. Clark St.  |  |  | Next Due Date     | 31-Aug-2021                             |
|                  | Chicago, IL 60605 |  |  | Technician        | Nishat K                                |
| Telephone        | 312-353-7445      |  |  | Report Print Date | 15-Feb-2021                             |

| ENVIRONMENTAL CONDITIONS |     |       |                     |                |                 |
|--------------------------|-----|-------|---------------------|----------------|-----------------|
| Water Temperature        | °C  | 21.10 | Barometric Pressure | kPa            | 100.10          |
| Relative Humidity        | (%) | 41.00 | Air Density         | (g/cm3)        | 0.00119         |
|                          |     |       |                     | Z Factor       | (cm3/g) 1.00308 |
|                          |     |       |                     | Liquid Density | (gm/ml) 0.9980  |

| STANDARD EQUIPMENT                   |               |                  |               |
|--------------------------------------|---------------|------------------|---------------|
| Standard                             | Serial Number | Calibration Date | Next Due Date |
| ST2-Mettler Balance AX205DR/0.00001g | 1122303954    | 14-Jan-2021      | 31-Jan-2022   |
| Digital Barometer                    | 200303896     | 19-May-2020      | 31-May-2022   |
| Digital Thermometer                  | 200303896     | 19-May-2020      | 31-May-2022   |
| Thermocouple w/Probe                 | 200311521     | 23-May-2020      | 31-May-2022   |

| Calibration Data - As Found |    |         |         |          |            |         |             |         |        |        |               |               |
|-----------------------------|----|---------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|---------------|
|                             |    |         |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight | Sample Volume |
| Volume (uL)                 | Ch | Mean    | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          | (uL)          |
| 1000.00                     | 1  | 1003.73 | 1.57929 | 5.87     | 0.37259    | 3.00000 | 0.15734     | 0.60000 | Passed |        |               |               |
|                             |    |         |         |          |            |         |             |         |        | 1      | 999.26000     | 1002.33411    |
|                             |    |         |         |          |            |         |             |         |        | 2      | 1002.74000    | 1005.82481    |
|                             |    |         |         |          |            |         |             |         |        | 3      | 999.63000     | 1002.70524    |
|                             |    |         |         |          |            |         |             |         |        | 4      | 1000.96000    | 1004.03934    |
| 10000.00                    | 1  | 9986.19 | 8.90664 | 56.99    | 0.13805    | 0.60000 | 0.08919     | 0.15000 | Passed |        |               |               |
|                             |    |         |         |          |            |         |             |         |        | 1      | 9965.93000    | 9996.58901    |
|                             |    |         |         |          |            |         |             |         |        | 2      | 9946.61000    | 9977.20958    |
|                             |    |         |         |          |            |         |             |         |        | 3      | 9949.97000    | 9980.57991    |
|                             |    |         |         |          |            |         |             |         |        | 4      | 9959.76000    | 9990.40003    |

| Calibration Data - As Calibrated |    |         |         |          |            |         |             |         |        |        |               |               |
|----------------------------------|----|---------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|---------------|
|                                  |    |         |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight | Sample Volume |
| Volume (uL)                      | Ch | Mean    | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          | (uL)          |
| 1000.00                          | 1  | 1004.12 | 2.14764 | 6.05     | 0.41171    | 3.00000 | 0.21388     | 0.60000 | Passed |        |               |               |
|                                  |    |         |         |          |            |         |             |         |        | 1      | 1003.27000    | 1006.35644    |
|                                  |    |         |         |          |            |         |             |         |        | 2      | 999.20000     | 1002.27392    |
|                                  |    |         |         |          |            |         |             |         |        | 3      | 1002.47000    | 1005.55398    |
|                                  |    |         |         |          |            |         |             |         |        | 4      | 999.21000     | 1002.28395    |
| 10000.00                         | 1  | 9991.46 | 3.45813 | 56.42    | 0.08537    | 0.60000 | 0.03461     | 0.15000 | Passed |        |               |               |
|                                  |    |         |         |          |            |         |             |         |        | 1      | 9959.82000    | 9990.46022    |
|                                  |    |         |         |          |            |         |             |         |        | 2      | 9957.42000    | 9988.05283    |
|                                  |    |         |         |          |            |         |             |         |        | 3      | 9965.61000    | 9996.26803    |
|                                  |    |         |         |          |            |         |             |         |        | 4      | 9960.43000    | 9991.07209    |



# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - P-4146

Comment Cleaned/Checked

1. PASS grade denotes that pipette meets OEM/ISO 8655 specifications. This pipette was calibrated gravimetrically using Standard Operating Procedure (NSOP), De-Ionized Water, Manufacturer/Generic Pipette tips and a Mettler Analytical Balance. All the standard equipment used to calibrate pipettes are certified at regular intervals traceable to National Institute of Standards and Technology (NIST). The test procedures comply to ISO/IEC 17025 guidelines.
2. As a standard practice, Multi-Channel pipettes are checked & calibrated at one random channel only, all other channels are verified. Multi-Channel (All) includes verification and data capturing on all channels.
3. Calibration and Measurement Capability (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. Calibration and Measurement Capabilities represent expanded uncertainties expressed at approximately the 95% level of confidence, usually using a coverage factor of  $k=2$ . The actual measurement uncertainty of a specific calibration performed by a laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.
4. The results above relate only to the item calibrated. This report shall not be reproduced except in full, without the written approval of Novamed Inc.
5. All Syringes are checked and verified at 3% of inaccuracy and imprecision specifications.

Technician

Date

15-Feb-2021

QC Designee

Review Date

15-Feb-2021

**REVIEWED**

By AK at 1:02 pm, Feb 18, 2021

# BATCH REAGENTS

21B2309





# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - P-4129

| CUSTOMER DETAILS |                   |  |  | Asset#            | P-4129                                  |
|------------------|-------------------|--|--|-------------------|-----------------------------------------|
| Customer         | EPA               |  |  | Serial Number     | 424277A                                 |
| Contact          | Angela Ockrassa   |  |  | Pipette Model     | Eppendorf Xplorer/E 100ul,V,5-100ul,1ch |
| Location         | A&I               |  |  | Calibration Date  | 15-Feb-2021                             |
| Address          | 536 S. Clark St.  |  |  | Next Due Date     | 31-Aug-2021                             |
|                  | Chicago, IL 60605 |  |  | Technician        | Nishat K                                |
| Telephone        | 312-353-7445      |  |  | Report Print Date | 15-Feb-2021                             |

| ENVIRONMENTAL CONDITIONS |       |                                  |         |                               |         |
|--------------------------|-------|----------------------------------|---------|-------------------------------|---------|
| Water Temperature °C     | 21.10 | Barometric Pressure kPa          | 100.10  | Z Factor (cm <sup>3</sup> /g) | 1.00308 |
| Relative Humidity (%)    | 41.00 | Air Density (g/cm <sup>3</sup> ) | 0.00119 | Liquid Density (gm/ml)        | 0.9980  |

| STANDARD EQUIPMENT                |               |                  |               |
|-----------------------------------|---------------|------------------|---------------|
| Standard                          | Serial Number | Calibration Date | Next Due Date |
| ST2-Mettler Balance MX5/0.000001g | 1120303862    | 14-Jan-2021      | 31-Jan-2022   |
| Digital Barometer                 | 200303896     | 19-May-2020      | 31-May-2022   |
| Digital Thermometer               | 200303896     | 19-May-2020      | 31-May-2022   |
| Thermocouple w/Probe              | 200311521     | 23-May-2020      | 31-May-2022   |

| Calibration Data - As Found |    |        |         |          |            |         |             |         |        |        |               |
|-----------------------------|----|--------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|
|                             |    |        |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight |
| Volume (uL)                 | Ch | Mean   | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          |
| 10.00                       | 1  | 10.19  | 0.04910 | 0.05     | 1.94015    | 2.00000 | 0.48168     | 1.00000 | Passed |        |               |
|                             |    |        |         |          |            |         |             |         |        | 1      | 10.13700      |
|                             |    |        |         |          |            |         |             |         |        | 2      | 10.11300      |
|                             |    |        |         |          |            |         |             |         |        | 3      | 10.22500      |
|                             |    |        |         |          |            |         |             |         |        | 4      | 10.17600      |
| 100.00                      | 1  | 100.56 | 0.08892 | 0.15     | 0.56242    | 0.80000 | 0.08842     | 0.20000 | Passed |        |               |
|                             |    |        |         |          |            |         |             |         |        | 1      | 100.35400     |
|                             |    |        |         |          |            |         |             |         |        | 2      | 100.20100     |
|                             |    |        |         |          |            |         |             |         |        | 3      | 100.30000     |
|                             |    |        |         |          |            |         |             |         |        | 4      | 100.16100     |

| Calibration Data - As Calibrated |    |        |         |          |            |         |             |         |        |        |               |
|----------------------------------|----|--------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|
|                                  |    |        |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight |
| Volume (uL)                      | Ch | Mean   | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          |
| 10.00                            | 1  | 10.14  | 0.03628 | 0.05     | 1.36588    | 2.00000 | 0.35793     | 1.00000 | Passed |        |               |
|                                  |    |        |         |          |            |         |             |         |        | 1      | 10.09700      |
|                                  |    |        |         |          |            |         |             |         |        | 2      | 10.09900      |
|                                  |    |        |         |          |            |         |             |         |        | 3      | 10.07000      |
|                                  |    |        |         |          |            |         |             |         |        | 4      | 10.15600      |
| 100.00                           | 1  | 100.14 | 0.05143 | 0.15     | 0.14414    | 0.80000 | 0.05135     | 0.20000 | Passed |        |               |
|                                  |    |        |         |          |            |         |             |         |        | 1      | 99.85200      |
|                                  |    |        |         |          |            |         |             |         |        | 2      | 99.90300      |
|                                  |    |        |         |          |            |         |             |         |        | 3      | 99.79300      |
|                                  |    |        |         |          |            |         |             |         |        | 4      | 99.80000      |



# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - P-4129

Comment Cleaned/Checked

1. PASS grade denotes that pipette meets OEM/ISO 8655 specifications. This pipette was calibrated gravimetrically using Standard Operating Procedure (NSOP), De-ionized Water, Manufacturer/Generic Pipette tips and a Mettler Analytical Balance. All the standard equipment used to calibrate pipettes are certified at regular intervals traceable to National Institute of Standards and Technology (NIST). The test procedures comply to ISO/IEC 17025 guidelines.
2. As a standard practice, Multi-Channel pipettes are checked & calibrated at one random channel only, all other channels are verified. Multi-Channel (All) includes verification and data capturing on all channels.
3. Calibration and Measurement Capability (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. Calibration and Measurement Capabilities represent expanded uncertainties expressed at approximately the 95% level of confidence, usually using a coverage factor of  $k=2$ . The actual measurement uncertainty of a specific calibration performed by a laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.
4. The results above relate only to the item calibrated. This report shall not be reproduced except in full, without the written approval of Novamed Inc.
5. All Syringes are checked and verified at 3% of inaccuracy and imprecision specifications.

Technician

Date

15-Feb-2021

QC Designee

Review Date

15-Feb-2021

**REVIEWED**

By AK at 1:00 pm, Feb 18, 2021

# BATCH REAGENTS

21C0906



# Environmental Protection Agency Region 5

## Chicago Regional Laboratory

Print Date:

3/9/2021

536 South Clark Street, Chicago, IL 60605  
 Phone: (312) 353-8370 Fax: (312) 886-2591

### Reagent Preparation Bench Sheet

REVIEWED  
 By NFUENTES at 11:10 am, Mar 31, 2021

REVIEWED  
 By NFUENTES at 11:10 am, Mar 31, 2021

Parameter / SOP #: TP/TKN SOP AIG34B ver#7, AIG35B ver#8

Prepared by: Nidia Fuentes

Reagent: TP/TKN Digestion Solution

Preparation Date: Mar-09-21

LIMS ID: 21C0906

Expiration Date: Mar-09-22

| Chemical Name (Formula)                             | LIMS ID | Mass or Volume (specify units) |
|-----------------------------------------------------|---------|--------------------------------|
| Sulfuric Acid (H <sub>2</sub> SO <sub>4</sub> )     | 20B0607 | 200 mL                         |
| Mercuric Sulfate solution                           | 19H0504 | 25 mL                          |
| Potassium Sulfate (K <sub>2</sub> SO <sub>4</sub> ) | 20J2902 | 133.0398 g                     |
|                                                     |         |                                |
|                                                     |         |                                |

Total Volume : 1000  
~~500 mL~~

REVIEWED  
 By NFUENTES at 11:10 am, Mar 31, 2021

Comments :

Balance #17

**REVIEWED**

**By AK at 8:15 am, Apr 01, 2021**

Analyst Signature:

*Nidia Fuentes*

# Balance Check

BALANCE ID: #17

DATE: 3/9/2021

ANALYST: Nidia Fuentes

WEIGHT SET ID: TROEMNER S/N: 400026116

WGT SET # CONFIRMED: YES

WEIGHT SET 2 ID: \_\_\_\_\_

WGT SET # CONFIRMED: \_\_\_\_\_

INITIAL & DATE: 117 3/9/2021

\*NOTE: Confirm # of weights in weight set before and after use above. # of weights in weight sets are listed at bottom of page. Create IR if find that weights are missing. Note any weights that are missing in the comments field below and contact QAO to remove weight(s) from Qualtrax records.

| Analytical Balance Tolerance Limits |                   |          |          |
|-------------------------------------|-------------------|----------|----------|
| Standard Weight (g)                 | Actual Weight (g) | LCL (g)  | UCL (g)  |
| 0.0100                              |                   | 0.0099   | 0.0101   |
| 0.0200                              |                   | 0.0199   | 0.0201   |
| 0.0200*                             |                   | 0.0199   | 0.0201   |
| 0.0500                              |                   | 0.0499   | 0.0501   |
| 0.1000                              |                   | 0.0999   | 0.1001   |
| 0.2000                              |                   | 0.1999   | 0.2001   |
| 0.2000*                             |                   | 0.1999   | 0.2001   |
| 0.5000                              |                   | 0.4999   | 0.5001   |
| 1.0000                              | 1.0000            | 0.9999   | 1.0001   |
| 2.0000                              |                   | 1.9999   | 2.0001   |
| 2.0000*                             |                   | 1.9999   | 2.0001   |
| 5.0000                              |                   | 4.9999   | 5.0001   |
| 10.0000                             | 10.0000           | 9.9999   | 10.0001  |
| 20.0000                             |                   | 19.9999  | 20.0001  |
| 20.0000*                            |                   | 19.9999  | 20.0001  |
| 50.0000                             |                   | 49.9999  | 50.0001  |
| 100.0000                            | 100.0001          | 99.9997  | 100.0003 |
| 200.0000                            | 199.9999          | 199.9995 | 200.0005 |

| Top-Loading Balance Tolerance Limits |                   |         |         |
|--------------------------------------|-------------------|---------|---------|
| Standard Weight (g)                  | Actual Weight (g) | LCL (g) | UCL (g) |
| 0.01                                 |                   | 0.00    | 0.02    |
| 0.02                                 |                   | 0.01    | 0.03    |
| 0.02*                                |                   | 0.01    | 0.03    |
| 0.05                                 |                   | 0.04    | 0.06    |
| 0.10                                 |                   | 0.09    | 0.11    |
| 0.20                                 |                   | 0.19    | 0.21    |
| 0.20*                                |                   | 0.19    | 0.21    |
| 0.50                                 |                   | 0.49    | 0.51    |
| 1.00                                 |                   | 0.99    | 1.01    |
| 2.00                                 |                   | 1.99    | 2.01    |
| 2.00*                                |                   | 1.99    | 2.01    |
| 5.00                                 |                   | 4.99    | 5.01    |
| 10.00                                |                   | 9.99    | 10.01   |
| 20.00                                |                   | 19.99   | 20.01   |
| 20.00*                               |                   | 19.99   | 20.01   |
| 50.00                                |                   | 49.99   | 50.01   |
| 100.00                               |                   | 99.99   | 100.01  |
| 200.00                               |                   | 199.99  | 200.01  |
| 300.00                               |                   | 299.99  | 300.01  |
| 500.00                               |                   | 499.99  | 500.01  |
| 1000.00                              |                   | 999.99  | 1000.01 |

**Weight Sets:**

TROEMNER S/N: 4000017548: 21 weights

TROEMNER S/N: 4000020557: 21 weights

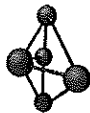
Denver Inst Co S/N: 01-25360-3A: 1 weight

TROEMNER S/N: 06679: 5 weights

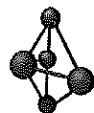
TROEMNER S/N: 400026116: 22 weights

COMMENTS:





Certified Reference Material CRM



CERTIFIED WEIGHT REPORT:

Part Number:  
Lot Number:  
Description:

54113  
102819  
Ammonia as N

Solvent:

ASTM Type 1 Water

*21W6*  
*19K1901*

Expiration Date:  
Recommended Storage:  
Nominal Concentration (µg/mL):  
NIST Test Number:

102821  
Refrigerate (4 °C)  
1000  
6UTB  
5E-05 Balance Uncertainty  
0.100 Flask Uncertainty

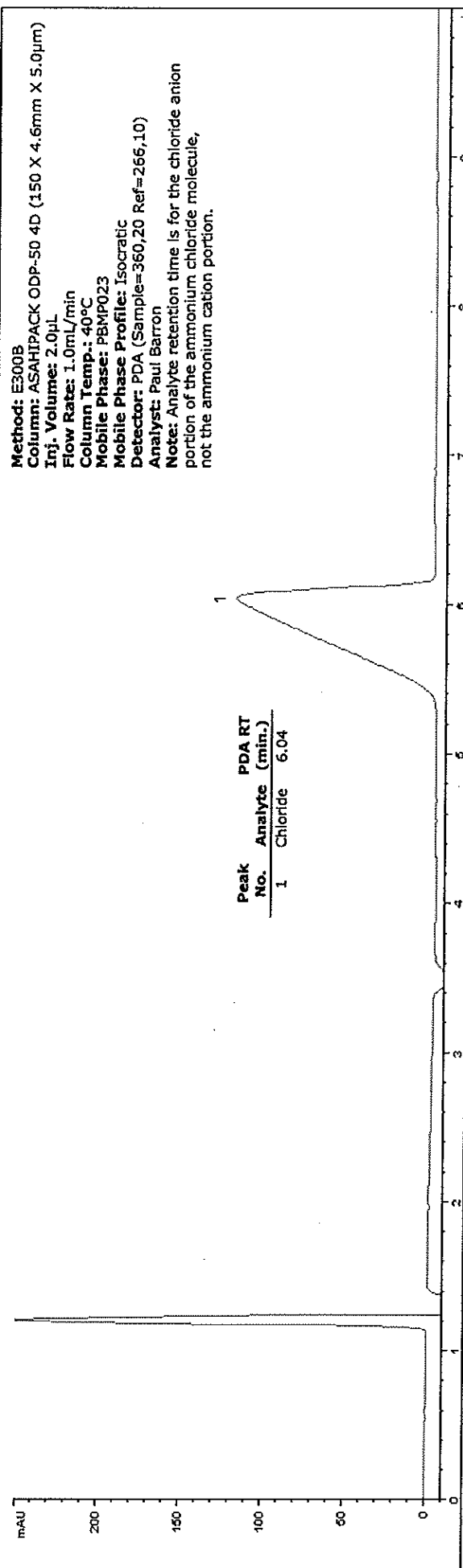
Weight shown below was diluted to (mL):

1999.53

| Compound                 | RM#   | Lot Number | Nominal Conc. (µg/mL) | Purity (%) | Uncertainty Assay (%) | Target Weight (g) | Actual Weight (g) | Actual Conc. (µg/mL) | Expanded Uncertainty +/- (µg/mL) | CAS# | OSHA PEL (TWA) | LD50                   | NIST SRM               |
|--------------------------|-------|------------|-----------------------|------------|-----------------------|-------------------|-------------------|----------------------|----------------------------------|------|----------------|------------------------|------------------------|
| 1. Ammonium chloride (N) | IN041 | MKBZ590V   | 1000                  | 99.7       | 0.10                  | 26.2              | 7.65768           | 7.65770              | 1000.0                           | 2.0  | 12125-02-9     | 10.0 mg/m <sup>3</sup> | ori-rat 1650mg/kg 3182 |

SDS Information

|                        |                 |
|------------------------|-----------------|
| <i>Lawrence Barry</i>  |                 |
| Formulated By:         | Lawrence Barry  |
| <i>Pedro L. Rentas</i> |                 |
| Reviewed By:           | Pedro L. Rentas |
| 102819                 |                 |



\* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.  
 \* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.  
 \* All standard containers are meticulously cleaned prior to use. 550  
 \* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).  
 \* Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.  
 \* All standards should be stored with caps tight and under appropriate laboratory conditions.  
 \* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

**REVIEWED**  
By AK at 10:47 am, Feb 04, 2020



## Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605  
Phone: (312) 353-8370 Fax: (312) 886-2591

### Analytical Standard Record

#### US EPA Region 5 LSASD Analytical Services Branch

**21D0707**

|                            |                                |                     |                       |
|----------------------------|--------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>TKN - WCS (0.00 mg N/L)</u> |                     |                       |
| <b>Standard Type:</b>      | Other Solution                 | <b>Expires:</b>     | May-07-21             |
| <b>Solvent:</b>            | Reagent water                  | <b>Prepared:</b>    | Apr-07-21             |
| <b>Final Volume (mls):</b> | 100                            | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Vials:</b>              | 1                              | <b>Department:</b>  | A&I                   |
| <b>Vendor:</b>             | Absolute Grade                 | <b>Last Edit:</b>   | Apr-07-21 15:35 by NF |
| <b>Lot Number:</b>         | 102819                         |                     |                       |

| Analyte                 | CAS Number | Concentration (ppm) |
|-------------------------|------------|---------------------|
| Ammonia as N            | NA         | 0                   |
| Total Kjeldahl Nitrogen | NA         | 0                   |

#### Parent Standards used in this standard:

| Standard | Description                          | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
|----------|--------------------------------------|-----------|---------------|-----------|-----------------------|-------|
| 19K1901  | NH3N/TKN-SCS (1000 mg/L)             | Nov-19-19 | ** Vendor **  | Oct-28-21 | Aug-27-20 10:20 by NF | 0     |
| 21B2306  | Pipette (Electronic) -- 50 -1,000 uL | Feb-15-21 | Nidia Fuentes | Aug-31-21 | Apr-05-21 09:19 by AK | 0.1   |
| 20B0607  | Sulfuric Acid 9673-33                | Feb-06-20 | ** Vendor **  | Jul-11-21 | Mar-02-20 14:42 by CB | 0.1   |

**REVIEWED**

**By AK at 10:34 am, Apr 14, 2021**



## Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605  
Phone: (312) 353-8370 Fax: (312) 886-2591

### Analytical Standard Record

#### US EPA Region 5 LSASD Analytical Services Branch

**21D0708**

|                            |                                 |                     |                       |
|----------------------------|---------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>TKN - WCS (10.00 mg N/L)</u> | <b>Expires:</b>     | May-07-21             |
| <b>Standard Type:</b>      | Other Solution                  | <b>Prepared:</b>    | Apr-07-21             |
| <b>Solvent:</b>            | Reagent water                   | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Final Volume (mls):</b> | 100                             | <b>Department:</b>  | A&I                   |
| <b>Vials:</b>              | 1                               | <b>Last Edit:</b>   | Apr-07-21 15:35 by NF |
| <b>Vendor:</b>             | Absolute Standards Inc.         |                     |                       |
| <b>Lot Number:</b>         | 102819                          |                     |                       |

| Analyte                 | CAS Number | Concentration (ppm) |
|-------------------------|------------|---------------------|
| Ammonia as N            | NA         | 10                  |
| Total Kjeldahl Nitrogen | NA         | 10                  |

| Parent Standards used in this standard: |                                      |           |               |           |                       |       |
|-----------------------------------------|--------------------------------------|-----------|---------------|-----------|-----------------------|-------|
| Standard                                | Description                          | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
| 19K1901                                 | NH3N/TKN-SCS (1000 mg/L)             | Nov-19-19 | ** Vendor **  | Oct-28-21 | Aug-27-20 10:20 by NF | 1     |
| 21B2309                                 | Pipette (Electronic) -- 5 -100 uL    | Feb-15-21 | Nidia Fuentes | Aug-31-21 | Apr-05-21 09:33 by AK | 0.1   |
| 21B2306                                 | Pipette (Electronic) -- 50 -1,000 uL | Feb-15-21 | Nidia Fuentes | Aug-31-21 | Apr-05-21 09:19 by AK | 1     |
| 20B0607                                 | Sulfuric Acid 9673-33                | Feb-06-20 | ** Vendor **  | Jul-11-21 | Mar-02-20 14:42 by CB | 0.1   |

***REVIEWED***

***By AK at 10:34 am, Apr 14, 2021***



## Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605  
Phone: (312) 353-8370 Fax: (312) 886-2591

### Analytical Standard Record

#### US EPA Region 5 LSASD Analytical Services Branch

**21D0709**

|                            |                                |                     |                       |
|----------------------------|--------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>TKN - WeS (5.00 mg N/L)</u> |                     |                       |
| <b>Standard Type:</b>      | Other Solution                 | <b>Expires:</b>     | May-07-21             |
| <b>Solvent:</b>            | Reagent water                  | <b>Prepared:</b>    | Apr-07-21             |
| <b>Final Volume (mls):</b> | 100                            | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Vials:</b>              | 1                              | <b>Department:</b>  | A&I                   |
| <b>Vendor:</b>             | Absolute Standards Inc.        | <b>Last Edit:</b>   | Apr-07-21 15:50 by NF |
| <b>Lot Number:</b>         | 012721                         |                     |                       |

| Analyte                    | CAS Number | Concentration (ppm) |
|----------------------------|------------|---------------------|
| Total Dissolved Phosphorus | NA         | 5                   |
| Total Kjeldahl Nitrogen    | NA         | 5                   |
| Total Phosphorus           | NA         | 5                   |

| Parent Standards used in this standard: |                                      |           |               |           |                       |       |
|-----------------------------------------|--------------------------------------|-----------|---------------|-----------|-----------------------|-------|
| Standard                                | Description                          | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
| 21B2309                                 | Pipette (Electronic) -- 5 -100 uL    | Feb-15-21 | Nidia Fuentes | Aug-31-21 | Apr-05-21 09:33 by AK | 0.1   |
| 21B2306                                 | Pipette (Electronic) -- 50 -1,000 uL | Feb-15-21 | Nidia Fuentes | Aug-31-21 | Apr-05-21 09:19 by AK | 0.5   |
| 20B0607                                 | Sulfuric Acid 9673-33                | Feb-06-20 | ** Vendor **  | Jul-11-21 | Mar-02-20 14:42 by CB | 0.1   |
| 21C1801                                 | TP&TKN Stock Control Std.            | Mar-16-21 | Nidia Fuentes | Jan-07-23 | Mar-18-21 09:14 by NF | 0.5   |

**REVIEWED**

**By AK at 10:33 am, Apr 14, 2021**



## Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605  
Phone: (312) 353-8370 Fax: (312) 886-2591

### Analytical Standard Record

#### US EPA Region 5 LSASD Analytical Services Branch

**21D0710**

|                            |                                |                     |                       |
|----------------------------|--------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>TKN - MRL (0.50 mg N/L)</u> |                     |                       |
| <b>Standard Type:</b>      | Reference Material             | <b>Expires:</b>     | May-07-21             |
| <b>Solvent:</b>            | Reagent water                  | <b>Prepared:</b>    | Apr-07-21             |
| <b>Final Volume (mls):</b> | 100                            | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Vials:</b>              | 1                              | <b>Department:</b>  | A&I                   |
| <b>Vendor:</b>             | Absolute Grade                 | <b>Last Edit:</b>   | Apr-12-21 08:57 by NF |
| <b>Lot Number:</b>         | 102819                         |                     |                       |

| Analyte                 | CAS Number | Concentration (ppm) | SRM Control Limits |
|-------------------------|------------|---------------------|--------------------|
| Ammonia as N            | NA         | 0.5                 | 0-200              |
| Total Kjeldahl Nitrogen | NA         | 0.5                 | 0-200              |

| Parent Standards used in this standard: |                                   |           |               |           |                       |       |
|-----------------------------------------|-----------------------------------|-----------|---------------|-----------|-----------------------|-------|
| Standard                                | Description                       | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
| 19K1901                                 | NH3N/TKN-SCS (1000 mg/L)          | Nov-19-19 | ** Vendor **  | Oct-28-21 | Aug-27-20 10:20 by NF | 0.05  |
| 21B2309                                 | Pipette (Electronic) -- 5 -100 uL | Feb-15-21 | Nidia Fuentes | Aug-31-21 | Apr-05-21 09:33 by AK | 0.05  |
| 20B0607                                 | Sulfuric Acid 9673-33             | Feb-06-20 | ** Vendor **  | Jul-11-21 | Mar-02-20 14:42 by CB | 0.1   |

**REVIEWED**

**By AK at 10:33 am, Apr 14, 2021**





Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

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 Phone:(312)353-8370 Fax:(312)886-2591

**Analytical Standard Record**

**US EPA Region 5 LSASD Analytical Services Branch**

**21D0809**

**Description:** TKN - WCS (0.25 mg N/L)

**Standard Type:** Other Solution

**Solvent:** Blank: 21D0707

**Final Volume (mls):** 2

**Vials:** 1

**Vendor:** Absolute Grade

**Lot Number:** 102819

**Expires:** Apr-09-21

**Prepared:** Apr-08-21

**Prepared By:** Nidia Fuentes

**Department:** A&I

**Last Edit:** Apr-08-21 15:48 by NF

Prepared by Instrument (DA-3)

**REVIEWED**

**By AK at 10:33 am, Apr 14, 2021**

| Analyte                 | CAS Number | Concentration (ppm) |
|-------------------------|------------|---------------------|
| Ammonia as N            | NA         | 0.25                |
| Total Kjeldahl Nitrogen | NA         | 0.25                |

| Parent Standards used in this standard: |                          |           |               |           |                       |       |
|-----------------------------------------|--------------------------|-----------|---------------|-----------|-----------------------|-------|
| Standard                                | Description              | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
| 21D0708                                 | TKN - WCS (10.00 mg N/L) | Apr-07-21 | Nidia Fuentes | May-07-21 | Apr-07-21 15:35 by NF | 0.05  |



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**Analytical Standard Record**

**US EPA Region 5 LSASD Analytical Services Branch**

**21D0810**

|                            |                               |                     |                       |
|----------------------------|-------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>TKN - WCS (0.5 mg N/L)</u> |                     |                       |
| <b>Standard Type:</b>      | Other Solution                | <b>Expires:</b>     | Apr-09-21             |
| <b>Solvent:</b>            | Blank: 21D0707                | <b>Prepared:</b>    | Apr-08-21             |
| <b>Final Volume (mls):</b> | 2                             | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Vials:</b>              | 1                             | <b>Department:</b>  | A&I                   |
| <b>Vendor:</b>             | Absolute Grade                | <b>Last Edit:</b>   | Apr-12-21 09:24 by NF |
| <b>Lot Number:</b>         | 102819                        |                     |                       |

Prepared by Instrument (DA-3)

**REVIEWED**  
*By AK at 10:32 am, Apr 14, 2021*

| Analyte                 | CAS Number | Concentration (ppm) |
|-------------------------|------------|---------------------|
| Ammonia as N            | NA         | 0.5                 |
| Total Kjeldahl Nitrogen | NA         | 0.5                 |

**Parent Standards used in this standard:**

| Standard | Description              | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
|----------|--------------------------|-----------|---------------|-----------|-----------------------|-------|
| 21D0708  | TKN - WCS (10.00 mg N/L) | Apr-07-21 | Nidia Fuentes | May-07-21 | Apr-07-21 15:35 by NF | 0.1   |



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### Analytical Standard Record

US EPA Region 5 LSASD Analytical Services Branch

21D0811

|                            |                               |                     |                       |
|----------------------------|-------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>TKN - WCS (1.0 mg N/L)</u> | <b>Expires:</b>     | Apr-09-21             |
| <b>Standard Type:</b>      | Other Solution                | <b>Prepared:</b>    | Apr-08-21             |
| <b>Solvent:</b>            | Blank: 21D0707                | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Final Volume (mls):</b> | 2                             | <b>Department:</b>  | A&I                   |
| <b>Vials:</b>              | 1                             | <b>Last Edit:</b>   | Apr-08-21 15:50 by NF |
| <b>Vendor:</b>             | Absolute Grade                |                     |                       |
| <b>Lot Number:</b>         | 102819                        |                     |                       |

Prepared by Instrument (DA-3)

**REVIEWED**

**By AK at 10:32 am, Apr 14, 2021**

| Analyte                 | CAS Number | Concentration (ppm) |
|-------------------------|------------|---------------------|
| Ammonia as N            | NA         | 1                   |
| Total Kjeldahl Nitrogen | NA         | 1                   |

| Parent Standards used in this standard: |                          |           |               |           |                       |       |
|-----------------------------------------|--------------------------|-----------|---------------|-----------|-----------------------|-------|
| Standard                                | Description              | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
| 21D0708                                 | TKN - WCS (10.00 mg N/L) | Apr-07-21 | Nidia Fuentes | May-07-21 | Apr-07-21 15:35 by NF | 0.2   |



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**Analytical Standard Record**

**US EPA Region 5 LSASD Analytical Services Branch**

**21D0812**

|                            |                               |                     |                       |
|----------------------------|-------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>TKN - WCS (2.0 mg N/L)</u> |                     |                       |
| <b>Standard Type:</b>      | Other Solution                | <b>Expires:</b>     | Apr-09-21             |
| <b>Solvent:</b>            | Blank: 21D0707                | <b>Prepared:</b>    | Apr-08-21             |
| <b>Final Volume (mls):</b> | 2                             | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Vials:</b>              | 1                             | <b>Department:</b>  | A&I                   |
| <b>Vendor:</b>             | Absolute Grade                | <b>Last Edit:</b>   | Apr-08-21 15:51 by NF |
| <b>Lot Number:</b>         | 102819                        |                     |                       |

Prepared by Instrument (DA-3)

**REVIEWED**  
*By AK at 10:32 am, Apr 14, 2021*

| Analyte                 | CAS Number | Concentration (ppm) |
|-------------------------|------------|---------------------|
| Ammonia as N            | NA         | 2                   |
| Total Kjeldahl Nitrogen | NA         | 2                   |

| Parent Standards used in this standard: |                          |           |               |           |                       |       |
|-----------------------------------------|--------------------------|-----------|---------------|-----------|-----------------------|-------|
| Standard                                | Description              | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
| 21D0708                                 | TKN - WCS (10.00 mg N/L) | Apr-07-21 | Nidia Fuentes | May-07-21 | Apr-07-21 15:35 by NF | 0.4   |



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**Analytical Standard Record**

**US EPA Region 5 LSASD Analytical Services Branch**

**21D0813**

|                            |                             |                     |                       |
|----------------------------|-----------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>TKN - WCS 2.5mg N/L)</u> |                     |                       |
| <b>Standard Type:</b>      | Other Solution              | <b>Expires:</b>     | Apr-09-21             |
| <b>Solvent:</b>            | Blank: 21D0707              | <b>Prepared:</b>    | Apr-08-21             |
| <b>Final Volume (mls):</b> | 2                           | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Vials:</b>              | 1                           | <b>Department:</b>  | A&I                   |
| <b>Vendor:</b>             | Absolute Grade              | <b>Last Edit:</b>   | Apr-08-21 15:51 by NF |
| <b>Lot Number:</b>         | 102819                      |                     |                       |

Prepared by Instrument (DA-3)

**REVIEWED**

**By AK at 10:32 am, Apr 14, 2021**

| Analyte                 | CAS Number | Concentration (ppm) |
|-------------------------|------------|---------------------|
| Ammonia as N            | NA         | 2.5                 |
| Total Kjeldahl Nitrogen | NA         | 2.5                 |

**Parent Standards used in this standard:**

| Standard | Description              | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
|----------|--------------------------|-----------|---------------|-----------|-----------------------|-------|
| 21D0708  | TKN - WCS (10.00 mg N/L) | Apr-07-21 | Nidia Fuentes | May-07-21 | Apr-07-21 15:35 by NF | 0.5   |





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**Analytical Standard Record**

**US EPA Region 5 LSASD Analytical Services Branch**

**21D0814**

**Description:** TKN - WCS (5.0 mg N/L)

**Standard Type:** Other Solution

**Solvent:** Blank: 21D0707

**Final Volume (mls):** 2

**Vials:** 1

**Vendor:** Absolute Grade

**Lot Number:** 102819

**Expires:** Apr-09-21

**Prepared:** Apr-08-21

**Prepared By:** Nidia Fuentes

**Department:** A&I

**Last Edit:** Apr-08-21 15:52 by NF

Prepared by Instrument (DA-3)

**REVIEWED**

**By AK at 10:32 am, Apr 14, 2021**

| Analyte                 | CAS Number | Concentration (ppm) |
|-------------------------|------------|---------------------|
| Ammonia as N            | NA         | 5                   |
| Total Kjeldahl Nitrogen | NA         | 5                   |

| Parent Standards used in this standard: |                          |           |               |           |                       |       |
|-----------------------------------------|--------------------------|-----------|---------------|-----------|-----------------------|-------|
| Standard                                | Description              | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
| 21D0708                                 | TKN - WCS (10.00 mg N/L) | Apr-07-21 | Nidia Fuentes | May-07-21 | Apr-07-21 15:35 by NF | 1     |

# **SEQUENCE**

**21D0802**

Sequence Date: 04/08/2021

Instrument: DA-3

Sequence Analyses:

TKN DA

## ANALYSIS SEQUENCE

21D0802

| Instrument: | DA-3      | Analysis Date: | Apr-08-21                            | Calibration ID: | UNASSIGNED | Matrix:  | Water |  |
|-------------|-----------|----------------|--------------------------------------|-----------------|------------|----------|-------|--|
| Order       | Container | Lab Number     | Sample name or QC sample designation | Analysis        | STD ID     | Comments |       |  |
| 1           |           | 21D0802-CAL2   | Cal Standard                         | QC              | 21D0809    |          |       |  |
| 2           |           | 21D0802-CAL3   | Cal Standard                         | QC              | 21D0810    |          |       |  |
| 3           |           | 21D0802-CAL4   | Cal Standard                         | QC              | 21D0811    |          |       |  |
| 4           |           | 21D0802-CAL5   | Cal Standard                         | QC              | 21D0812    |          |       |  |
| 5           |           | 21D0802-CAL6   | Cal Standard                         | QC              | 21D0813    |          |       |  |
| 6           |           | 21D0802-CAL7   | Cal Standard                         | QC              | 21D0814    |          |       |  |
| 7           |           | 21D0802-CAL8   | Cal Standard                         | QC              | 21D0708    |          |       |  |
| 8           |           | 21D0802-CAL1   | Cal Standard                         | QC              | 21D0707    |          |       |  |
| 9           |           | 21D0802-ICB1   | ICB                                  | QC              |            |          |       |  |
| 10          |           | 21D0802-ICV1   | ICV                                  | QC              | 21D0709    |          |       |  |
| 11          | A         | 2103010-03     | S03                                  | TKN DA          |            | pH = 1   |       |  |
| 12          | A         | 2103010-04     | B01                                  | TKN DA          |            | pH = 1   |       |  |
| 13          |           | B21D011-MRL1   | MRL Check                            | QC              |            |          |       |  |
| 14          |           | B21D011-BLK1   | Blank                                | QC              |            |          |       |  |
| 15          |           | B21D011-BS1    | LCS                                  | QC              |            |          |       |  |
| 16          | A         | 2103007-02     | S02                                  | TKN DA          |            | pH = 1   |       |  |
| 17          |           | 21D0802-CCB1   | ICB                                  | QC              |            |          |       |  |
| 18          |           | 21D0802-CCV1   | ICV                                  | QC              | 21D0709    |          |       |  |
| 19          | A         | 2103007-06     | S06                                  | TKN DA          |            | pH = 1   |       |  |
| 20          | A         | 2103007-07     | S07                                  | TKN DA          |            | pH = 1   |       |  |
| 21          | A         | 2103007-08     | S08                                  | TKN DA          |            | pH = 1   |       |  |
| 22          | A         | 2103007-09     | B01                                  | TKN DA          |            | pH = 1   |       |  |
| 23          | A         | 2103007-01     | S01                                  | TKN DA          |            | pH = 1   |       |  |

| Order | Container | Lab Number   | Sample name or<br>QC sample designation | Analysis | STD ID  | Comments |
|-------|-----------|--------------|-----------------------------------------|----------|---------|----------|
| 24    |           | 21D0802-CCB2 | ICB                                     | QC       |         |          |
| 25    |           | 21D0802-CCV2 | ICV                                     | QC       | 21D0709 |          |
| 26    |           | B21D011-DUP1 | Duplicate                               | QC       |         |          |
| 27    |           | B21D011-MS1  | Matrix Spike                            | QC       |         |          |
| 28    | A         | 2103007-03   | S03                                     | TKN DA   |         | pH = 1   |
| 29    |           | 21D0802-CCB3 | ICB                                     | QC       |         |          |
| 30    |           | 21D0802-CCV3 | ICV                                     | QC       | 21D0709 |          |
| 31    |           | 21D0802-CCB4 | ICB                                     | QC       |         |          |
| 32    |           | 21D0802-CCV4 | ICV                                     | QC       | 21D0709 |          |
| 33    | A         | 2103007-04   | S04                                     | TKN DA   |         | pH = 1   |
| 34    | A         | 2103007-05   | S05                                     | TKN DA   |         | pH = 1   |
| 35    | A         | 2103010-01   | S01                                     | TKN DA   |         | pH = 1   |
| 36    |           | B21D011-DUP2 | Duplicate                               | QC       |         |          |
| 37    |           | B21D011-MS2  | Matrix Spike                            | QC       |         |          |
| 38    |           | 21D0802-CCB5 | ICB                                     | QC       |         |          |
| 39    |           | 21D0802-CCV5 | ICV                                     | QC       | 21D0709 |          |
| 40    | A         | 2103010-02   | S02                                     | TKN DA   |         | pH = 1   |
| 41    |           | 21D0802-CCB6 | ICB                                     | QC       |         |          |
| 42    |           | 21D0802-CCV6 | ICV                                     | QC       | 21D0709 |          |

| Order                                                  | Container                                         | Lab Number | Sample name or<br>QC sample designation | Analysis           | STD ID | Comments |
|--------------------------------------------------------|---------------------------------------------------|------------|-----------------------------------------|--------------------|--------|----------|
| <b><u>PREPARATION REAGENTS/STANDARDS/PIPETTES:</u></b> |                                                   |            |                                         |                    |        |          |
| <u>19K1902:</u>                                        | TKN-Spike Mix (1000 mg/L)                         |            | Prepared: Nov-19-19                     | Expires: Oct-28-21 |        |          |
| <u>21D0710:</u>                                        | TKN - MRL (0.50 mg N/L)                           |            | Prepared: Apr-07-21                     | Expires: May-07-21 |        |          |
| <u>21D0707:</u>                                        | TKN - WCS (0.00 mg N/L)                           |            | Prepared: Apr-07-21                     | Expires: May-07-21 |        |          |
| <u>21D0708:</u>                                        | TKN - WCS (10.00 mg N/L)                          |            | Prepared: Apr-07-21                     | Expires: May-07-21 |        |          |
| <u>21D0709:</u>                                        | TKN - WCS (5.00 mg N/L)                           |            | Prepared: Apr-07-21                     | Expires: May-07-21 |        |          |
| <u>21D0809:</u>                                        | TKN - WCS (0.25 mg N/L)                           |            | Prepared: Apr-08-21                     | Expires: Apr-09-21 |        |          |
| <u>21D0810:</u>                                        | TKN - WCS (0.5 mg N/L)                            |            | Prepared: Apr-08-21                     | Expires: Apr-09-21 |        |          |
| <u>21D0811:</u>                                        | TKN - WCS (1.0 mg N/L)                            |            | Prepared: Apr-08-21                     | Expires: Apr-09-21 |        |          |
| <u>21D0812:</u>                                        | TKN - WCS (2.0 mg N/L)                            |            | Prepared: Apr-08-21                     | Expires: Apr-09-21 |        |          |
| <u>21D0813:</u>                                        | TKN - WCS 2.5mg N/L)                              |            | Prepared: Apr-08-21                     | Expires: Apr-09-21 |        |          |
| <u>21D0814:</u>                                        | TKN - WCS (5.0 mg N/L)                            |            | Prepared: Apr-08-21                     | Expires: Apr-09-21 |        |          |
| <u>20G1701:</u>                                        | TKN - Sodium salicylate/sodium nitroprusside sol. |            | Prepared: Jul-17-20                     | Expires: Jul-17-21 |        |          |
| <u>21B0411:</u>                                        | TKN-Working Buffer Solution                       |            | Prepared: Feb-04-21                     | Expires: Feb-04-22 |        |          |
| <u>21D0808:</u>                                        | TKN-Sodium Hypochlorite                           |            | Prepared: Apr-08-21                     | Expires: Apr-09-21 |        |          |



# Calibration results

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TKN\_351.2

Version number 1.6 DA-3

Date 4/8/2021

User NF

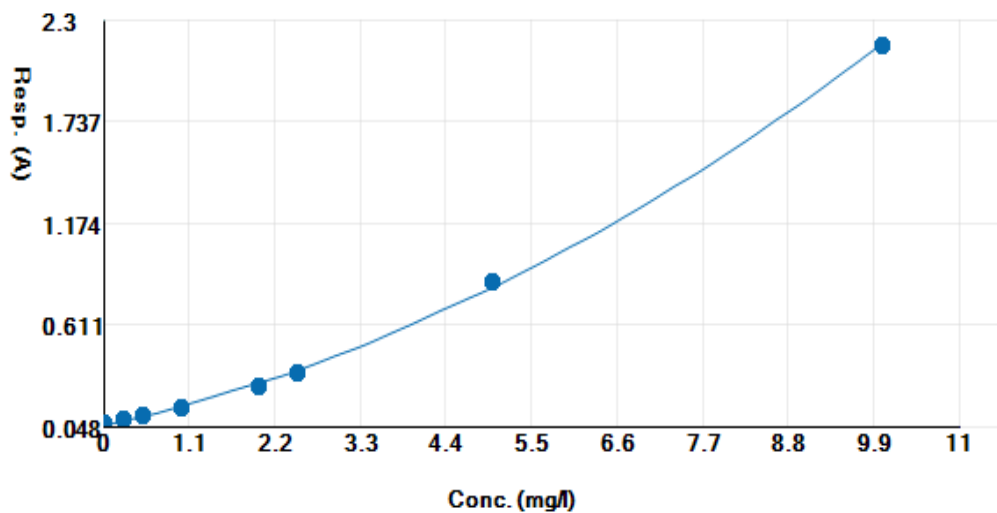
Time 2:50:56PM

Software version: 7.0

Analyzer name Analyzer 1

|           |                  |                   |          |
|-----------|------------------|-------------------|----------|
| Test      | TKN_351.2        | Coeff. of deter.  | 0.999375 |
| Status    | Accepted         | Total factor      | 4.735    |
| Accepted  | 4/8/2021 2:50 PM |                   |          |
| Checked   | 4/8/2021 2:50 PM |                   |          |
| User name | NF               | Zero-order factor | 0.053    |
| Comment   |                  | 1st order factor  | 0.094    |
| Errors    |                  | 2nd order factor  | 0.012    |

| Cal/Ctrl | Response | Calc. conc. | Given conc. | Lot     | Errors |
|----------|----------|-------------|-------------|---------|--------|
| TKN-0    | 0.068    | 0.15867     | 0.00000     | Default |        |
| TKN-10   | 0.086    | 0.33669     | 0.25000     | Default |        |
| TKN-10   | 0.105    | 0.51949     | 0.50000     | Default |        |
| TKN-10   | 0.148    | 0.90879     | 1.00000     | Default |        |
| TKN-10   | 0.267    | 1.84788     | 2.00000     | Default |        |
| TKN-10   | 0.342    | 2.37051     | 2.50000     | Default |        |
| TKN-10   | 0.848    | 5.14492     | 5.00000     | Default |        |
| TKN-10   | 2.159    | 9.98308     | 10.00000    | Default |        |



## Results by Test

Page

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DA-3

Date 4/8/2021

User NF

Time 4:56:45PM

Software version: 7.0

Test name TKN\_351.2

| Sample/ctrl ID | Test version | Result  | Unit | Note | Dil. 1 + | Status  | Errors                                          |
|----------------|--------------|---------|------|------|----------|---------|-------------------------------------------------|
| ICB            | 1.6          | 0.2370  | mg/l |      | 0.0      | man acc |                                                 |
| ICV            | 1.6          | 5.3224  | mg/l |      | 0.0      | man acc |                                                 |
| 2103010-03     | 1.6          | 9.2231  | mg/l |      | 0.0      | man acc |                                                 |
| 2103010-04     | 1.6          | 0.2451  | mg/l |      | 0.0      | man acc |                                                 |
| B21D011-MRL1   | 1.6          | 0.5601  | mg/l |      | 0.0      | man acc |                                                 |
| B21D011-BLK1   | 1.6          | 0.2082  | mg/l |      | 0.0      | man acc |                                                 |
| B21D011-BS1    | 1.6          | 2.0261  | mg/l |      | 0.0      | man acc |                                                 |
| 2103007-01     | 1.6          | - D     | mg/l |      | 0.0      | aut rej | Dil. limit High, Outside calibration            |
| B21D011-DUP1   | 1.6          | - D     | mg/l |      | 0.0      | aut rej | Dil. limit High, Outside calibration            |
| B21D011-MS1    | 1.6          | - D     | mg/l |      | 0.0      | aut rej | Abs. high, Dil. limit High, Outside calibration |
| 2103007-02     | 1.6          | 9.5753  | mg/l |      | 0.0      | man acc |                                                 |
| 2103007-03     | 1.6          | - D     | mg/l |      | 0.0      | aut rej | Abs. high, Dil. limit High, Outside calibration |
| ICB            | 1.6          | 0.2458  | mg/l |      | 0.0      | man acc |                                                 |
| ICV            | 1.6          | 5.3327  | mg/l |      | 0.0      | man acc |                                                 |
| 2103007-04     | 1.6          | - D     | mg/l |      | 0.0      | aut rej | Abs. high, Dil. limit High, Outside calibration |
| 2103007-05     | 1.6          | - D     | mg/l |      | 0.0      | aut rej | Abs. high, Dil. limit High, Outside calibration |
| 2103007-06     | 1.6          | 9.6234  | mg/l |      | 0.0      | man acc |                                                 |
| 2103007-07     | 1.6          | 4.9525  | mg/l |      | 0.0      | man acc |                                                 |
| 2103007-08     | 1.6          | 7.1694  | mg/l |      | 0.0      | man acc |                                                 |
| 2103007-09     | 1.6          | 0.2432  | mg/l |      | 0.0      | man acc |                                                 |
| 2103010-01     | 1.6          | - D     | mg/l |      | 0.0      | aut rej | Abs. high, Dil. limit High, Outside calibration |
| B21D011-DUP2   | 1.6          | - D     | mg/l |      | 0.0      | aut rej | Abs. high, Dil. limit High, Outside calibration |
| B21D011-MS2    | 1.6          | - D     | mg/l |      | 0.0      | aut rej | Abs. high, Dil. limit High, Outside calibration |
| 2103007-01     | 1.6          | 10.8365 | mg/l |      | 9.0      | man acc |                                                 |
| ICB            | 1.6          | 0.2540  | mg/l |      | 0.0      | man acc |                                                 |
| ICV            | 1.6          | 5.3553  | mg/l |      | 0.0      | man acc |                                                 |
| B21D011-DUP1   | 1.6          | 11.0004 | mg/l |      | 9.0      | man acc |                                                 |
| B21D011-MS1    | 1.6          | 12.4687 | mg/l |      | 9.0      | man acc |                                                 |
| 2103007-03     | 1.6          | 29.3358 | mg/l |      | 9.0      | man acc |                                                 |
| ICB            | 1.6          | 0.2663  | mg/l |      | 0.0      | man acc |                                                 |
| ICV            | 1.6          | 5.4069  | mg/l |      | 0.0      | man acc |                                                 |
| ICB            | 1.6          | 0.2726  | mg/l |      | 0.0      | man acc |                                                 |

| Sample/ctrl ID          | Test version   | Result            | Unit            | Note | Dil. 1 +       | Status             | Errors                                                                                                            |
|-------------------------|----------------|-------------------|-----------------|------|----------------|--------------------|-------------------------------------------------------------------------------------------------------------------|
| ICV                     | 1.6            | 5.3735            | mg/l            |      | 0.0            | man acc            |                                                                                                                   |
| 2103007-04              | 1.6            | 29.4263           | mg/l            |      | 9.0            | man acc            |                                                                                                                   |
| 2103007-05              | 1.6            | 29.3888           | mg/l            |      | 9.0            | man acc            |                                                                                                                   |
| 2103010-01              | 1.6            | 16.7312           | mg/l            |      | 9.0            | man acc            |                                                                                                                   |
| B21D011-DUP2            | 1.6            | 16.1920           | mg/l            |      | 9.0            | man acc            |                                                                                                                   |
| B21D011-MS2             | 1.6            | 18.3482           | mg/l            |      | 9.0            | man acc            |                                                                                                                   |
| 2103010-02              | 1.6            | - D               | mg/l            |      | 0.0            | aut rej            | Abs. high, Dil. limit High, Outside calit                                                                         |
| ICB                     | 1.6            | 0.2880            | mg/l            |      | 0.0            | man acc            |                                                                                                                   |
| ICV                     | 1.6            | 5.4713            | mg/l            |      | 0.0            | man acc            |                                                                                                                   |
| <del>ICB</del>          | <del>1.6</del> | <del></del>       | <del>mg/l</del> |      | <del>0.0</del> | <del>aut rej</del> | <del>Aut. rejected</del> <small>REVIEWED<br/>By NFUENTES at 11:08 am, Apr 09, 2021</small> Instrument error, need |
| <del>ICV</del>          | <del>1.6</del> | <del></del>       | <del>mg/l</del> |      | <del>0.0</del> | <del>aut rej</del> | <del>Aut. rejected</del> water                                                                                    |
| 2103010-02              | 1.6            | 67.1938           | mg/l            |      | 9.0            | man acc            | <small>REVIEWED<br/>By NFUENTES at 11:08 am, Apr 09, 2021</small>                                                 |
| ICB                     | 1.6            | 0.1574            | mg/l            |      | 0.0            | man acc            |                                                                                                                   |
| ICV                     | 1.6            | 5.3114            | mg/l            |      | 0.0            | man acc            |                                                                                                                   |
| <del>B21D011-BLK1</del> | <del>1.6</del> | <del>0.2062</del> | <del>mg/l</del> |      | <del>0.0</del> | <del>man acc</del> | <del>Data not used, because is not needed</del>                                                                   |
| ICB                     | 1.6            | 0.2553            | mg/l            |      | 0.0            | man acc            | <small>REVIEWED<br/>By NFUENTES at 11:07 am, Apr 09, 2021</small>                                                 |
| ICV                     | 1.6            | 5.3615            | mg/l            |      | 0.0            | man acc            |                                                                                                                   |

D - Diluted by instrument

Date 4/8/2021 User NF  
Time 4:57:40 PM Software version: 7.0

DA-3

| Sample/ctrl ID | Pat/Ctr/cal | Test name    | Test type | Result        | Result unit | Result time    | STAT | Status | Errors | Notes | Dilution | 1 - Manual dil | Response | Blank resp | Main abs. | Blank abs.    | Sample type |
|----------------|-------------|--------------|-----------|---------------|-------------|----------------|------|--------|--------|-------|----------|----------------|----------|------------|-----------|---------------|-------------|
| TP-0           | A           | Total Phos P |           | 0.02703 mg/l  |             | 4/8/2021 10:21 |      | MA     |        |       | 0        | 0.00291        | -0.00031 | 0.00261    | -0.00031  | -0.00031      |             |
| TP-3.0         | A           | Total Phos P |           | 0.15605 mg/l  |             | 4/8/2021 10:22 |      | MA     |        |       | 19       | 0.03233        | -0.00034 | 0.02289    | -0.00034  | -0.00034      |             |
| TP-3.0         | A           | Total Phos P |           | 0.30176 mg/l  |             | 4/8/2021 10:24 |      | MA     |        |       | 9        | 0.04618        | 0.00975  | 0.05593    | 0.00975   | 0.00975       |             |
| TP-3.0         | A           | Total Phos P |           | 0.72112 mg/l  |             | 4/8/2021 10:25 |      | MA     |        |       | 3        | 0.11222        | 0.07613  | 0.18835    | 0.07613   | 0.07613       |             |
| TP-3.0         | A           | Total Phos P |           | 0.99025 mg/l  |             | 4/8/2021 10:26 |      | MA     |        |       | 2        | 0.1546         | 0.00051  | 0.15511    | 0.00051   | 0.00051       |             |
| TP-3.0         | A           | Total Phos P |           | 1.72561 mg/l  |             | 4/8/2021 10:28 |      | MR     |        |       | 1        | 0.28019        | 0.01044  | 0.29063    | 0.01044   | 0.01044       |             |
| TP-3.0         | A           | Total Phos P |           | 3.0162 mg/l   |             | 4/8/2021 10:29 |      | MA     |        |       | 0        | 0.47365        | 0.00264  | 0.47629    | 0.00264   | 0.00264       |             |
| TP-3.0         | A           | Total Phos P |           | 1.48758 mg/l  |             | 4/8/2021 10:52 |      | MA     |        |       | 1        | 0.23292        | 0.00076  | 0.23368    | 0.00076   | 0.00076       |             |
| CCB            | C           | Total Phos P |           | 0.03678 mg/l  |             | 4/8/2021 11:42 |      | MA     |        |       | 0        | 0.00445        | -0.00018 | 0.00427    | -0.00018  |               |             |
| CCV            | C           | Total Phos P |           | 2.0234 mg/l   |             | 4/8/2021 11:43 |      | MA     |        |       | 0        | 0.31731        | 0.00161  | 0.31892    | 0.00161   |               |             |
| B21D010-MRL1   | P           | Total Phos P |           | 0.15322 mg/l  |             | 4/8/2021 11:43 |      | MA     |        |       | 0        | 0.03279        | -0.00046 | 0.02232    | -0.00046  | Sample type 1 |             |
| B21D010-BLK1   | P           | Total Phos P |           | 0.02593 mg/l  |             | 4/8/2021 11:44 |      | MA     |        |       | 0        | 0.00274        | -0.00047 | 0.00227    | -0.00047  | Sample type 1 |             |
| B21D010-BS1    | P           | Total Phos P |           | 1.06767 mg/l  |             | 4/8/2021 11:45 |      | MA     |        |       | 0        | 0.16679        | 0.06458  | 0.23138    | 0.06458   | Sample type 1 |             |
| 2103007-01     | P           | Total Phos P |           | 1.99852 mg/l  |             | 4/8/2021 11:46 |      | MA     |        |       | 0        | 0.31339        | 0.00181  | 0.3152     | 0.00181   | Sample type 1 |             |
| B21D010-DUP1   | P           | Total Phos P |           | 1.92304 mg/l  |             | 4/8/2021 11:47 |      | MA     |        |       | 0        | 0.3015         | 0.00089  | 0.30239    | 0.00089   | Sample type 1 |             |
| B21D010-MS1    | P           | Total Phos P |           | 2.95843 mg/l  |             | 4/8/2021 11:48 |      | MA     |        |       | 0        | 0.46456        | 0.00172  | 0.46627    | 0.00172   | Sample type 1 |             |
| 2103007-02     | P           | Total Phos P |           | 1.71794 mg/l  |             | 4/8/2021 11:49 |      | MA     |        |       | 0        | 0.2692         | 0.00111  | 0.27031    | 0.00111   | Sample type 1 |             |
| 2103007-03     | P           | Total Phos P |           | 3.44004 mg/l  |             | 4/8/2021 11:50 |      | AR     | 19,    | R     | 0        | 0.5404         | 0.02876  | 0.56916    | 0.02876   | Sample type 1 |             |
| 2103007-04     | P           | Total Phos P |           | 2.99316 mg/l  |             | 4/8/2021 11:51 |      | MA     |        |       | 0        | 0.47003        | 0.00207  | 0.4721     | 0.00207   | Sample type 1 |             |
| 2103007-05     | P           | Total Phos P |           | 2.21613 mg/l  |             | 4/8/2021 11:52 |      | MA     |        |       | 0        | 0.34766        | 0.01366  | 0.36131    | 0.01366   | Sample type 1 |             |
| CCB            | C           | Total Phos P |           | 0.02665 mg/l  |             | 4/8/2021 11:52 |      | MA     |        |       | 0        | 0.00285        | -0.00055 | 0.0023     | -0.00055  |               |             |
| CCV            | C           | Total Phos P |           | 2.03013 mg/l  |             | 4/8/2021 11:53 |      | MA     |        |       | 0        | 0.31837        | 0.00102  | 0.31938    | 0.00102   |               |             |
| 2103007-06     | P           | Total Phos P |           | 1.34727 mg/l  |             | 4/8/2021 11:54 |      | MA     |        |       | 0        | 0.21083        | 0.02485  | 0.23568    | 0.02485   | Sample type 1 |             |
| 2103007-07     | P           | Total Phos P |           | 2.79325 mg/l  |             | 4/8/2021 11:55 |      | MA     |        |       | 0        | 0.43854        | 0.00167  | 0.44022    | 0.00167   | Sample type 1 |             |
| 2103007-08     | P           | Total Phos P |           | 1.81963 mg/l  |             | 4/8/2021 11:56 |      | MA     |        |       | 0        | 0.28522        | 0.00211  | 0.28733    | 0.00211   | Sample type 1 |             |
| 2103007-09     | P           | Total Phos P |           | 0.0242 mg/l   |             | 4/8/2021 11:57 |      | MA     |        |       | 0        | 0.00247        | -0.00058 | 0.00189    | -0.00058  | Sample type 1 |             |
| 2103010-01     | P           | Total Phos P |           | 5.43184 mg/l  |             | 4/8/2021 11:58 |      | AR     | 19,    | R     | 0        | 0.85407        | 0.03886  | 0.89293    | 0.03886   | Sample type 1 |             |
| B21D010-DUP2   | P           | Total Phos P |           | 5.34461 mg/l  |             | 4/8/2021 11:59 |      | AR     | 19,    | R     | 0        | 0.84033        | 0.02699  | 0.86733    | 0.02699   | Sample type 1 |             |
| B21D010-MS2    | P           | Total Phos P |           | 6.29726 mg/l  |             | 4/8/2021 12:00 |      | AR     | 19,    | R     | 0        | 0.99036        | 0.00394  | 0.9943     | 0.00394   | Sample type 1 |             |
| 2103010-02     | P           | Total Phos P |           | 13.62197 mg/l |             | 4/8/2021 12:01 |      | AR     | 19,    | R     | 0        | 2.14387        | 0.15466  | 2.29852    | 0.15466   | Sample type 1 |             |
| 2103010-03     | P           | Total Phos P |           | 2.27359 mg/l  |             | 4/8/2021 12:01 |      | MA     |        |       | 0        | 0.35671        | 0.00602  | 0.36272    | 0.00602   | Sample type 1 |             |
| 2103007-03     | P           | Total Phos P |           | 3.41338 mg/l  |             | 4/8/2021 12:03 |      | MA     |        |       | 9        | 0.05241        | 0.00506  | 0.05748    | 0.00506   | Sample type 1 |             |
| CCB            | C           | Total Phos P |           | 0.02531 mg/l  |             | 4/8/2021 12:04 |      | MA     |        |       | 0        | 0.00264        | -0.0003  | 0.00234    | -0.0003   |               |             |
| CCV            | C           | Total Phos P |           | 2.0199 mg/l   |             | 4/8/2021 12:05 |      | MA     |        |       | 0        | 0.31675        | 0.00339  | 0.32015    | 0.00339   |               |             |
| 2103010-04     | P           | Total Phos P |           | 0.0408 mg/l   |             | 4/8/2021 12:06 |      | MA     |        |       | 0        | 0.00508        | 0.00343  | 0.00851    | 0.00343   | Sample type 1 |             |
| CCB            | C           | Total Phos P |           | 0.02616 mg/l  |             | 4/8/2021 12:07 |      | MA     |        |       | 0        | 0.00278        | 0.00166  | 0.00444    | 0.00166   |               |             |
| CCV            | C           | Total Phos P |           | 2.00738 mg/l  |             | 4/8/2021 12:08 |      | MA     |        |       | 0        | 0.31478        | 0.00167  | 0.31646    | 0.00167   |               |             |
| 2103010-01     | P           | Total Phos P |           | 5.50305 mg/l  |             | 4/8/2021 12:10 |      | MA     |        |       | 9        | 0.08532        | 0.00133  | 0.08665    | 0.00133   | Sample type 1 |             |
| B21D010-DUP2   | P           | Total Phos P |           | 7.94358 mg/l  |             | 4/8/2021 12:11 |      | MA     |        |       | 9        | 0.12375        | 0.0445   | 0.16825    | 0.0445    | Sample type 1 |             |
| B21D010-MS2    | P           | Total Phos P |           | 6.39657 mg/l  |             | 4/8/2021 12:13 |      | MA     |        |       | 9        | 0.09939        | 0.00018  | 0.09957    | 0.00018   | Sample type 1 |             |
| 2103010-02     | P           | Total Phos P |           | 17.89696 mg/l |             | 4/8/2021 12:15 |      | MA     |        |       | 9        | 0.2805         | 0.02513  | 0.30563    | 0.02513   | Sample type 1 |             |
| CCB            | C           | Total Phos P |           | 0.21101 mg/l  |             | 4/8/2021 12:16 |      | MA     |        |       | 0        | 0.03189        | 0.00724  | 0.03913    | 0.00724   |               |             |
| CCV            | C           | Total Phos P |           | 2.00693 mg/l  |             | 4/8/2021 12:17 |      | MA     |        |       | 0        | 0.31471        | 0.00099  | 0.3157     | 0.00099   |               |             |
| CCB            | C           | Total Phos P |           | -0.00354 mg/l |             | 4/8/2021 12:52 |      | MA     |        |       | 0        | -0.0019        | 0.00523  | 0.00333    | 0.00523   |               |             |
| CCV            | C           | Total Phos P |           | 2.04164 mg/l  |             | 4/8/2021 12:53 |      | MA     |        |       | 0        | 0.32018        | 0.00249  | 0.32267    | 0.00249   |               |             |
| 2103010-01     | P           | Total Phos P |           | 5.47962 mg/l  |             | 4/8/2021 12:55 |      | MA     |        |       | 9        | 0.08495        | 0.00039  | 0.08534    | 0.00039   | Sample type 1 |             |
| B21D010-DUP2   | P           | Total Phos P |           | 5.51893 mg/l  |             | 4/8/2021 12:56 |      | MA     |        |       | 9        | 0.08557        | 0.00353  | 0.0891     | 0.00353   | Sample type 1 |             |

|              |   |              |               |                |    |            |          |          |          |          |               |               |
|--------------|---|--------------|---------------|----------------|----|------------|----------|----------|----------|----------|---------------|---------------|
| B21D010-MS2  | P | Total Phos P | 6.56653 mg/l  | 4/8/2021 12:58 | MA | 9          | 0        | 0.10207  | 0.00028  | 0.10235  | 0.00028       | Sample type 1 |
| 2103010-02   | P | Total Phos P | 19.1745 mg/l  | 4/8/2021 13:00 | MA | 9          | 0        | 0.30062  | 0.00348  | 0.3041   | 0.00348       | Sample type 1 |
| CCB          | C | Total Phos P | 0.0266 mg/l   | 4/8/2021 13:01 | MA | 0          | 0.00285  | -0.00073 | 0.00211  | -0.00073 |               |               |
| CCV          | C | Total Phos P | 2.02863 mg/l  | 4/8/2021 13:01 | MA | 0          | 0.31813  | 0.00068  | 0.31881  | 0.00068  |               |               |
| TKN-0        | A | TKN_351.2P   | 0.39238 mg/l  | 4/8/2021 13:50 | MR | 0          | 0.10081  | -0.0002  | 0.10062  | -0.0002  |               |               |
| TKN-10       | A | TKN_351.2P   | 0.33669 mg/l  | 4/8/2021 13:52 | MA | 39         | 0.08601  | -0.00041 | 0.08561  | -0.00041 |               |               |
| TKN-10       | A | TKN_351.2P   | 0.51949 mg/l  | 4/8/2021 13:53 | MA | 19         | 0.10511  | -0.00025 | 0.10486  | -0.00025 |               |               |
| TKN-10       | A | TKN_351.2P   | 0.90879 mg/l  | 4/8/2021 13:55 | MA | 9          | 0.14838  | -0.00034 | 0.14804  | -0.00034 |               |               |
| TKN-10       | A | TKN_351.2P   | 1.84788 mg/l  | 4/8/2021 13:57 | MA | 4          | 0.26732  | 0.00004  | 0.26736  | 0.00004  |               |               |
| TKN-10       | A | TKN_351.2P   | 2.37051 mg/l  | 4/8/2021 13:59 | MA | 3          | 0.34242  | -0.00023 | 0.34219  | -0.00023 |               |               |
| TKN-10       | A | TKN_351.2P   | 5.14492 mg/l  | 4/8/2021 14:00 | MA | 1          | 0.8479   | -0.00018 | 0.84772  | -0.00018 |               |               |
| TKN-10       | A | TKN_351.2P   | 9.98308 mg/l  | 4/8/2021 14:02 | MA | 0          | 2.15926  | 0.00941  | 2.16867  | 0.00941  |               |               |
| TKN-0        | A | TKN_351.2P   | 0.41766 mg/l  | 4/8/2021 14:20 | MR | 0          | 0.10425  | -0.00028 | 0.10396  | -0.00028 |               |               |
| TKN-0        | A | TKN_351.2P   | 0.15867 mg/l  | 4/8/2021 14:42 | MA | 0          | 0.06817  | -0.00004 | 0.06812  | -0.00004 |               |               |
| ICB          | C | TKN_351.2P   | 0.23698 mg/l  | 4/8/2021 15:11 | MA | 0          | 0.07593  | 0.00025  | 0.07617  | 0.00025  |               |               |
| ICV          | C | TKN_351.2P   | 5.32237 mg/l  | 4/8/2021 15:12 | MA | 0          | 0.88635  | 0.00078  | 0.88712  | 0.00078  |               |               |
| 2103010-03   | P | TKN_351.2P   | 9.22313 mg/l  | 4/8/2021 15:13 | MA | 0          | 1.91711  | 0.00291  | 1.92001  | 0.00291  | Sample type 1 |               |
| 2103010-04   | P | TKN_351.2P   | 0.24506 mg/l  | 4/8/2021 15:15 | MA | 0          | 0.07673  | -0.00011 | 0.07662  | -0.00011 | Sample type 1 |               |
| B21D011-MR11 | P | TKN_351.2P   | 0.56014 mg/l  | 4/8/2021 15:15 | MA | 0          | 0.10946  | -0.00002 | 0.10944  | -0.00002 | Sample type 1 |               |
| B21D011-BLK1 | P | TKN_351.2P   | 0.20815 mg/l  | 4/8/2021 15:16 | MA | 0          | 0.07305  | -0.00002 | 0.07304  | -0.00002 | Sample type 1 |               |
| B21D011-BS1  | P | TKN_351.2P   | 2.02612 mg/l  | 4/8/2021 15:18 | MA | 0          | 0.29222  | 0.00004  | 0.29226  | 0.00004  | Sample type 1 |               |
| 2103007-01   | P | TKN_351.2P   | 11.50035 mg/l | 4/8/2021 15:19 | AR | 19,30, R   | 0.26503  | 0.0013   | 2.65633  | 0.0013   | Sample type 1 |               |
| B21D011-DUP1 | P | TKN_351.2P   | 11.66875 mg/l | 4/8/2021 15:19 | AR | 19,30, R   | 0.271005 | 0.00144  | 2.71149  | 0.00144  | Sample type 1 |               |
| B21D011-MS1  | P | TKN_351.2P   | 12.78503 mg/l | 4/8/2021 15:21 | AR | 3,19,30, R | 0.307479 | 0.00111  | 3.0759   | 0.00111  | Sample type 1 |               |
| 2103007-02   | P | TKN_351.2P   | 9.57534 mg/l  | 4/8/2021 15:22 | MA | 0          | 2.02766  | 0.00026  | 2.02792  | 0.00026  | Sample type 1 |               |
| 2103007-03   | P | TKN_351.2P   | 32.22951 mg/l | 4/8/2021 15:23 | AR | 0          | 9.42811  | 0.00062  | 9.42873  | 0.00062  | Sample type 1 |               |
| ICB          | C | TKN_351.2P   | 0.24576 mg/l  | 4/8/2021 15:24 | MA | 0          | 0.07681  | -0.00018 | 0.07662  | -0.00018 |               |               |
| ICV          | C | TKN_351.2P   | 5.33267 mg/l  | 4/8/2021 15:25 | MA | 0          | 0.8886   | -0.00023 | 0.88837  | -0.00023 |               |               |
| 2103007-04   | P | TKN_351.2P   | 32.20405 mg/l | 4/8/2021 15:26 | AR | 3,19,30, R | 0.941979 | 0.00032  | 9.42011  | 0.00032  | Sample type 1 |               |
| 2103007-05   | P | TKN_351.2P   | 32.20051 mg/l | 4/8/2021 15:27 | AR | 3,19,30, R | 0.941863 | 0.00013  | 9.41876  | 0.00013  | Sample type 1 |               |
| 2103007-06   | P | TKN_351.2P   | 9.62339 mg/l  | 4/8/2021 15:28 | MA | 0          | 2.04296  | 0.00106  | 2.04402  | 0.00106  | Sample type 1 |               |
| 2103007-07   | P | TKN_351.2P   | 4.95252 mg/l  | 4/8/2021 15:29 | MA | 0          | 0.80705  | 0.00013  | 0.80718  | 0.00013  | Sample type 1 |               |
| 2103007-08   | P | TKN_351.2P   | 7.16942 mg/l  | 4/8/2021 15:30 | MA | 0          | 1.33015  | 0.00032  | 1.33047  | 0.00032  | Sample type 1 |               |
| 2103007-09   | P | TKN_351.2P   | 0.24315 mg/l  | 4/8/2021 15:31 | MA | 0          | 0.07654  | -0.00014 | 0.0764   | -0.00014 | Sample type 1 |               |
| 2103010-01   | P | TKN_351.2P   | 15.38466 mg/l | 4/8/2021 15:32 | AR | 3,19,30, R | 0.39242  | 0.00191  | 3.92611  | 0.00191  | Sample type 1 |               |
| B21D011-DUP2 | P | TKN_351.2P   | 14.99121 mg/l | 4/8/2021 15:33 | AR | 3,19,30, R | 0.379564 | 0.00233  | 3.79797  | 0.00233  | Sample type 1 |               |
| B21D011-MS2  | P | TKN_351.2P   | 32.21655 mg/l | 4/8/2021 15:34 | AR | 0          | 9.42388  | 0.00209  | 9.42596  | 0.00209  | Sample type 1 |               |
| 2103007-01   | P | TKN_351.2P   | 10.83648 mg/l | 4/8/2021 15:36 | MA | 9          | 0.16897  | -0.00014 | 0.16883  | -0.00014 | Sample type 1 |               |
| ICB          | C | TKN_351.2P   | 0.25401 mg/l  | 4/8/2021 15:37 | MA | 0          | 0.07763  | 0        | 0.07763  | 0        |               |               |
| ICV          | C | TKN_351.2P   | 5.35534 mg/l  | 4/8/2021 15:37 | MA | 0          | 0.89357  | -0.00019 | 0.89338  | -0.00019 |               |               |
| B21D011-DUP1 | P | TKN_351.2P   | 11.0004 mg/l  | 4/8/2021 15:40 | MA | 9          | 0.17093  | 0.00008  | 0.17102  | 0.00008  | Sample type 1 |               |
| B21D011-MS1  | P | TKN_351.2P   | 12.46871 mg/l | 4/8/2021 15:41 | MA | 9          | 0.18883  | -0.00013 | 0.1887   | -0.00013 | Sample type 1 |               |
| 2103007-03   | P | TKN_351.2P   | 29.33582 mg/l | 4/8/2021 15:43 | MA | 9          | 0.43048  | 0.00006  | 0.43054  | 0.00006  | Sample type 1 |               |
| ICB          | C | TKN_351.2P   | 0.26628 mg/l  | 4/8/2021 16:10 | MA | 0          | 0.07887  | -0.00004 | 0.07883  | -0.00004 |               |               |
| ICV          | C | TKN_351.2P   | 5.40695 mg/l  | 4/8/2021 16:10 | MA | 0          | 0.90493  | -0.0001  | 0.90483  | -0.0001  |               |               |
| ICB          | C | TKN_351.2P   | 0.27265 mg/l  | 4/8/2021 16:11 | MA | 0          | 0.07951  | 0.00003  | 0.07953  | 0.00003  |               |               |
| ICV          | C | TKN_351.2P   | 5.37355 mg/l  | 4/8/2021 16:13 | MA | 0          | 0.89757  | -0.00002 | 0.89755  | -0.00002 |               |               |
| 2103007-04   | P | TKN_351.2P   | 29.42627 mg/l | 4/8/2021 16:14 | MA | 9          | 0.43196  | 0.00014  | 0.43209  | 0.00014  | Sample type 1 |               |
| 2103007-05   | P | TKN_351.2P   | 29.38877 mg/l | 4/8/2021 16:16 | MA | 9          | 0.43134  | 0.01389  | 0.44523  | 0.01389  | Sample type 1 |               |
| 2103010-01   | P | TKN_351.2P   | 16.73119 mg/l | 4/8/2021 16:18 | MA | 9          | 0.24362  | -0.0001  | 0.24352  | -0.0001  | Sample type 1 |               |
| B21D011-DUP2 | P | TKN_351.2P   | 16.19201 mg/l | 4/8/2021 16:20 | MA | 9          | 0.23646  | -0.00024 | 0.23621  | -0.00024 | Sample type 1 |               |
| B21D011-MS2  | P | TKN_351.2P   | 18.34817 mg/l | 4/8/2021 16:21 | MA | 9          | 0.26552  | -0.00018 | 0.26535  | -0.00018 | Sample type 1 |               |
| 2103010-02   | P | TKN_351.2P   | 32.15372 mg/l | 4/8/2021 16:23 | AR | 0          | 9.40335  | 0.02265  | 9.426    | 0.02265  | Sample type 1 |               |
| ICB          | C | TKN_351.2P   | 0.28802 mg/l  | 4/8/2021 16:24 | MA | 0          | 0.08106  | -0.00009 | 0.08097  | -0.00009 |               |               |
| ICV          | C | TKN_351.2P   | 5.47129 mg/l  | 4/8/2021 16:24 | MA | 0          | 0.91918  | -0.00023 | 0.91895  | -0.00023 |               |               |
| ICB          | C | TKN_351.2P   | mg/l          | 4/8/2021 16:27 | AR | 1, 0       |          |          |          |          |               |               |
| ICV          | C | TKN_351.2P   | mg/l          | 4/8/2021 16:27 | AR | 1, 0       |          |          |          |          |               |               |
| 2103010-02   | P | TKN_351.2P   | 67.19382 mg/l | 4/8/2021 16:36 | MA | 9          | 0        | 1.21468  | -0.00029 | 1.21439  | -0.00029      | Sample type 1 |



|              |   |            |              |                |    |   |         |          |         |                       |
|--------------|---|------------|--------------|----------------|----|---|---------|----------|---------|-----------------------|
| ICB          | C | TKN_351.2P | 0.15742 mg/l | 4/8/2021 16:51 | MA | 0 | 0.06804 | 0.02974  | 0.09778 | 0.02974               |
| ICV          | C | TKN_351.2P | 5.3114 mg/l  | 4/8/2021 16:52 | MA | 0 | 0.88395 | 0.00306  | 0.88701 | 0.00306               |
| B21D011-BLK1 | P | TKN_351.2P | 0.20618 mg/l | 4/8/2021 16:53 | MA | 0 | 0       | 0.00259  | 0.07545 | 0.00259 Sample type 1 |
| ICB          | C | TKN_351.2P | 0.25533 mg/l | 4/8/2021 16:54 | MA | 0 | 0.07286 | -0.00032 | 0.07744 | -0.00032              |
| ICV          | C | TKN_351.2P | 5.36155 mg/l | 4/8/2021 16:55 | MA | 0 | 0.07776 | -0.00022 | 0.07744 | -0.00022              |
|              |   |            |              |                |    |   | 0.89493 | -0.00022 | 0.89472 | -0.00022              |

# ANALYSIS REAGENTS/STANDARDS

20G1701



Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

Print Date: 7/17/2020

536 South Clark Street, Chicago, IL 60605  
 Phone: (312) 353-8370 Fax: (312) 886-2591

**Reagent Preparation Bench Sheet**

Parameter / SOP #: TKN/ SOP AIG035B VER #8

Prepared by: Nidia Fuentes

Reagent: TKN - Sodium salicylate/sodium nitroprusside sol.

Preparation Date: Jul-17-20

LIMS ID: 20G1701

Expiration Date: Jul-17-21

| Chemical Name (Formula)                                                         | LIMS ID | Mass or Volume<br>(specify units) |
|---------------------------------------------------------------------------------|---------|-----------------------------------|
| Sodium Nitroprusside (Na <sub>2</sub> Fe(CN) <sub>5</sub> NO*2H <sub>2</sub> O) | 19F1901 | 0.0314 g                          |
| Sodium Salicylate (NaC <sub>7</sub> H <sub>5</sub> O <sub>3</sub> )             | 19L1207 | 15.1707 g                         |
|                                                                                 |         |                                   |
|                                                                                 |         |                                   |
|                                                                                 |         |                                   |

Total Volume : 100 mL

**Comments :**

Balance #17.

Reviewed w/ **2006014**

**REVIEWED**

**By AK at 10:43 am, Aug 26, 2020**

Analyst Signature:

*Nidia Fuentes*

# Balance Check

BALANCE ID: #17

DATE: 7/18/2020

ANALYST: Nidia Fuentes

WEIGHT SET ID: TROEMNER S/N: 4000017548

WEIGHT SET 2 ID:

INITIAL &amp; DATE: 17 7/18/2020

| Analytical Balance Tolerance Limits |                   |          |          |
|-------------------------------------|-------------------|----------|----------|
| Standard Weight (g)                 | Actual Weight (g) | LCL (g)  | UCL (g)  |
| 0.0100                              | 0.0100            | 0.0099   | 0.0101   |
| 0.0200                              |                   | 0.0199   | 0.0201   |
| 0.0200*                             |                   | 0.0199   | 0.0201   |
| 0.0500                              | 0.0500            | 0.0499   | 0.0501   |
| 0.1000                              | 0.1000            | 0.0999   | 0.1001   |
| 0.2000                              |                   | 0.1999   | 0.2001   |
| 0.2000*                             |                   | 0.1999   | 0.2001   |
| 0.5000                              | 0.5000            | 0.4999   | 0.5001   |
| 1.0000                              | 1.0000            | 0.9999   | 1.0001   |
| 2.0000                              |                   | 1.9999   | 2.0001   |
| 2.0000*                             |                   | 1.9999   | 2.0001   |
| 5.0000                              | 5.0000            | 4.9999   | 5.0001   |
| 10.0000                             | 10.0000           | 9.9999   | 10.0001  |
| 20.0000                             | 20.0000           | 19.9999  | 20.0001  |
| 20.0000*                            |                   | 19.9999  | 20.0001  |
| 50.0000                             | 50.0001           | 49.9999  | 50.0001  |
| 100.0000                            |                   | 99.9997  | 100.0003 |
| 200.0000                            | 100.0000          | 199.9995 | 200.0005 |

| Top-Loading Balance Tolerance Limits |                   |         |         |
|--------------------------------------|-------------------|---------|---------|
| Standard Weight (g)                  | Actual Weight (g) | LCL (g) | UCL (g) |
| 0.01                                 |                   | 0.00    | 0.02    |
| 0.02                                 |                   | 0.01    | 0.03    |
| 0.02*                                |                   | 0.01    | 0.03    |
| 0.05                                 |                   | 0.04    | 0.06    |
| 0.10                                 |                   | 0.09    | 0.11    |
| 0.20                                 |                   | 0.19    | 0.21    |
| 0.20*                                |                   | 0.19    | 0.21    |
| 0.50                                 |                   | 0.49    | 0.51    |
| 1.00                                 |                   | 0.99    | 1.01    |
| 2.00                                 |                   | 1.99    | 2.01    |
| 2.00*                                |                   | 1.99    | 2.01    |
| 5.00                                 |                   | 4.99    | 5.01    |
| 10.00                                |                   | 9.99    | 10.01   |
| 20.00                                |                   | 19.99   | 20.01   |
| 20.00*                               |                   | 19.99   | 20.01   |
| 50.00                                |                   | 49.99   | 50.01   |
| 100.00                               |                   | 99.99   | 100.01  |
| 200.00                               |                   | 199.99  | 200.01  |
| 300.00                               |                   | 299.99  | 300.01  |
| 500.00                               |                   | 499.99  | 500.01  |
| 1000.00                              |                   | 999.99  | 1000.01 |

COMMENTS:

# ANALYSIS REAGENTS/STANDARDS

21B0411





Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

**Reagent Preparation Bench Sheet**

Table of Contents

Print Date: 2/4/2021

Parameter / SOP #: SOP AIG 035B VER #8

Prepared by: Nidia Fuentes

Reagent: TKN-Working Buffer Solution

Preparation Date: Feb-04-21

LIMS ID: 21B0411

Expiration Date: Feb-04-22

| Chemical Name (Formula)                                                                              | LIMS ID | Mass or Volume<br>(specify units) |
|------------------------------------------------------------------------------------------------------|---------|-----------------------------------|
| Stock Sodium Potassium Tartrate (C <sub>4</sub> H <sub>4</sub> KNaO <sub>6</sub> *4H <sub>2</sub> O) | 21B0408 | 25 mL                             |
| Stock Buffer Solution                                                                                | 21B0409 | 20 mL                             |
| Stock Sodium Hydroxide (NaOH)                                                                        | 21B0410 | 25 mL                             |
|                                                                                                      |         |                                   |
|                                                                                                      |         |                                   |

Total Volume : 100 mL

Comments :

**REVIEWED**

**By AK at 2:08 pm, Mar 04, 2021**

Analyst Signature:

*Nidia Fuentes*

# ANALYSIS REAGENTS/STANDARDS

21D0808



Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

Print Date:

4/8/2021

536 South Clark Street, Chicago, IL 60605  
 Phone:(312)353-8370 Fax:(312)886-2591

**Reagent Preparation Bench Sheet**

Parameter / SOP #: TKN /AIG035B VERSION 8Prepared by: Nidia FuentesReagent: TKN-Sodium HypochloritePreparation Date: Apr-08-21LIMS ID: 21D0808Expiration Date: Apr-09-21

| Chemical Name (Formula)     | LIMS ID | Mass or Volume<br>(specify units) |
|-----------------------------|---------|-----------------------------------|
| Sodium Hypochlorite (NaOCl) | 21C0923 | 1.2 mL                            |
|                             |         |                                   |
|                             |         |                                   |
|                             |         |                                   |
|                             |         |                                   |

Total Volume : 10 mL

Comments :

**REVIEWED**

**By AK at 10:33 am, Apr 14, 2021**

Analyst Signature:

*Nidia Fuentes*

## Pen&amp;Ink Changes

Page 1 of 2

Deviation Type: ☐ One-Time ☒ Continuous Pen&Ink Reference No: 24510

A hard copy of the approved Pen&Ink form shall be included in all relevant data packages until the deviation is either no longer applicable or incorporated in the pertinent SOP. When applicable, include this pen&ink reference number in case narratives. Continuous pen&ink changes have a 45-TAT unless an extension is approved.

Attachments Included: ☐ Yes ☒ No

|                                                                                                 |                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Document Title</b>                                                                           | SOP AIG035B- TKN in Water                                                                                                                                                                                                                                                     |
| <b>Deviation Reason<br/>(Technical Justification)</b><br>Additional space on pg 2 if needed     | Adjusting the preparation of Hypochlorite solution by assay using a weaker sodium hypochlorite reagent.                                                                                                                                                                       |
| <b>Deviation Section(s)</b>                                                                     | 7.8 and 7.18.1                                                                                                                                                                                                                                                                |
| <b>Existing Language<br/>(Being replaced)</b><br>Additional space on pg 2 if needed             | <p>7.8- Sodium Hypochlorite (NaOCl) – Commercially available or regular Clorox Bleach containing 5.25% sodium hypochlorite.</p> <p>7.18.1- Dilute 0.60 mL sodium hypochlorite (NaOCl) (Clorox bleach) to 10 mL with reagent water and mix properly. Store at 4 °C ± 2 °C.</p> |
| <b>Revised Language<br/>(Replacing existing language)</b><br>Additional space on pg 2 if needed | <p>7.8- Sodium Hypochlorite (NaOCl) – Commercially available or regular Clorox Bleach containing 5.00% sodium hypochlorite.</p> <p>7.18.1- Dilute 1.2 mL sodium hypochlorite (NaOCl) (Clorox bleach) to 10 mL with reagent water and mix properly. Store at 4 °C ± 2 °C.</p>  |

**Pen&Ink Changes**

Page 2 of 2

|                                            |  |
|--------------------------------------------|--|
| <b>Qualtrax CC #<br/>Or Other Comments</b> |  |
| <b>Additional<br/>Information</b>          |  |





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5 ANALYTICAL SERVICES BRANCH LABORATORY  
536 SOUTH CLARK STREET (LAB-10C)  
CHICAGO, ILLINOIS 60605

**ELECTRONIC LABORATORY DATA PACKAGE  
FINAL LEVEL IV  
COVER PAGE**

|                                      |                     |
|--------------------------------------|---------------------|
| LIMS Work order(s):                  | 2103010             |
| Primary Analyst:                     | Nidia Fuentes       |
| Analysis:                            | Total Phosphorus DA |
| Date:                                | May 03, 2021        |
| Data Reporting Qualtrax Workflow ID: | 24874               |

Digital Signature of Primary Analyst:

|  |
|--|
|  |
|--|

**Digital Signature Agreement:** By signing above the primary analyst understands and agrees that they will be held legally bound, obligated, and responsible for the use of their digital signature as they would be by using their hand-written signature.



## Table of Contents

Client Project Name: Deardorff (BA-01-21)  
 Work Order Number: 2103010

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**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY****US EPA Region 5 LSASD Analytical Services Branch****536 SOUTH CLARK STREET****CHICAGO, ILLINOIS 60605**

**Date:** 5/3/2021

**Title:** ASB Data Report for Deardorff

**To:** Water Division, US EPA Region 5  
77 West Jackson Boulevard  
Chicago, IL 60604

**From:** Nidia Fuentes, Chemist  
fuentes.nidia@epa.gov  
US EPA Region 5 LSASD Analytical Services Branch

The results reported in this document apply to the samples as received and relate only to the items tested. The data transmitted under this cover memo successfully passed the data review process and applicable Analytical Services Branch (ASB) laboratory Standard Operating Procedures. In accordance with the EPA QA/G-8 *Guidance on Environmental Data Verification and Data Validation*, ASB performs data verification on all the data generated internally. ASB does not perform data validation or quality assessment procedures.

This report was reviewed and the information provided herein accurately represents the analysis performed.

*Please contact the analyst with any technical report issues, Amanda Wroble at (312)-353-0375 for sample project concerns, and Robert Snyder at (312)-353-9083 with data transmittal questions. Thank you.*

**Attached are Results for: Deardorff**

---

**Analyses included in this report:**

Total Phosphorus DA

Report Name: 2103010 Total Phosphorus DA FINAL May 03 21 0830



**Environmental Protection Agency Region 5**  
**US EPA Region 5 LSASD Analytical Services Branch**

536 South Clark Street, Chicago, IL 60605  
 Phone:(312)353-8370 Fax:(312)886-2591

Water Division, US EPA Region 5  
 77 West Jackson Boulevard  
 Chicago IL, 60604

Project: Deardorff  
 Project Number: BA-01-21  
 Project Manager: Ben Atkinson

**Reported:**  
 May-03-21 08:30

**Accredited Analyses included in this Report**



**Method:** EPA 365.4 in Water  
**Analysis:** Total Phosphorus DA  
**Analyte**

**Certifications**

| Analyte          | Certifications     |
|------------------|--------------------|
| Total Phosphorus | ISO/IEC 17025:2017 |

*Analytes not listed above are not accredited by ANAB.*



## Environmental Protection Agency Region 5

### US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605  
 Phone:(312)353-8370 Fax:(312)886-2591

Water Division, US EPA Region 5  
 77 West Jackson Boulevard  
 Chicago IL, 60604

Project: Deardorff  
 Project Number: BA-01-21  
 Project Manager: Ben Atkinson

**Reported:**  
 May-03-21 08:30

## ANALYSIS CASE NARRATIVE

### Analysis List

#### Total Phosphorus DA

Analyst: Nidia Fuentes  
 Phone #: 312-353-9079

## General Information

### Samples analyzed:

| <u>Sample</u> | <u>Analysis List</u> |
|---------------|----------------------|
| 2103010-01    | Total Phosphorus DA  |
| 2103010-02    | Total Phosphorus DA  |
| 2103010-03    | Total Phosphorus DA  |
| 2103010-04    | Total Phosphorus DA  |

### Holding times:

All holding times were met.

## Sample Analysis and Results

The samples were analyzed using ASB SOP AIG034B, Version #7. The samples were stored in the refrigerator at all times, except when in use. The data reported herein meets any requirements referenced in the previously mentioned SOP and Sampling QAPP titled “General Field Sampling Plan for AFO Inspections” and dated “FY 2021”, except for those listed in the Quality Control section.

### SOP Based on:

#### Method List

EPA 365.4

## Quality Control

All quality control audits were within ASB limits or did not result in qualification of the data except for any listed below.





# Environmental Protection Agency Region 5

## Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605  
 Phone:(312)353-8370 Fax:(312)886-2591

### WORK ORDER

Printed: 3/30/2021 1:30:52PM

**2103010**

### US EPA Region 5 LSASD Analytical Services Branch

**Client:** Water Division, US EPA Region 5

**Project:** Deardorff

**Project Manager:** Angela Ockrassa Davis

**Project Number:** BA-01-21

#### Report To:

Ben Atkinson  
 Water Division, US EPA Region 5

77 West Jackson Boulevard  
 Chicago, IL 60604

Phone: (312) 353-2004  
 Fax: (312) 886-2001

Date Due: May-14-21 15:00 (45 day TAT)

Received By: Robert Snyder

Logged In By: Robert Snyder

Date Received: Mar-30-21 10:08

Date Logged In: Mar-30-21 11:31

|                    |     |                                                              |
|--------------------|-----|--------------------------------------------------------------|
| Sample tags/labels | Yes | <b>Work Order Comments:</b><br>pH paper used in SC = 18D1901 |
| Seals Intact       | Yes |                                                              |
| Received on ice    | Yes |                                                              |
| Paperwork Included | Yes |                                                              |

#### Cooler(s) information:

Default Cooler - 0.40 C

**Sample ID:** [2103010-01](#)

**Sampled:** [Mar-26-21 10:16](#)

**Matrix:** [Water](#)

**Sample Name:** [S01](#)

**Sample Location/Comments:** [Pasture outlet](#)

#### **Sample Comments:**

| Analysis                                  | Hold time (days) | Expires         | Comments |
|-------------------------------------------|------------------|-----------------|----------|
| Ammonia N DA, Distilled                   | 28               | Apr-23-21 10:16 | pH = 1   |
| Nitrate-Nitrite N DA, Enzymatic reduction | 28               | Apr-23-21 10:16 | pH = 1   |
| Solids, TDS                               | 7                | Apr-02-21 10:16 | pH = 7   |
| Solids, TSS                               | 7                | Apr-02-21 10:16 | pH = 7   |
| TKN DA                                    | 28               | Apr-23-21 10:16 | pH = 1   |
| Total Phosphorus DA                       | 28               | Apr-23-21 10:16 | pH = 1   |

**Sample ID:** [2103010-02](#)

**Sampled:** [Mar-26-21 10:24](#)

**Matrix:** [Water](#)

**Sample Name:** [S02](#)

**Sample Location/Comments:** [Leachate inlet](#)

#### **Sample Comments:**

| Analysis                                  | Hold time (days) | Expires         | Comments |
|-------------------------------------------|------------------|-----------------|----------|
| Ammonia N DA, Distilled                   | 28               | Apr-23-21 10:24 | pH = 1   |
| Nitrate-Nitrite N DA, Enzymatic reduction | 28               | Apr-23-21 10:24 | pH = 1   |
| Solids, TDS                               | 7                | Apr-02-21 10:24 | pH = 7   |
| Solids, TSS                               | 7                | Apr-02-21 10:24 | pH = 7   |

## WORK ORDER

Printed: 3/30/2021 1:30:52PM

2103010

## US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5

Project Manager: Angela Ockrassa Davis

Project: Deardorff

Project Number: BA-01-21

Sample ID: [2103010-02](#) Sampled: [Mar-26-21 10:24](#) Matrix: [Water](#)Sample Name: [S02](#) Sample Location/Comments: [Leachate inlet](#)

## Sample Comments:

| Analysis            | Hold time (days) | Expires         | Comments |
|---------------------|------------------|-----------------|----------|
| TKN DA              | 28               | Apr-23-21 10:24 | pH = 1   |
| Total Phosphorus DA | 28               | Apr-23-21 10:24 | pH = 1   |

Sample ID: [2103010-03](#) Sampled: [Mar-26-21 11:47](#) Matrix: [Water](#)Sample Name: [S03](#) Sample Location/Comments: [Leachate outlet](#)

## Sample Comments:

| Analysis                                  | Hold time (days) | Expires         | Comments |
|-------------------------------------------|------------------|-----------------|----------|
| Ammonia N DA, Distilled                   | 28               | Apr-23-21 11:47 | pH = 1   |
| Nitrate-Nitrite N DA, Enzymatic reduction | 28               | Apr-23-21 11:47 | pH = 1   |
| Solids, TDS                               | 7                | Apr-02-21 11:47 | pH = 7   |
| Solids, TSS                               | 7                | Apr-02-21 11:47 | pH = 7   |
| TKN DA                                    | 28               | Apr-23-21 11:47 | pH = 1   |
| Total Phosphorus DA                       | 28               | Apr-23-21 11:47 | pH = 1   |

Sample ID: [2103010-04](#) Sampled: [Mar-26-21 16:10](#) Matrix: [Water](#)Sample Name: [B01](#) Sample Location/Comments: [Blank](#)

## Sample Comments:

| Analysis                                  | Hold time (days) | Expires         | Comments |
|-------------------------------------------|------------------|-----------------|----------|
| Ammonia N DA, Distilled                   | 28               | Apr-23-21 16:10 | pH = 1   |
| Nitrate-Nitrite N DA, Enzymatic reduction | 28               | Apr-23-21 16:10 | pH = 1   |
| Solids, TDS                               | 7                | Apr-02-21 16:10 | pH = 5   |
| Solids, TSS                               | 7                | Apr-02-21 16:10 | pH = 5   |
| TKN DA                                    | 28               | Apr-23-21 16:10 | pH = 1   |
| Total Phosphorus DA                       | 28               | Apr-23-21 16:10 | pH = 1   |

## WORK ORDER

Printed: 3/30/2021 1:30:52PM

**2103010****US EPA Region 5 LSASD Analytical Services Branch**

**Client:** Water Division, US EPA Region 5  
**Project:** Deardorff

**Project Manager:** Angela Ockrassa Davis  
**Project Number:** BA-01-21

---

Reviewed By

Date



## Environmental Protection Agency Region 5

### US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605  
Phone: (312) 353-8370 Fax: (312) 886-2591

Water Division, US EPA Region 5  
77 West Jackson Boulevard  
Chicago IL, 60604

Project: Deardorff  
Project Number: BA-01-21  
Project Manager: Ben Atkinson

**Reported:**  
May-03-21 08:30

### Phosphorus, Colorimetric, EPA 365.4 (modified) US EPA Region 5 LSASD Analytical Services Branch

**S01 (2103010-01)                      Matrix: Water                      Sampled: Mar-26-21 10:16                      Received: Mar-30-21 10:08**

| Analyte                 | Result      | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Units | Dilution | Batch   | Prepared  | Analyzed  |
|-------------------------|-------------|-----------------------|------|--------------------|-------|----------|---------|-----------|-----------|
| <b>Total Phosphorus</b> | <b>5.48</b> |                       | 0.60 | 1.50               | mg/L  | 10       | B21D010 | Apr-07-21 | Apr-08-21 |

**S02 (2103010-02)                      Matrix: Water                      Sampled: Mar-26-21 10:24                      Received: Mar-30-21 10:08**

| Analyte                 | Result      | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Units | Dilution | Batch   | Prepared  | Analyzed  |
|-------------------------|-------------|-----------------------|------|--------------------|-------|----------|---------|-----------|-----------|
| <b>Total Phosphorus</b> | <b>19.2</b> |                       | 0.60 | 1.50               | mg/L  | 10       | B21D010 | Apr-07-21 | Apr-08-21 |

**S03 (2103010-03)                      Matrix: Water                      Sampled: Mar-26-21 11:47                      Received: Mar-30-21 10:08**

| Analyte                 | Result      | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Units | Dilution | Batch   | Prepared  | Analyzed  |
|-------------------------|-------------|-----------------------|------|--------------------|-------|----------|---------|-----------|-----------|
| <b>Total Phosphorus</b> | <b>2.27</b> |                       | 0.06 | 0.15               | mg/L  | 1        | B21D010 | Apr-07-21 | Apr-08-21 |

**B01 (2103010-04)                      Matrix: Water                      Sampled: Mar-26-21 16:10                      Received: Mar-30-21 10:08**

| Analyte                 | Result   | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Units | Dilution | Batch   | Prepared  | Analyzed  |
|-------------------------|----------|-----------------------|------|--------------------|-------|----------|---------|-----------|-----------|
| <b>Total Phosphorus</b> | <b>U</b> |                       | 0.06 | 0.15               | mg/L  | 1        | B21D010 | Apr-07-21 | Apr-08-21 |



**Environmental Protection Agency Region 5**  
**US EPA Region 5 LSASD Analytical Services Branch**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

Water Division, US EPA Region 5  
77 West Jackson Boulevard  
Chicago IL, 60604

Project: Deardorff  
Project Number: BA-01-21  
Project Manager: Ben Atkinson

**Reported:**  
May-03-21 08:30

**Notes and Definitions**

U Not Detected  
NR Not Reported  
Q QC limit Exceeded





**Environmental Protection Agency  
US EPA Region 5 LSASD Analytical Services Branch**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

## Quality Control Summary

**Date:** 5/3/2021

**Analyst:** Nidia Fuentes

**Project:** Deardorff

**Analyte:** Total Phosphorus

**Analysis:** Total Phosphorus DA

| QC Sample Name | Result  | Units | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Spike<br>Level | Source<br>Result | % REC<br>or abs<br>diff (pH) | % REC or<br>abs diff<br>(pH) Limits | % RPD<br>or abs<br>diff (pH) | %RPD<br>or abs<br>diff (pH)<br>Limits |
|----------------|---------|-------|-----------------------|------|--------------------|----------------|------------------|------------------------------|-------------------------------------|------------------------------|---------------------------------------|
| 21D0801-CAL1   | 0.03    | mg/L  |                       | 0.06 | 0.15               | 0.000          |                  | %                            |                                     |                              |                                       |
| 21D0801-CAL2   | 0.16    | mg/L  |                       | 0.06 | 0.15               | 0.1500         |                  | 104%                         |                                     |                              |                                       |
| 21D0801-CAL3   | 0.30    | mg/L  |                       | 0.06 | 0.15               | 0.3000         |                  | 101%                         |                                     |                              |                                       |
| 21D0801-CAL4   | 0.72    | mg/L  |                       | 0.06 | 0.15               | 0.7500         |                  | 96%                          |                                     |                              |                                       |
| 21D0801-CAL5   | 0.99    | mg/L  |                       | 0.06 | 0.15               | 1.000          |                  | 99%                          |                                     |                              |                                       |
| 21D0801-CAL6   | 1.49    | mg/L  |                       | 0.06 | 0.15               | 1.500          |                  | 99%                          |                                     |                              |                                       |
| 21D0801-CAL7   | 3.02    | mg/L  |                       | 0.06 | 0.15               | 3.000          |                  | 101%                         |                                     |                              |                                       |
| 21D0801-CCB1   | 0.03    | mg/L  |                       | 0.06 | 0.15               |                |                  |                              |                                     |                              |                                       |
| 21D0801-CCB2   | 0.03    | mg/L  |                       | 0.06 | 0.15               |                |                  |                              |                                     |                              |                                       |
| 21D0801-CCB3   | 0.03    | mg/L  |                       | 0.06 | 0.15               |                |                  |                              |                                     |                              |                                       |
| 21D0801-CCB4   | -0.0040 | mg/L  |                       | 0.06 | 0.15               |                |                  |                              |                                     |                              |                                       |
| 21D0801-CCB5   | 0.03    | mg/L  |                       | 0.06 | 0.15               |                |                  |                              |                                     |                              |                                       |
| 21D0801-CCV1   | 2.03    | mg/L  |                       | 0.06 | 0.15               | 2.000          |                  | 102%                         | 92-112                              |                              |                                       |
| 21D0801-CCV2   | 2.02    | mg/L  |                       | 0.06 | 0.15               | 2.000          |                  | 101%                         | 92-112                              |                              |                                       |
| 21D0801-CCV3   | 2.01    | mg/L  |                       | 0.06 | 0.15               | 2.000          |                  | 100%                         | 92-112                              |                              |                                       |
| 21D0801-CCV4   | 2.04    | mg/L  |                       | 0.06 | 0.15               | 2.000          |                  | 102%                         | 92-112                              |                              |                                       |
| 21D0801-CCV5   | 2.03    | mg/L  |                       | 0.06 | 0.15               | 2.000          |                  | 101%                         | 92-112                              |                              |                                       |
| 21D0801-ICB1   | 0.04    | mg/L  |                       | 0.06 | 0.15               |                |                  |                              |                                     |                              |                                       |
| 21D0801-ICV1   | 2.02    | mg/L  |                       | 0.06 | 0.15               | 2.000          |                  | 101%                         | 92-112                              |                              |                                       |

Report Name: 2103010 Total Phosphorus DA FINAL May 03 21 0830



**Environmental Protection Agency  
US EPA Region 5 LSASD Analytical Services Branch**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

## Quality Control Summary

**Date:** 5/3/2021

**Analyst:** Nidia Fuentes

**Project:** Deardorff

**Analyte:** Total Phosphorus

**Analysis:** Total Phosphorus DA

| QC Sample Name                     | Result | Units | Flags /<br>Qualifiers | MDL  | Reporting<br>Limit | Spike<br>Level | Source<br>Result | % REC<br>or abs<br>diff (pH) | % REC or<br>abs diff<br>(pH) Limits | % RPD<br>or abs<br>diff (pH) | %RPD<br>or abs<br>diff (pH)<br>Limits |
|------------------------------------|--------|-------|-----------------------|------|--------------------|----------------|------------------|------------------------------|-------------------------------------|------------------------------|---------------------------------------|
| B21D010-BLK1                       | U      | mg/L  |                       | 0.06 | 0.15               |                |                  |                              |                                     |                              |                                       |
| B21D010-BS1                        | 1.07   | mg/L  |                       | 0.06 | 0.15               | 1.000          |                  | 107%                         | 89-111                              |                              |                                       |
| B21D010-DUP2<br>Source: 2103010-01 | 5.52   | mg/L  |                       | 0.60 | 1.50               |                | 5.48             |                              |                                     | 0.7                          | 10                                    |
| B21D010-MRL1                       | 0.15   | mg/L  |                       |      |                    | 0.1500         |                  | 102%                         | 68-132                              |                              |                                       |
| B21D010-MS2<br>Source: 2103010-01  | 6.57   | mg/L  |                       | 0.60 | 1.50               | 1.000          | 5.48             | 109%                         | 79-124                              |                              |                                       |

### Notes and Definitions

U Not Detected  
NR Not Reported  
Q QC limit Exceeded

Nidia Fuentes



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
 REGION 5 LSASD ANALYTICAL SERVICE BRANCH  
 536 SOUTH CLARK STREET  
 CHICAGO, ILLINOIS 60605

### Data Verification Checklist

|                      |                     |                  |           |
|----------------------|---------------------|------------------|-----------|
| <b>Work:</b>         | 2103010             | <b>Project:</b>  | Deardorff |
| <b>Analysis:</b>     | Total Phosphorus DA |                  |           |
| <b>CRL SOP Used:</b> | AIG034B v7          | <b>Batch ID:</b> | B21D010   |

### General Information

| Question # | Question                                                                                    | Analyst Response (YES/ NO/ NA) |
|------------|---------------------------------------------------------------------------------------------|--------------------------------|
| 1          | Did samples meet the laboratory's standard conditions of sample acceptability upon receipt? | YES                            |
| 2          | Was customer contact communication included?                                                | NA                             |
| 3          | Are all field sample ID numbers cross-referenced to the laboratory ID numbers?              | YES                            |
| 4          | Were all samples prepared and analyzed within holding times?                                | YES                            |

### Sample Results

| Question # | Question                                                                                     | Analyst Response (YES/ NO/ NA) |
|------------|----------------------------------------------------------------------------------------------|--------------------------------|
| 5          | Were calculations checked?                                                                   | YES                            |
| 6          | Were all analyte results checked?                                                            | YES                            |
| 7          | Were all results for soil and sediment samples reported on a dry weight basis?               | NA                             |
| 8          | Were % moisture (or solids) reported for all soil and sediment samples?                      | NA                             |
| 9          | Other than those results < RL, were all other raw values bracketed by calibration standards? | YES                            |
| 10         | Are the RLs for each method analyte included in the laboratory data package?                 | YES                            |
| 11         | Are MDLs/RLs adjusted for dilutions?                                                         | YES                            |
| 12         | Were the raw data (for example, chromatograms, spectral data) reviewed?                      | NA                             |
| 13         | Were data associated with manual integrations flagged on the raw data?                       | NA                             |

### Standards

| Question # | Question                                                                                                                             | Analyst Response (YES/ NO/ NA) |
|------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 14         | Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources as specified in the analytical SOP? | YES                            |
| 15         | Were standard/reagent preparations checked (preparation date, expiration date, parent standard IDs, etc.), if applicable?            | YES                            |

### Batch Quality Control

Work: 2103010

Project: Deardorff

**Batch Quality Control**

| Question # | Question                                                                                                                      | Analyst Response (YES/ NO/ NA) |
|------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 16         | Were appropriate type(s) of blanks analyzed?                                                                                  | YES                            |
| 17         | Were blanks analyzed at the appropriate frequency?                                                                            | YES                            |
| 18         | Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures? | YES                            |
| 19         | Were blank concentrations <= MDL or RL, as applicable in the analytical SOP?                                                  | YES                            |
| 20         | Was each LCS/SRM taken through the entire analytical procedure, including prep and cleanup steps?                             | YES                            |
| 21         | Were LCSs/SRMs analyzed at the required frequency?                                                                            | YES                            |
| 22         | Were LCS/SRM %Rs within the laboratory QC limits or other acceptance criteria?                                                | YES                            |
| 23         | Were the project/method specified analytes included in the MS?                                                                | YES                            |
| 24         | Were MS analyzed at the appropriate frequency?                                                                                | YES                            |
| 25         | Were MS %Rs within the laboratory QC limits?                                                                                  | YES                            |
| 26         | Were appropriate analytical duplicates analyzed for each matrix?                                                              | YES                            |
| 27         | Were analytical duplicates analyzed at the appropriate frequency?                                                             | YES                            |
| 28         | Were RPDs or relative standard deviations within the laboratory QC limits or other acceptance criteria?                       | YES                            |
| 29         | Were RLs analyzed at the appropriate frequency?                                                                               | YES                            |
| 30         | Were RL recoveries within the laboratory QC limits?                                                                           | YES                            |

**Calibration**

| Question # | Question                                                                                       | Analyst Response (YES/ NO/ NA) |
|------------|------------------------------------------------------------------------------------------------|--------------------------------|
| 31         | Were calibration correlation coefficient or other acceptance criteria met?                     | YES                            |
| 32         | Was the number of calibration standards recommended in the method used for all analytes?       | YES                            |
| 33         | Were all points generated between the lowest and highest standard used to calculate the curve? | YES                            |
| 34         | Are calibration data available for all instruments used?                                       | YES                            |

**Calibration Verification**

| Question # | Question                                                                                                              | Analyst Response (YES/ NO/ NA) |
|------------|-----------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 35         | Was the absolute value of the analyte concentration in the ICB/CCB <= MDL or RL, as applicable in the analytical SOP? | YES                            |
| 36         | Was the calibration curve verified for each analyte?                                                                  | YES                            |
| 37         | Has the calibration curve been verified using an appropriate second source standard?                                  | YES                            |

Work: 2103010

Project: Deardorff

**Calibration Verification**

| Question # | Question                                                | Analyst Response (YES/ NO/ NA) |
|------------|---------------------------------------------------------|--------------------------------|
| 38         | Were ICV/CCV analyzed at the method-required frequency? | YES                            |
| 39         | Were ICV/CCV %R within the laboratory QC limits?        | YES                            |

**Quality Control**

| Question # | Question                                                                                              | Analyst Response (YES/ NO/ NA) |
|------------|-------------------------------------------------------------------------------------------------------|--------------------------------|
| 40         | QC limits in LIMS checked against the SOP?                                                            | YES                            |
| 41         | Were percent differences, recoveries, and the linearity within the QC limits specified in the method? | YES                            |
| 42         | Were QC charts checked if a QC audit, excluding matrix QC (MS or DUP), was out of limit?              | NA                             |

**Supporting Data**

| Question # | Question                                                                                                       | Analyst Response (YES/ NO/ NA) |
|------------|----------------------------------------------------------------------------------------------------------------|--------------------------------|
| 43         | Were support equipment data (balance verification, data logs, logbook entries, etc.) included in data package? | YES                            |
| 44         | Were approved spreadsheet(s) used?                                                                             | YES                            |

**Document Verification**

| Question # | Question                                                                                                                                                                                | Analyst Response (YES/ NO/ NA) |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 45         | Is the MDL or RL study up-to-date for each reported analyte?                                                                                                                            | YES                            |
| 46         | Is documentation of the analyst's capability up-to-date and on file?<br>ID 24411                                                                                                        | YES                            |
| 47         | Are the procedures for compound/analyte identification documented?                                                                                                                      | YES                            |
| 48         | Are laboratory SOPs current and on file for the method performed?                                                                                                                       | YES                            |
| 49         | Were data evaluated against project QAPP or Sample Plan, any special requests in the sample schedule, and documented in case narrative?                                                 | YES                            |
| 50         | Were electronic pathways checked (add pathway and files below)?<br><br>Notes/Comments: I:\Vol1\Projects (New File Structure)\Deardorff\1.<br>A&I\NFuentes\DA3\04082021-TPTKN\ARC_70.bak | YES                            |

**Accreditation**

| Question # | Question                      | Analyst Response (YES/ NO/ NA) |
|------------|-------------------------------|--------------------------------|
| 51         | ANAB logo used appropriately? | YES                            |

Analyst's Signature and Date\*:

**REVIEWED****By NFUENTES at 1:08 pm, Apr 09, 2021**



**Work:** 2103010**Project:** Deardorff**REVIEWED**  
*By AK at 12:10 pm, Apr 29, 2021***Reviewer's Signature and Date\*:** \_\_\_\_\_**\*Reviewer Concurs with Analyst Responses****Additional Notes/Comments (if applicable):**

# **Total Phosphorus DA**

# BATCH

B21D010



## Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

## TP/TKN DIGESTION LOG

Batch Number: B21D010

Prepared Date: Apr-07-21

Analyst (initials): NF

Analyses Included On This Benchsheet

Total Phosphorus DA

| Position # | Sample Number | Source ID<br>(MS and DUP only) | Spike ID | Spike Volume<br>(uL) | Spike Final<br>Volume (mL)<br>(MRL, BS, MS only) | Sample Volume<br>(mL) | Comments |
|------------|---------------|--------------------------------|----------|----------------------|--------------------------------------------------|-----------------------|----------|
| 17         | 2103007-01    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 21         | 2103007-02    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 22         | 2103007-03    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 23         | 2103007-04    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 24         | 2103007-05    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 25         | 2103007-06    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 26         | 2103007-07    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 27         | 2103007-08    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 28         | 2103007-09    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 29         | 2103010-01    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 33         | 2103010-02    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 34         | 2103010-03    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 35         | 2103010-04    |                                |          |                      |                                                  | 10                    | pH = 1   |
| 5          | B21D010-BLK1  |                                |          |                      |                                                  | 10                    |          |



# Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

Date: 4/7/2021

## TP/TKN DIGESTION LOG

Batch Number: B21D0010

Analyses Included On This Benchsheet

Total Phosphorus DA

Prepared Date: Apr-07-21

Analyst (initials): NF

| Position # | Sample Number | Source ID (MS and DUP only) | Spike ID | Spike Volume (uL) | Spike Final Volume (mL) (MRL, BS, MS only) | Sample Volume (mL) | Comments |
|------------|---------------|-----------------------------|----------|-------------------|--------------------------------------------|--------------------|----------|
| 4          | B21D010-BS1   |                             | 21D0715  | 100               | 10                                         | 10                 |          |
| 18         | B21D010-DUP1  | 2103007-01                  |          |                   |                                            | 10                 |          |
| 30         | B21D010-DUP2  | 2103010-01                  |          |                   |                                            | 10                 |          |
| 3          | B21D010-MRL1  |                             | 21D0714  |                   |                                            | 10                 |          |
| 19         | B21D010-MS1   | 2103007-01                  | 21D0715  | 100               | 10                                         | 10                 |          |
| 31         | B21D010-MS2   | 2103010-01                  | 21D0715  | 100               | 10                                         | 10                 |          |

Batch Comments:

### PREPARATION REAGENTS/STANDARDS/PIPETTES:

|          |                                        |                     |                                            |
|----------|----------------------------------------|---------------------|--------------------------------------------|
| 21D0715: | TP - Stock Cal Standard (SCS)          | Prepared: Apr-07-21 | Expires: Apr-07-22                         |
| 21D0714: | TP - MRL (0.15 mg P/L)                 | Prepared: Apr-07-21 | Expires: May-07-21<br><del>Apr-11-21</del> |
| 21B2306: | Pipette (Electronic) - 50 -1,000 uL    | Prepared: Feb-15-21 | Expires: Aug-31-21                         |
| 21B2307: | Pipette (Electronic) - 200 -5000 uL    | Prepared: Feb-15-21 | Expires: Aug-31-21                         |
| 21B2308: | Pipette (Electronic) - 500 - 10,000 uL | Prepared: Feb-15-21 | Expires: Aug-31-21                         |
| 21B2309: | Pipette (Electronic) - 5 - 100 uL      | Prepared: Feb-15-21 | Expires: Aug-31-21                         |
| 21C0906: | TP/TKN Digestion Solution              | Prepared: Mar-09-21 | Expires: Mar-09-22                         |

REVIEWED  
By INFIDENTES at 8:22 am, Apr 12, 2021





## Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

## TP/TKN DIGESTION LOG

Batch Number: B21D010

Prepared Date: Apr-07-21

Analyst (initials): NF

Analyses Included On This Benchsheet

Total Phosphorus DA

Hot Block ID: #9

Block Digital Temp 1 Reading (°C) - Start - Stop Time/

Block Digital Temp 2 Reading (°C) - Start - Stop Time:

200C-11:50 AM -12:50 PM/

380C-12:50 PM - 2:20PM

|             |    |    |         |    |    |    |    |
|-------------|----|----|---------|----|----|----|----|
| 33          | 34 | 35 | 36      | 37 | 38 | 39 | 40 |
|             |    |    |         |    |    | DB | DB |
| 25          | 26 | 27 | 28      | 29 | 30 | 31 | 32 |
| 17          | 18 | 19 | 20      | 21 | 22 | 23 | 24 |
| 9           | 10 | 11 | 12      | 13 | 14 | 15 | 16 |
| 1           | 2  | 3  | 4       | 5  | 6  | 7  | 8  |
| TP          | TP | TP | ICV/CCV |    |    |    |    |
| Calibration |    |    |         |    |    |    |    |

DB= Dilution Blank

# BATCH REAGENTS

21B2306



# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - P-4136

| CUSTOMER DETAILS |                   |  |  | Asset#            | P-4136                                      |
|------------------|-------------------|--|--|-------------------|---------------------------------------------|
| Customer         | EPA               |  |  | Serial Number     | 424801A                                     |
| Contact          | Angela Ockrassa   |  |  | Pipette Model     | Eppendorf Xplorer/E 1000ul,V,100-1000ul,1ch |
| Location         | A&I               |  |  | Calibration Date  | 15-Feb-2021                                 |
| Address          | 536 S. Clark St.  |  |  | Next Due Date     | 31-Aug-2021                                 |
|                  | Chicago, IL 60605 |  |  | Technician        | Nishat K                                    |
| Telephone        | 312-353-7445      |  |  | Report Print Date | 15-Feb-2021                                 |

| ENVIRONMENTAL CONDITIONS |       |                                  |         |                               |         |
|--------------------------|-------|----------------------------------|---------|-------------------------------|---------|
| Water Temperature °C     | 21.10 | Barometric Pressure kPa          | 100.10  | Z Factor (cm <sup>3</sup> /g) | 1.00308 |
| Relative Humidity (%)    | 41.00 | Air Density (g/cm <sup>3</sup> ) | 0.00119 | Liquid Density (gm/ml)        | 0.9980  |

| STANDARD EQUIPMENT                   |               |                  |               |
|--------------------------------------|---------------|------------------|---------------|
| Standard                             | Serial Number | Calibration Date | Next Due Date |
| ST2-Mettler Balance AX205DR/0.00001g | 1122303954    | 14-Jan-2021      | 31-Jan-2022   |
| Digital Barometer                    | 200303896     | 19-May-2020      | 31-May-2022   |
| Digital Thermometer                  | 200303896     | 19-May-2020      | 31-May-2022   |
| Thermocouple w/Probe                 | 200311521     | 23-May-2020      | 31-May-2022   |

| Calibration Data - As Found |    |         |         |          |            |         |             |         |        |        |               |               |
|-----------------------------|----|---------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|---------------|
|                             |    |         |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight | Sample Volume |
| Volume (uL)                 | Ch | Mean    | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          | (uL)          |
| 100.00                      | 1  | 100.41  | 0.19197 | 0.60     | 0.40544    | 3.00000 | 0.19119     | 0.60000 | Passed |        |               |               |
|                             |    |         |         |          |            |         |             |         |        | 1      | 100.14000     | 100.44807     |
|                             |    |         |         |          |            |         |             |         |        | 2      | 99.87000      | 100.17724     |
|                             |    |         |         |          |            |         |             |         |        | 3      | 100.05000     | 100.35779     |
|                             |    |         |         |          |            |         |             |         |        | 4      | 100.33000     | 100.63865     |
| 1000.00                     | 1  | 1003.42 | 0.11597 | 5.66     | 0.34224    | 0.60000 | 0.01156     | 0.20000 | Passed |        |               |               |
|                             |    |         |         |          |            |         |             |         |        | 1      | 1000.37000    | 1003.44752    |
|                             |    |         |         |          |            |         |             |         |        | 2      | 1000.45000    | 1003.52777    |
|                             |    |         |         |          |            |         |             |         |        | 3      | 1000.18000    | 1003.25694    |
|                             |    |         |         |          |            |         |             |         |        | 4      | 1000.38000    | 1003.45755    |

| Calibration Data - As Calibrated |    |         |         |          |            |         |             |         |        |        |               |               |
|----------------------------------|----|---------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|---------------|
|                                  |    |         |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight | Sample Volume |
| Volume (uL)                      | Ch | Mean    | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          | (uL)          |
| 100.00                           | 1  | 100.44  | 0.27671 | 0.63     | 0.44305    | 3.00000 | 0.27549     | 0.60000 | Passed |        |               |               |
|                                  |    |         |         |          |            |         |             |         |        | 1      | 100.54000     | 100.84930     |
|                                  |    |         |         |          |            |         |             |         |        | 2      | 99.96000      | 100.26752     |
|                                  |    |         |         |          |            |         |             |         |        | 3      | 100.08000     | 100.38788     |
|                                  |    |         |         |          |            |         |             |         |        | 4      | 99.96000      | 100.26752     |
| 1000.00                          | 1  | 1002.71 | 0.70565 | 5.70     | 0.27078    | 0.60000 | 0.07037     | 0.20000 | Passed |        |               |               |
|                                  |    |         |         |          |            |         |             |         |        | 1      | 999.85000     | 1002.92592    |
|                                  |    |         |         |          |            |         |             |         |        | 2      | 999.90000     | 1002.97607    |
|                                  |    |         |         |          |            |         |             |         |        | 3      | 1000.18000    | 1003.25694    |
|                                  |    |         |         |          |            |         |             |         |        | 4      | 998.60000     | 1001.67208    |



# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - P-4136

Comment Cleaned/Checked

1. PASS grade denotes that pipette meets OEM/ISO 8655 specifications. This pipette was calibrated gravimetrically using Standard Operating Procedure (NSOP), De-Ionized Water, Manufacturer/Generic Pipette tips and a Mettler Analytical Balance. All the standard equipment used to calibrate pipettes are certified at regular intervals traceable to National Institute of Standards and Technology (NIST). The test procedures comply to ISO/IEC 17025 guidelines.
2. As a standard practice, Multi-Channel pipettes are checked & calibrated at one random channel only, all other channels are verified. Multi-Channel (All) includes verification and data capturing on all channels.
3. Calibration and Measurement Capability (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. Calibration and Measurement Capabilities represent expanded uncertainties expressed at approximately the 95% level of confidence, usually using a coverage factor of  $k=2$ . The actual measurement uncertainty of a specific calibration performed by a laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.
4. The results above relate only to the item calibrated. This report shall not be reproduced except in full, without the written approval of Novamed Inc.
5. All Syringes are checked and verified at 3% of inaccuracy and imprecision specifications.

Technician

Date

15-Feb-2021

QC Designee

Review Date

15-Feb-2021

**REVIEWED**

By AK at 1:03 pm, Feb 18, 2021

# BATCH REAGENTS

21B2307



# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - Y-6609

| CUSTOMER DETAILS |                   |  |  | Asset#            | Y-6609                                      |
|------------------|-------------------|--|--|-------------------|---------------------------------------------|
| Customer         | EPA               |  |  | Serial Number     | J13539G                                     |
| Contact          | Angela Ockrassa   |  |  | Pipette Model     | Eppendorf Xplorer Plus/E 5ml,V, 0.2-5ml,1ch |
| Location         | A&I               |  |  | Calibration Date  | 15-Feb-2021                                 |
| Address          | 536 S. Clark St.  |  |  | Next Due Date     | 31-Aug-2021                                 |
|                  | Chicago, IL 60605 |  |  | Technician        | Nishat K                                    |
| Telephone        | 312-353-7445      |  |  | Report Print Date | 15-Feb-2021                                 |

| ENVIRONMENTAL CONDITIONS |       |                         |         |                        |         |
|--------------------------|-------|-------------------------|---------|------------------------|---------|
| Water Temperature °C     | 21.10 | Barometric Pressure kPa | 100.10  | Z Factor (cm3/g)       | 1.00308 |
| Relative Humidity (%)    | 41.00 | Air Density (g/cm3)     | 0.00119 | Liquid Density (gm/ml) | 0.9980  |

| STANDARD EQUIPMENT                   |               |                  |               |
|--------------------------------------|---------------|------------------|---------------|
| Standard                             | Serial Number | Calibration Date | Next Due Date |
| ST2-Mettler Balance AX205DR/0.00001g | 1122303954    | 14-Jan-2021      | 31-Jan-2022   |
| Digital Barometer                    | 200303896     | 19-May-2020      | 31-May-2022   |
| Digital Thermometer                  | 200303896     | 19-May-2020      | 31-May-2022   |
| Thermocouple w/Probe                 | 200311521     | 23-May-2020      | 31-May-2022   |

| Calibration Data - As Found |    |         |         |          |            |         |             |         |        |        |               |               |
|-----------------------------|----|---------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|---------------|
|                             |    |         |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight | Sample Volume |
| Volume (uL)                 | Ch | Mean    | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          | (uL)          |
| 500.00                      | 1  | 504.78  | 1.90663 | 3.43     | 0.95663    | 3.00000 | 0.37771     | 0.60000 | Passed |        |               |               |
|                             |    |         |         |          |            |         |             |         |        | 1      | 501.45000     | 502.99265     |
|                             |    |         |         |          |            |         |             |         |        | 2      | 505.84000     | 507.39616     |
|                             |    |         |         |          |            |         |             |         |        | 3      | 503.34000     | 504.88847     |
|                             |    |         |         |          |            |         |             |         |        | 4      | 502.31000     | 503.85530     |
| 5000.00                     | 1  | 5009.37 | 1.66219 | 28.28    | 0.18737    | 0.60000 | 0.03318     | 0.15000 | Passed |        |               |               |
|                             |    |         |         |          |            |         |             |         |        | 1      | 4994.51000    | 5009.87502    |
|                             |    |         |         |          |            |         |             |         |        | 2      | 4992.97000    | 5008.33029    |
|                             |    |         |         |          |            |         |             |         |        | 3      | 4996.11000    | 5011.47995    |
|                             |    |         |         |          |            |         |             |         |        | 4      | 4992.43000    | 5007.78862    |

| Calibration Data - As Calibrated |    |         |         |          |            |         |             |         |        |        |               |               |
|----------------------------------|----|---------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|---------------|
|                                  |    |         |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight | Sample Volume |
| Volume (uL)                      | Ch | Mean    | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          | (uL)          |
| 500.00                           | 1  | 504.63  | 1.18568 | 3.08     | 0.92603    | 3.00000 | 0.23496     | 0.60000 | Passed |        |               |               |
|                                  |    |         |         |          |            |         |             |         |        | 1      | 503.58000     | 505.12920     |
|                                  |    |         |         |          |            |         |             |         |        | 2      | 504.00000     | 505.55050     |
|                                  |    |         |         |          |            |         |             |         |        | 3      | 501.35000     | 502.89234     |
|                                  |    |         |         |          |            |         |             |         |        | 4      | 503.40000     | 504.94865     |
| 5000.00                          | 1  | 5012.32 | 1.13501 | 28.28    | 0.24640    | 0.60000 | 0.02264     | 0.15000 | Passed |        |               |               |
|                                  |    |         |         |          |            |         |             |         |        | 1      | 4996.35000    | 5011.72068    |
|                                  |    |         |         |          |            |         |             |         |        | 2      | 4996.50000    | 5011.87115    |
|                                  |    |         |         |          |            |         |             |         |        | 3      | 4998.64000    | 5014.01773    |
|                                  |    |         |         |          |            |         |             |         |        | 4      | 4996.30000    | 5011.67053    |





# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - Y-6609

Comment Cleaned/Checked/Calibrated

1. PASS grade denotes that pipette meets OEM/ISO 8655 specifications. This pipette was calibrated gravimetrically using Standard Operating Procedure (NSOP), De-Ionized Water, Manufacturer/Generic Pipette tips and a Mettler Analytical Balance. All the standard equipment used to calibrate pipettes are certified at regular intervals traceable to National Institute of Standards and Technology (NIST). The test procedures comply to ISO/IEC 17025 guidelines.
2. As a standard practice, Multi-Channel pipettes are checked & calibrated at one random channel only, all other channels are verified. Multi-Channel (All) includes verification and data capturing on all channels.
3. Calibration and Measurement Capability (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. Calibration and Measurement Capabilities represent expanded uncertainties expressed at approximately the 95% level of confidence, usually using a coverage factor of  $k=2$ . The actual measurement uncertainty of a specific calibration performed by a laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.
4. The results above relate only to the item calibrated. This report shall not be reproduced except in full, without the written approval of Novamed Inc.
5. All Syringes are checked and verified at 3% of inaccuracy and imprecision specifications.

Technician

Date

15-Feb-2021

QC Designee

Review Date

15-Feb-2021

**REVIEWED**

By AK at 12:58 pm, Feb 18, 2021

# BATCH REAGENTS

21B2308



# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - P-4146

| CUSTOMER DETAILS |                   |  |  | Asset#            | P-4146                                  |
|------------------|-------------------|--|--|-------------------|-----------------------------------------|
| Customer         | EPA               |  |  | Serial Number     | 424660A                                 |
| Contact          | Angela Ockrassa   |  |  | Pipette Model     | Eppendorf Xplorer/E 10ml,V,0.5-10ml,1ch |
| Location         | A&I               |  |  | Calibration Date  | 15-Feb-2021                             |
| Address          | 536 S. Clark St.  |  |  | Next Due Date     | 31-Aug-2021                             |
|                  | Chicago, IL 60605 |  |  | Technician        | Nishat K                                |
| Telephone        | 312-353-7445      |  |  | Report Print Date | 15-Feb-2021                             |

| ENVIRONMENTAL CONDITIONS |     |       |                     |                |                 |
|--------------------------|-----|-------|---------------------|----------------|-----------------|
| Water Temperature        | °C  | 21.10 | Barometric Pressure | kPa            | 100.10          |
| Relative Humidity        | (%) | 41.00 | Air Density         | (g/cm3)        | 0.00119         |
|                          |     |       |                     | Z Factor       | (cm3/g) 1.00308 |
|                          |     |       |                     | Liquid Density | (gm/ml) 0.9980  |

| STANDARD EQUIPMENT                   |               |                  |               |
|--------------------------------------|---------------|------------------|---------------|
| Standard                             | Serial Number | Calibration Date | Next Due Date |
| ST2-Mettler Balance AX205DR/0.00001g | 1122303954    | 14-Jan-2021      | 31-Jan-2022   |
| Digital Barometer                    | 200303896     | 19-May-2020      | 31-May-2022   |
| Digital Thermometer                  | 200303896     | 19-May-2020      | 31-May-2022   |
| Thermocouple w/Probe                 | 200311521     | 23-May-2020      | 31-May-2022   |

| Calibration Data - As Found |    |         |         |          |            |         |             |         |        |        |               |               |
|-----------------------------|----|---------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|---------------|
|                             |    |         |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight | Sample Volume |
| Volume (uL)                 | Ch | Mean    | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          | (uL)          |
| 1000.00                     | 1  | 1003.73 | 1.57929 | 5.87     | 0.37259    | 3.00000 | 0.15734     | 0.60000 | Passed |        |               |               |
|                             |    |         |         |          |            |         |             |         |        | 1      | 999.26000     | 1002.33411    |
|                             |    |         |         |          |            |         |             |         |        | 2      | 1002.74000    | 1005.82481    |
|                             |    |         |         |          |            |         |             |         |        | 3      | 999.63000     | 1002.70524    |
|                             |    |         |         |          |            |         |             |         |        | 4      | 1000.96000    | 1004.03934    |
| 10000.00                    | 1  | 9986.19 | 8.90664 | 56.99    | 0.13805    | 0.60000 | 0.08919     | 0.15000 | Passed |        |               |               |
|                             |    |         |         |          |            |         |             |         |        | 1      | 9965.93000    | 9996.58901    |
|                             |    |         |         |          |            |         |             |         |        | 2      | 9946.61000    | 9977.20958    |
|                             |    |         |         |          |            |         |             |         |        | 3      | 9949.97000    | 9980.57991    |
|                             |    |         |         |          |            |         |             |         |        | 4      | 9959.76000    | 9990.40003    |

| Calibration Data - As Calibrated |    |         |         |          |            |         |             |         |        |        |               |               |
|----------------------------------|----|---------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|---------------|
|                                  |    |         |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight | Sample Volume |
| Volume (uL)                      | Ch | Mean    | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          | (uL)          |
| 1000.00                          | 1  | 1004.12 | 2.14764 | 6.05     | 0.41171    | 3.00000 | 0.21388     | 0.60000 | Passed |        |               |               |
|                                  |    |         |         |          |            |         |             |         |        | 1      | 1003.27000    | 1006.35644    |
|                                  |    |         |         |          |            |         |             |         |        | 2      | 999.20000     | 1002.27392    |
|                                  |    |         |         |          |            |         |             |         |        | 3      | 1002.47000    | 1005.55398    |
|                                  |    |         |         |          |            |         |             |         |        | 4      | 999.21000     | 1002.28395    |
| 10000.00                         | 1  | 9991.46 | 3.45813 | 56.42    | 0.08537    | 0.60000 | 0.03461     | 0.15000 | Passed |        |               |               |
|                                  |    |         |         |          |            |         |             |         |        | 1      | 9959.82000    | 9990.46022    |
|                                  |    |         |         |          |            |         |             |         |        | 2      | 9957.42000    | 9988.05283    |
|                                  |    |         |         |          |            |         |             |         |        | 3      | 9965.61000    | 9996.26803    |
|                                  |    |         |         |          |            |         |             |         |        | 4      | 9960.43000    | 9991.07209    |



# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - P-4146

Comment Cleaned/Checked

1. PASS grade denotes that pipette meets OEM/ISO 8655 specifications. This pipette was calibrated gravimetrically using Standard Operating Procedure (NSOP), De-Ionized Water, Manufacturer/Generic Pipette tips and a Mettler Analytical Balance. All the standard equipment used to calibrate pipettes are certified at regular intervals traceable to National Institute of Standards and Technology (NIST). The test procedures comply to ISO/IEC 17025 guidelines.
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5. All Syringes are checked and verified at 3% of inaccuracy and imprecision specifications.

Technician

Date

15-Feb-2021

QC Designee

Review Date

15-Feb-2021

**REVIEWED**

By AK at 1:02 pm, Feb 18, 2021

# BATCH REAGENTS

21B2309



# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - P-4129

| CUSTOMER DETAILS |                   |  |  | Asset#            | P-4129                                  |
|------------------|-------------------|--|--|-------------------|-----------------------------------------|
| Customer         | EPA               |  |  | Serial Number     | 424277A                                 |
| Contact          | Angela Ockrassa   |  |  | Pipette Model     | Eppendorf Xplorer/E 100ul,V,5-100ul,1ch |
| Location         | A&I               |  |  | Calibration Date  | 15-Feb-2021                             |
| Address          | 536 S. Clark St.  |  |  | Next Due Date     | 31-Aug-2021                             |
|                  | Chicago, IL 60605 |  |  | Technician        | Nishat K                                |
| Telephone        | 312-353-7445      |  |  | Report Print Date | 15-Feb-2021                             |

| ENVIRONMENTAL CONDITIONS |       |                                  |         |                               |         |
|--------------------------|-------|----------------------------------|---------|-------------------------------|---------|
| Water Temperature °C     | 21.10 | Barometric Pressure kPa          | 100.10  | Z Factor (cm <sup>3</sup> /g) | 1.00308 |
| Relative Humidity (%)    | 41.00 | Air Density (g/cm <sup>3</sup> ) | 0.00119 | Liquid Density (gm/ml)        | 0.9980  |

| STANDARD EQUIPMENT                |               |                  |               |
|-----------------------------------|---------------|------------------|---------------|
| Standard                          | Serial Number | Calibration Date | Next Due Date |
| ST2-Mettler Balance MX5/0.000001g | 1120303862    | 14-Jan-2021      | 31-Jan-2022   |
| Digital Barometer                 | 200303896     | 19-May-2020      | 31-May-2022   |
| Digital Thermometer               | 200303896     | 19-May-2020      | 31-May-2022   |
| Thermocouple w/Probe              | 200311521     | 23-May-2020      | 31-May-2022   |

| Calibration Data - As Found |    |        |         |          |            |         |             |         |        |        |               |
|-----------------------------|----|--------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|
|                             |    |        |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight |
| Volume (uL)                 | Ch | Mean   | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          |
| 10.00                       | 1  | 10.19  | 0.04910 | 0.05     | 1.94015    | 2.00000 | 0.48168     | 1.00000 | Passed |        |               |
|                             |    |        |         |          |            |         |             |         |        | 1      | 10.13700      |
|                             |    |        |         |          |            |         |             |         |        | 2      | 10.11300      |
|                             |    |        |         |          |            |         |             |         |        | 3      | 10.22500      |
|                             |    |        |         |          |            |         |             |         |        | 4      | 10.17600      |
| 100.00                      | 1  | 100.56 | 0.08892 | 0.15     | 0.56242    | 0.80000 | 0.08842     | 0.20000 | Passed |        |               |
|                             |    |        |         |          |            |         |             |         |        | 1      | 100.35400     |
|                             |    |        |         |          |            |         |             |         |        | 2      | 100.20100     |
|                             |    |        |         |          |            |         |             |         |        | 3      | 100.30000     |
|                             |    |        |         |          |            |         |             |         |        | 4      | 100.16100     |

| Calibration Data - As Calibrated |    |        |         |          |            |         |             |         |        |        |               |
|----------------------------------|----|--------|---------|----------|------------|---------|-------------|---------|--------|--------|---------------|
|                                  |    |        |         | Unc. +/- | Accuracy % |         | Precision % |         |        |        | Sample Weight |
| Volume (uL)                      | Ch | Mean   | SD      | (k=2)    | Actual     | Target  | Actual      | Target  | Status | Sample | (mg)          |
| 10.00                            | 1  | 10.14  | 0.03628 | 0.05     | 1.36588    | 2.00000 | 0.35793     | 1.00000 | Passed |        |               |
|                                  |    |        |         |          |            |         |             |         |        | 1      | 10.09700      |
|                                  |    |        |         |          |            |         |             |         |        | 2      | 10.09900      |
|                                  |    |        |         |          |            |         |             |         |        | 3      | 10.07000      |
|                                  |    |        |         |          |            |         |             |         |        | 4      | 10.15600      |
| 100.00                           | 1  | 100.14 | 0.05143 | 0.15     | 0.14414    | 0.80000 | 0.05135     | 0.20000 | Passed |        |               |
|                                  |    |        |         |          |            |         |             |         |        | 1      | 99.85200      |
|                                  |    |        |         |          |            |         |             |         |        | 2      | 99.90300      |
|                                  |    |        |         |          |            |         |             |         |        | 3      | 99.79300      |
|                                  |    |        |         |          |            |         |             |         |        | 4      | 99.80000      |





# NOVAMED INC.

## CERTIFICATE OF PIPETTE CALIBRATION

Certificate # 021521 - P-4129

Comment Cleaned/Checked

1. PASS grade denotes that pipette meets OEM/ISO 8655 specifications. This pipette was calibrated gravimetrically using Standard Operating Procedure (NSOP), De-ionized Water, Manufacturer/Generic Pipette tips and a Mettler Analytical Balance. All the standard equipment used to calibrate pipettes are certified at regular intervals traceable to National Institute of Standards and Technology (NIST). The test procedures comply to ISO/IEC 17025 guidelines.
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5. All Syringes are checked and verified at 3% of inaccuracy and imprecision specifications.

Technician

Date

15-Feb-2021

QC Designee

Review Date

15-Feb-2021

**REVIEWED**

*By AK at 1:00 pm, Feb 18, 2021*

# BATCH REAGENTS

21C0906



# Environmental Protection Agency Region 5

## Chicago Regional Laboratory

Print Date:

3/9/2021

536 South Clark Street, Chicago, IL 60605  
 Phone: (312) 353-8370 Fax: (312) 886-2591

### Reagent Preparation Bench Sheet

REVIEWED  
 By NFUENTES at 11:10 am, Mar 31, 2021

REVIEWED  
 By NFUENTES at 11:10 am, Mar 31, 2021

Parameter / SOP #: TP/TKN SOP AIG34B ver#7, AIG35B ver#8

Prepared by: Nidia Fuentes

Reagent: TP/TKN Digestion Solution

Preparation Date: Mar-09-21

LIMS ID: 21C0906

Expiration Date: Mar-09-22

| Chemical Name (Formula)                             | LIMS ID | Mass or Volume (specify units) |
|-----------------------------------------------------|---------|--------------------------------|
| Sulfuric Acid (H <sub>2</sub> SO <sub>4</sub> )     | 20B0607 | 200 mL                         |
| Mercuric Sulfate solution                           | 19H0504 | 25 mL                          |
| Potassium Sulfate (K <sub>2</sub> SO <sub>4</sub> ) | 20J2902 | 133.0398 g                     |
|                                                     |         |                                |
|                                                     |         |                                |

Total Volume : 1000  
~~500~~ mL

REVIEWED  
 By NFUENTES at 11:10 am, Mar 31, 2021

Comments :

Balance #17

**REVIEWED**

**By AK at 8:15 am, Apr 01, 2021**

Analyst Signature:

*Nidia Fuentes*

# Balance Check

BALANCE ID: #17

DATE: 3/9/2021

ANALYST: Nidia Fuentes

WEIGHT SET ID: TROEMNER S/N: 400026116

WGT SET # CONFIRMED: YES

WEIGHT SET 2 ID: \_\_\_\_\_

WGT SET # CONFIRMED: \_\_\_\_\_

INITIAL & DATE: 117 3/9/2021

\*NOTE: Confirm # of weights in weight set before and after use above. # of weights in weight sets are listed at bottom of page. Create IR if find that weights are missing . Note any weights that are missing in the comments field below and contact QAO to remove weight(s) from Qualtrax records.

| Analytical Balance Tolerance Limits |                   |          |          |
|-------------------------------------|-------------------|----------|----------|
| Standard Weight (g)                 | Actual Weight (g) | LCL (g)  | UCL (g)  |
| 0.0100                              |                   | 0.0099   | 0.0101   |
| 0.0200                              |                   | 0.0199   | 0.0201   |
| 0.0200*                             |                   | 0.0199   | 0.0201   |
| 0.0500                              |                   | 0.0499   | 0.0501   |
| 0.1000                              |                   | 0.0999   | 0.1001   |
| 0.2000                              |                   | 0.1999   | 0.2001   |
| 0.2000*                             |                   | 0.1999   | 0.2001   |
| 0.5000                              |                   | 0.4999   | 0.5001   |
| 1.0000                              | 1.0000            | 0.9999   | 1.0001   |
| 2.0000                              |                   | 1.9999   | 2.0001   |
| 2.0000*                             |                   | 1.9999   | 2.0001   |
| 5.0000                              |                   | 4.9999   | 5.0001   |
| 10.0000                             | 10.0000           | 9.9999   | 10.0001  |
| 20.0000                             |                   | 19.9999  | 20.0001  |
| 20.0000*                            |                   | 19.9999  | 20.0001  |
| 50.0000                             |                   | 49.9999  | 50.0001  |
| 100.0000                            | 100.0001          | 99.9997  | 100.0003 |
| 200.0000                            | 199.9999          | 199.9995 | 200.0005 |

| Top-Loading Balance Tolerance Limits |                   |         |         |
|--------------------------------------|-------------------|---------|---------|
| Standard Weight (g)                  | Actual Weight (g) | LCL (g) | UCL (g) |
| 0.01                                 |                   | 0.00    | 0.02    |
| 0.02                                 |                   | 0.01    | 0.03    |
| 0.02*                                |                   | 0.01    | 0.03    |
| 0.05                                 |                   | 0.04    | 0.06    |
| 0.10                                 |                   | 0.09    | 0.11    |
| 0.20                                 |                   | 0.19    | 0.21    |
| 0.20*                                |                   | 0.19    | 0.21    |
| 0.50                                 |                   | 0.49    | 0.51    |
| 1.00                                 |                   | 0.99    | 1.01    |
| 2.00                                 |                   | 1.99    | 2.01    |
| 2.00*                                |                   | 1.99    | 2.01    |
| 5.00                                 |                   | 4.99    | 5.01    |
| 10.00                                |                   | 9.99    | 10.01   |
| 20.00                                |                   | 19.99   | 20.01   |
| 20.00*                               |                   | 19.99   | 20.01   |
| 50.00                                |                   | 49.99   | 50.01   |
| 100.00                               |                   | 99.99   | 100.01  |
| 200.00                               |                   | 199.99  | 200.01  |
| 300.00                               |                   | 299.99  | 300.01  |
| 500.00                               |                   | 499.99  | 500.01  |
| 1000.00                              |                   | 999.99  | 1000.01 |

**Weight Sets:**

TROEMNER S/N: 4000017548: 21 weights

TROEMNER S/N: 4000020557: 21 weights

Denver Inst Co S/N: 01-25360-3A: 1 weight

TROEMNER S/N: 06679: 5 weights

TROEMNER S/N: 400026116: 22 weights

COMMENTS:

# **SEQUENCE**

**21D0801**

Sequence Date: 04/08/2021

Instrument: DA-3

Sequence Analyses:

Total Phosphorus DA

## ANALYSIS SEQUENCE

Printed: 4/13/2021 2:21:18PM

21D0801

| Instrument: | DA-3      | Analysis Date: | Apr-08-21                            | Calibration ID:     | UNASSIGNED | Matrix: | Water    |  |
|-------------|-----------|----------------|--------------------------------------|---------------------|------------|---------|----------|--|
| Order       | Container | Lab Number     | Sample name or QC sample designation |                     | Analysis   | STD ID  | Comments |  |
| 1           |           | 21D0801-CAL1   | Cal Standard                         | QC                  |            | 21D0711 |          |  |
| 2           |           | 21D0801-CAL2   | Cal Standard                         | QC                  |            | 21D0803 |          |  |
| 3           |           | 21D0801-CAL3   | Cal Standard                         | QC                  |            | 21D0804 |          |  |
| 4           |           | 21D0801-CAL4   | Cal Standard                         | QC                  |            | 21D0805 |          |  |
| 5           |           | 21D0801-CAL5   | Cal Standard                         | QC                  |            | 21D0806 |          |  |
| 6           |           | 21D0801-CAL7   | Cal Standard                         | QC                  |            | 21D0712 |          |  |
| 7           |           | 21D0801-CAL6   | Cal Standard                         | QC                  |            | 21D0807 |          |  |
| 8           |           | 21D0801-ICB1   | CCB                                  | QC                  |            |         |          |  |
| 9           |           | 21D0801-ICV1   | CCV                                  | QC                  |            | 21D0713 |          |  |
| 10          |           | B21D010-MRL1   | MRL Check                            | QC                  |            |         |          |  |
| 11          |           | B21D010-BLK1   | Blank                                | QC                  |            |         |          |  |
| 12          |           | B21D010-BS1    | LCS                                  | QC                  |            |         |          |  |
| 13          | A         | 2103007-01     | S01                                  | Total Phosphorus DA |            |         | pH = 1   |  |
| 14          |           | B21D010-DUP1   | Duplicate                            | QC                  |            |         |          |  |
| 15          |           | B21D010-MS1    | Matrix Spike                         | QC                  |            |         |          |  |
| 16          | B         | 2103007-02     | S02                                  | Total Phosphorus DA |            |         | pH = 1   |  |
| 17          | A         | 2103007-04     | S04                                  | Total Phosphorus DA |            |         | pH = 1   |  |
| 18          | B         | 2103007-05     | S05                                  | Total Phosphorus DA |            |         | pH = 1   |  |
| 19          |           | 21D0801-CCB1   | CCB                                  | QC                  |            |         |          |  |
| 20          |           | 21D0801-CCV1   | CCV                                  | QC                  |            | 21D0713 |          |  |
| 21          | B         | 2103007-06     | S06                                  | Total Phosphorus DA |            |         | pH = 1   |  |
| 22          | B         | 2103007-07     | S07                                  | Total Phosphorus DA |            |         | pH = 1   |  |
| 23          | B         | 2103007-08     | S08                                  | Total Phosphorus DA |            |         | pH = 1   |  |



| Order | Container | Lab Number   | Sample name or<br>QC sample designation | Analysis            | STD ID  | Comments |
|-------|-----------|--------------|-----------------------------------------|---------------------|---------|----------|
| 24    | B         | 2103007-09   | B01                                     | Total Phosphorus DA |         | pH = 1   |
| 25    | B         | 2103010-03   | S03                                     | Total Phosphorus DA |         | pH = 1   |
| 26    | A         | 2103007-03   | S03                                     | Total Phosphorus DA |         | pH = 1   |
| 27    |           | 21D0801-CCB2 | CCB                                     | QC                  |         |          |
| 28    |           | 21D0801-CCV2 | CCV                                     | QC                  | 21D0713 |          |
| 29    | B         | 2103010-04   | B01                                     | Total Phosphorus DA |         | pH = 1   |
| 30    |           | 21D0801-CCB3 | CCB                                     | QC                  |         |          |
| 31    |           | 21D0801-CCV3 | CCV                                     | QC                  | 21D0713 |          |
| 32    |           | 21D0801-CCB4 | CCB                                     | QC                  |         |          |
| 33    |           | 21D0801-CCV4 | CCV                                     | QC                  | 21D0713 |          |
| 34    | A         | 2103010-01   | S01                                     | Total Phosphorus DA |         | pH = 1   |
| 35    |           | B21D010-DUP2 | Duplicate                               | QC                  |         |          |
| 36    |           | B21D010-MS2  | Matrix Spike                            | QC                  |         |          |
| 37    | B         | 2103010-02   | S02                                     | Total Phosphorus DA |         | pH = 1   |
| 38    |           | 21D0801-CCB5 | CCB                                     | QC                  |         |          |
| 39    |           | 21D0801-CCV5 | CCV                                     | QC                  | 21D0713 |          |

| Order                                                  | Container                    | Lab Number | Sample name <u>or</u><br>QC sample designation | Analysis           | STD ID | Comments |
|--------------------------------------------------------|------------------------------|------------|------------------------------------------------|--------------------|--------|----------|
| <b><u>PREPARATION REAGENTS/STANDARDS/PIPETTES:</u></b> |                              |            |                                                |                    |        |          |
| <u>21D0715:</u>                                        | TP-Stock Cal Standard (SCS)  |            | Prepared: Apr-07-21                            | Expires: Apr-07-22 |        |          |
| <u>21D0714:</u>                                        | TP - MRL (0.15 mg P/L)       |            | Prepared: Apr-07-21                            | Expires: May-07-21 |        |          |
| <u>21D0711:</u>                                        | TP - WCS (0.00 mg P/L)       |            | Prepared: Apr-07-21                            | Expires: May-07-21 |        |          |
| <u>21D0712:</u>                                        | TP - WCS (3.00 mg P/L)       |            | Prepared: Apr-07-21                            | Expires: May-07-21 |        |          |
| <u>21D0713:</u>                                        | TP - WcS (2.00 mg P/L)       |            | Prepared: Apr-07-21                            | Expires: May-07-21 |        |          |
| <u>21D0803:</u>                                        | TP - WCS (0.15 mg P/L)       |            | Prepared: Apr-08-21                            | Expires: Apr-09-21 |        |          |
| <u>21D0804:</u>                                        | TP - WCS (0.3 mg P/L)        |            | Prepared: Apr-08-21                            | Expires: Apr-09-21 |        |          |
| <u>21D0805:</u>                                        | TP - WCS (0.75 mg P/L)       |            | Prepared: Apr-08-21                            | Expires: Apr-09-21 |        |          |
| <u>21D0806:</u>                                        | TP - WCS (1.0 mg P/L)        |            | Prepared: Apr-08-21                            | Expires: Apr-09-21 |        |          |
| <u>21D0807:</u>                                        | TP - WCS (1.5 mg P/L)        |            | Prepared: Apr-08-21                            | Expires: Apr-09-21 |        |          |
| <u>21B2417:</u>                                        | TP-NaCl Solution             |            | Prepared: Feb-24-21                            | Expires: Feb-24-22 |        |          |
| <u>21B2421:</u>                                        | TP-MolybdateAntimonySolution |            | Prepared: Feb-24-21                            | Expires: Feb-24-22 |        |          |
| <u>21D0801:</u>                                        | TP- Ascorbic Acid            |            | Prepared: Apr-08-21                            | Expires: Apr-22-21 |        |          |

# Calibration results

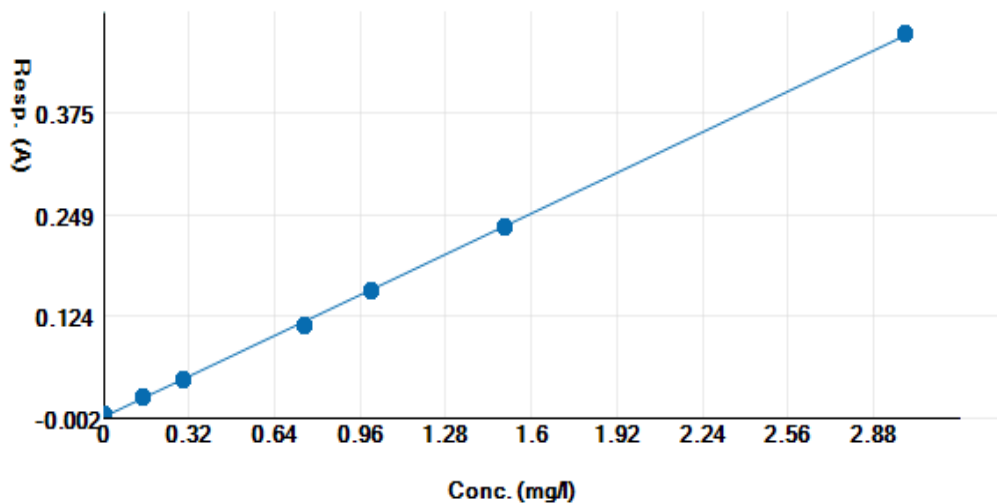
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Total Phos Version number 1.13 DA-3

Date 4/8/2021 User NF  
 Time 11:07:20AM Software version: 7.0  
 Analyzer name Analyzer 1

|           |                   |                  |          |
|-----------|-------------------|------------------|----------|
| Test      | Total Phos        | Coeff. of deter. | 0.999675 |
| Status    | Accepted          | Total factor     | 6.350    |
| Accepted  | 4/8/2021 11:07 AM |                  |          |
| Checked   | 4/8/2021 11:07 AM |                  |          |
| User name | NF                |                  |          |
| Comment   |                   |                  |          |
| Errors    |                   |                  |          |
| Factor    | 6.350             |                  |          |
| Bias      | -0.001            |                  |          |

| Cal/Ctrl | Response | Calc. conc. | Given conc. | Lot     | Errors |
|----------|----------|-------------|-------------|---------|--------|
| TP-0     | 0.003    | 0.02703     | 0.00000     | Default |        |
| TP-3.0   | 0.023    | 0.15605     | 0.15000     | Default |        |
| TP-3.0   | 0.046    | 0.30176     | 0.30000     | Default |        |
| TP-3.0   | 0.112    | 0.72112     | 0.75000     | Default |        |
| TP-3.0   | 0.155    | 0.99025     | 1.00000     | Default |        |
| TP-3.0   | 0.233    | 1.48758     | 1.50000     | Default |        |
| TP-3.0   | 0.474    | 3.01620     | 3.00000     | Default |        |



## Results by Test

Page

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DA-3

**Date** 4/8/2021  
**Time** 1:08:49PM

**User** NF  
**Software version: 7.0**

## Test name Total Phos

| Sample/ctrl ID | Test version | Result | Unit | Note | Dil. 1 + | Status  | Errors                         |
|----------------|--------------|--------|------|------|----------|---------|--------------------------------|
| CCB            | 1.13         | 0.0368 | mg/l |      | 0.0      | man acc |                                |
| CCV            | 1.13         | 2.0234 | mg/l |      | 0.0      | man acc |                                |
| B21D010-MRL1   | 1.13         | 0.1532 | mg/l |      | 0.0      | man acc |                                |
| B21D010-BLK1   | 1.13         | 0.0259 | mg/l |      | 0.0      | man acc |                                |
| B21D010-BS1    | 1.13         | 1.0677 | mg/l |      | 0.0      | man acc |                                |
| 2103007-01     | 1.13         | 1.9985 | mg/l |      | 0.0      | man acc |                                |
| B21D010-DUP1   | 1.13         | 1.9230 | mg/l |      | 0.0      | man acc |                                |
| B21D010-MS1    | 1.13         | 2.9584 | mg/l |      | 0.0      | man acc |                                |
| 2103007-02     | 1.13         | 1.7179 | mg/l |      | 0.0      | man acc |                                |
| 2103007-03     | 1.13         | - D    | mg/l |      | 0.0      | aut rej | Dil. limit High                |
| 2103007-04     | 1.13         | 2.9932 | mg/l |      | 0.0      | man acc |                                |
| 2103007-05     | 1.13         | 2.2161 | mg/l |      | 0.0      | man acc |                                |
| CCB            | 1.13         | 0.0267 | mg/l |      | 0.0      | man acc |                                |
| CCV            | 1.13         | 2.0301 | mg/l |      | 0.0      | man acc |                                |
| 2103007-06     | 1.13         | 1.3473 | mg/l |      | 0.0      | man acc |                                |
| 2103007-07     | 1.13         | 2.7933 | mg/l |      | 0.0      | man acc |                                |
| 2103007-08     | 1.13         | 1.8196 | mg/l |      | 0.0      | man acc |                                |
| 2103007-09     | 1.13         | 0.0242 | mg/l |      | 0.0      | man acc |                                |
| 2103010-01     | 1.13         | - D    | mg/l |      | 0.0      | aut rej | Dil. limit High                |
| B21D010-DUP2   | 1.13         | - D    | mg/l |      | 0.0      | aut rej | Dil. limit High                |
| B21D010-MS2    | 1.13         | - D    | mg/l |      | 0.0      | aut rej | Dil. limit High                |
| 2103010-02     | 1.13         | - D    | mg/l |      | 0.0      | aut rej | Dil. limit High                |
| 2103010-03     | 1.13         | 2.2736 | mg/l |      | 0.0      | man acc |                                |
| 2103007-03     | 1.13         | 3.4134 | mg/l |      | 9.0      | man acc |                                |
| CCB            | 1.13         | 0.0253 | mg/l |      | 0.0      | man acc |                                |
| CCV            | 1.13         | 2.0199 | mg/l |      | 0.0      | man acc |                                |
| 2103010-04     | 1.13         | 0.0408 | mg/l |      | 0.0      | man acc |                                |
| CCB            | 1.13         | 0.0262 | mg/l |      | 0.0      | man acc |                                |
| CCV            | 1.13         | 2.0074 | mg/l |      | 0.0      | man acc |                                |
| 2103010-01     | 1.13         | 5.5030 | mg/l |      | 9.0      | man acc | Not used because of failing QC |
| B21D010-DUP2   | 1.13         | 7.9436 | mg/l |      | 9.0      | man acc |                                |
| B21D010-MS2    | 1.13         | 6.3966 | mg/l |      | 9.0      | man acc |                                |

| Sample/ctrl ID | Test version | Result  | Unit | Note | Dil. 1 + | Status  | Errors                                           |
|----------------|--------------|---------|------|------|----------|---------|--------------------------------------------------|
| 2103010-02     | 1.13         | 17.8970 | mg/l |      | 9.0      | man acc |                                                  |
| CCB            | 1.13         | 0.2110  | mg/l |      | 0.0      | man acc | QC, Rule 1 violated                              |
| CCV            | 1.13         | 2.0069  | mg/l |      | 0.0      | man acc | REVIEWED<br>By NFUENTES at 3:42 pm, Apr 08, 2021 |
| CCB            | 1.13         | -0.0035 | mg/l |      | 0.0      | man acc |                                                  |
| CCV            | 1.13         | 2.0416  | mg/l |      | 0.0      | man acc |                                                  |
| 2103010-01     | 1.13         | 5.4796  | mg/l |      | 9.0      | man acc |                                                  |
| B21D010-DUP2   | 1.13         | 5.5189  | mg/l |      | 9.0      | man acc |                                                  |
| B21D010-MS2    | 1.13         | 6.5665  | mg/l |      | 9.0      | man acc |                                                  |
| 2103010-02     | 1.13         | 19.1745 | mg/l |      | 9.0      | man acc |                                                  |
| CCB            | 1.13         | 0.0266  | mg/l |      | 0.0      | man acc |                                                  |
| CCV            | 1.13         | 2.0286  | mg/l |      | 0.0      | man acc |                                                  |

D - diluted by instrument

Date 4/8/2021 User NF  
Time 4:57:40 PM Software version: 7.0

DA-3

| Sample/ctrl ID | Pat/Ctr/cal | Test name    | Test type | Result        | Result unit | Result time    | STAT | Status | Errors | Notes | Dilution | 1 - Manual dil | Response | Blank resp | Main abs. | Blank abs.    | Sample type |
|----------------|-------------|--------------|-----------|---------------|-------------|----------------|------|--------|--------|-------|----------|----------------|----------|------------|-----------|---------------|-------------|
| TP-0           | A           | Total Phos P |           | 0.02703 mg/l  |             | 4/8/2021 10:21 |      | MA     |        |       | 0        | 0.00291        | -0.00031 | 0.00261    | 0.00031   | -0.00031      |             |
| TP-3.0         | A           | Total Phos P |           | 0.15605 mg/l  |             | 4/8/2021 10:22 |      | MA     |        |       | 19       | 0.03233        | -0.00034 | 0.02289    | 0.00034   | -0.00034      |             |
| TP-3.0         | A           | Total Phos P |           | 0.30176 mg/l  |             | 4/8/2021 10:24 |      | MA     |        |       | 9        | 0.04618        | 0.00975  | 0.05593    | 0.00975   |               |             |
| TP-3.0         | A           | Total Phos P |           | 0.72112 mg/l  |             | 4/8/2021 10:25 |      | MA     |        |       | 3        | 0.11222        | 0.07613  | 0.18835    | 0.07613   |               |             |
| TP-3.0         | A           | Total Phos P |           | 0.99025 mg/l  |             | 4/8/2021 10:26 |      | MA     |        |       | 2        | 0.1546         | 0.00051  | 0.15511    | 0.00051   |               |             |
| TP-3.0         | A           | Total Phos P |           | 1.72561 mg/l  |             | 4/8/2021 10:28 |      | MR     |        |       | 1        | 0.28019        | 0.01044  | 0.29063    | 0.01044   |               |             |
| TP-3.0         | A           | Total Phos P |           | 3.0162 mg/l   |             | 4/8/2021 10:29 |      | MA     |        |       | 0        | 0.47365        | 0.00264  | 0.47629    | 0.00264   |               |             |
| TP-3.0         | A           | Total Phos P |           | 1.48758 mg/l  |             | 4/8/2021 10:52 |      | MA     |        |       | 1        | 0.23292        | 0.00076  | 0.23368    | 0.00076   |               |             |
| CCB            | C           | Total Phos P |           | 0.03678 mg/l  |             | 4/8/2021 11:42 |      | MA     |        |       | 0        | 0.00445        | -0.00018 | 0.00427    | -0.00018  |               |             |
| CCV            | C           | Total Phos P |           | 2.0234 mg/l   |             | 4/8/2021 11:43 |      | MA     |        |       | 0        | 0.31731        | 0.00161  | 0.31892    | 0.00161   |               |             |
| B21D010-MRL1   | P           | Total Phos P |           | 0.15322 mg/l  |             | 4/8/2021 11:43 |      | MA     |        |       | 0        | 0.03279        | -0.00046 | 0.02232    | -0.00046  | Sample type 1 |             |
| B21D010-BLK1   | P           | Total Phos P |           | 0.02593 mg/l  |             | 4/8/2021 11:44 |      | MA     |        |       | 0        | 0.00274        | -0.00047 | 0.00227    | -0.00047  | Sample type 1 |             |
| B21D010-BS1    | P           | Total Phos P |           | 1.06767 mg/l  |             | 4/8/2021 11:45 |      | MA     |        |       | 0        | 0.16679        | 0.06458  | 0.23138    | 0.06458   | Sample type 1 |             |
| 2103007-01     | P           | Total Phos P |           | 1.99852 mg/l  |             | 4/8/2021 11:46 |      | MA     |        |       | 0        | 0.31339        | 0.00181  | 0.3152     | 0.00181   | Sample type 1 |             |
| B21D010-DUP1   | P           | Total Phos P |           | 1.92304 mg/l  |             | 4/8/2021 11:47 |      | MA     |        |       | 0        | 0.3015         | 0.00089  | 0.30239    | 0.00089   | Sample type 1 |             |
| B21D010-MS1    | P           | Total Phos P |           | 2.95843 mg/l  |             | 4/8/2021 11:48 |      | MA     |        |       | 0        | 0.46456        | 0.00172  | 0.46627    | 0.00172   | Sample type 1 |             |
| 2103007-02     | P           | Total Phos P |           | 1.71794 mg/l  |             | 4/8/2021 11:49 |      | MA     |        |       | 0        | 0.2692         | 0.00111  | 0.27031    | 0.00111   | Sample type 1 |             |
| 2103007-03     | P           | Total Phos P |           | 3.44004 mg/l  |             | 4/8/2021 11:50 |      | AR     | 19,    | R     | 0        | 0.5404         | 0.02876  | 0.56916    | 0.02876   | Sample type 1 |             |
| 2103007-04     | P           | Total Phos P |           | 2.99316 mg/l  |             | 4/8/2021 11:51 |      | MA     |        |       | 0        | 0.47003        | 0.00207  | 0.4721     | 0.00207   | Sample type 1 |             |
| 2103007-05     | P           | Total Phos P |           | 2.21613 mg/l  |             | 4/8/2021 11:52 |      | MA     |        |       | 0        | 0.34766        | 0.01366  | 0.36131    | 0.01366   | Sample type 1 |             |
| CCB            | C           | Total Phos P |           | 0.02665 mg/l  |             | 4/8/2021 11:52 |      | MA     |        |       | 0        | 0.00285        | -0.00055 | 0.0023     | -0.00055  |               |             |
| CCV            | C           | Total Phos P |           | 2.03013 mg/l  |             | 4/8/2021 11:53 |      | MA     |        |       | 0        | 0.31837        | 0.00102  | 0.31938    | 0.00102   |               |             |
| 2103007-06     | P           | Total Phos P |           | 1.34727 mg/l  |             | 4/8/2021 11:54 |      | MA     |        |       | 0        | 0.21083        | 0.02485  | 0.23568    | 0.02485   | Sample type 1 |             |
| 2103007-07     | P           | Total Phos P |           | 2.79325 mg/l  |             | 4/8/2021 11:55 |      | MA     |        |       | 0        | 0.43854        | 0.00167  | 0.44022    | 0.00167   | Sample type 1 |             |
| 2103007-08     | P           | Total Phos P |           | 1.81963 mg/l  |             | 4/8/2021 11:56 |      | MA     |        |       | 0        | 0.28522        | 0.00211  | 0.28733    | 0.00211   | Sample type 1 |             |
| 2103007-09     | P           | Total Phos P |           | 0.0242 mg/l   |             | 4/8/2021 11:57 |      | MA     |        |       | 0        | 0.00247        | -0.00058 | 0.00189    | -0.00058  | Sample type 1 |             |
| 2103010-01     | P           | Total Phos P |           | 5.43184 mg/l  |             | 4/8/2021 11:58 |      | AR     | 19,    | R     | 0        | 0.85407        | 0.03886  | 0.89293    | 0.03886   | Sample type 1 |             |
| B21D010-DUP2   | P           | Total Phos P |           | 5.34461 mg/l  |             | 4/8/2021 11:59 |      | AR     | 19,    | R     | 0        | 0.84033        | 0.02699  | 0.86733    | 0.02699   | Sample type 1 |             |
| B21D010-MS2    | P           | Total Phos P |           | 6.29726 mg/l  |             | 4/8/2021 12:00 |      | AR     | 19,    | R     | 0        | 0.99036        | 0.00394  | 0.9943     | 0.00394   | Sample type 1 |             |
| 2103010-02     | P           | Total Phos P |           | 13.62197 mg/l |             | 4/8/2021 12:01 |      | AR     | 19,    | R     | 0        | 2.14387        | 0.15466  | 2.29852    | 0.15466   | Sample type 1 |             |
| 2103010-03     | P           | Total Phos P |           | 2.27359 mg/l  |             | 4/8/2021 12:01 |      | MA     |        |       | 0        | 0.35671        | 0.00602  | 0.36272    | 0.00602   | Sample type 1 |             |
| 2103007-03     | P           | Total Phos P |           | 3.41338 mg/l  |             | 4/8/2021 12:03 |      | MA     |        |       | 9        | 0.05241        | 0.00506  | 0.05748    | 0.00506   | Sample type 1 |             |
| CCB            | C           | Total Phos P |           | 0.02531 mg/l  |             | 4/8/2021 12:04 |      | MA     |        |       | 0        | 0.00264        | -0.0003  | 0.00234    | -0.0003   |               |             |
| CCV            | C           | Total Phos P |           | 2.0199 mg/l   |             | 4/8/2021 12:05 |      | MA     |        |       | 0        | 0.31675        | 0.00339  | 0.32015    | 0.00339   |               |             |
| 2103010-04     | P           | Total Phos P |           | 0.0408 mg/l   |             | 4/8/2021 12:06 |      | MA     |        |       | 0        | 0.00508        | 0.00343  | 0.00851    | 0.00343   | Sample type 1 |             |
| CCB            | C           | Total Phos P |           | 0.02616 mg/l  |             | 4/8/2021 12:07 |      | MA     |        |       | 0        | 0.00278        | 0.00166  | 0.00444    | 0.00166   |               |             |
| CCV            | C           | Total Phos P |           | 2.00738 mg/l  |             | 4/8/2021 12:08 |      | MA     |        |       | 0        | 0.31478        | 0.00167  | 0.31646    | 0.00167   |               |             |
| 2103010-01     | P           | Total Phos P |           | 5.50305 mg/l  |             | 4/8/2021 12:10 |      | MA     |        |       | 9        | 0.08532        | 0.00133  | 0.08665    | 0.00133   | Sample type 1 |             |
| B21D010-DUP2   | P           | Total Phos P |           | 7.94358 mg/l  |             | 4/8/2021 12:11 |      | MA     |        |       | 9        | 0.12375        | 0.0445   | 0.16825    | 0.0445    | Sample type 1 |             |
| B21D010-MS2    | P           | Total Phos P |           | 6.39657 mg/l  |             | 4/8/2021 12:13 |      | MA     |        |       | 9        | 0.09939        | 0.00018  | 0.09957    | 0.00018   | Sample type 1 |             |
| 2103010-02     | P           | Total Phos P |           | 17.89696 mg/l |             | 4/8/2021 12:15 |      | MA     |        |       | 9        | 0.2805         | 0.02513  | 0.30563    | 0.02513   | Sample type 1 |             |
| CCB            | C           | Total Phos P |           | 0.21101 mg/l  |             | 4/8/2021 12:16 |      | MA     | 27,    |       | 0        | 0.03189        | 0.00724  | 0.03913    | 0.00724   |               |             |
| CCV            | C           | Total Phos P |           | 2.00693 mg/l  |             | 4/8/2021 12:17 |      | MA     |        |       | 0        | 0.31471        | 0.00099  | 0.3157     | 0.00099   |               |             |
| CCB            | C           | Total Phos P |           | -0.00354 mg/l |             | 4/8/2021 12:52 |      | MA     |        |       | 0        | -0.0019        | 0.00523  | 0.00333    | 0.00523   |               |             |
| CCV            | C           | Total Phos P |           | 2.04164 mg/l  |             | 4/8/2021 12:53 |      | MA     |        |       | 0        | 0.32018        | 0.00249  | 0.32267    | 0.00249   |               |             |
| 2103010-01     | P           | Total Phos P |           | 5.47962 mg/l  |             | 4/8/2021 12:55 |      | MA     |        |       | 9        | 0.08495        | 0.00039  | 0.08534    | 0.00039   | Sample type 1 |             |
| B21D010-DUP2   | P           | Total Phos P |           | 5.51893 mg/l  |             | 4/8/2021 12:56 |      | MA     |        |       | 9        | 0.08557        | 0.00353  | 0.0891     | 0.00353   | Sample type 1 |             |



|              |   |              |               |                |    |            |          |          |          |          |               |               |
|--------------|---|--------------|---------------|----------------|----|------------|----------|----------|----------|----------|---------------|---------------|
| B21D010-MS2  | P | Total Phos P | 6.56653 mg/l  | 4/8/2021 12:58 | MA | 9          | 0        | 0.10207  | 0.00028  | 0.10235  | 0.00028       | Sample type 1 |
| 2103010-02   | P | Total Phos P | 19.1745 mg/l  | 4/8/2021 13:00 | MA | 9          | 0        | 0.30062  | 0.00348  | 0.3041   | 0.00348       | Sample type 1 |
| CCB          | C | Total Phos P | 0.0266 mg/l   | 4/8/2021 13:01 | MA | 0          | 0.00285  | -0.00073 | 0.00211  | -0.00073 |               |               |
| CCV          | C | Total Phos P | 2.02863 mg/l  | 4/8/2021 13:01 | MA | 0          | 0.31813  | 0.00068  | 0.31881  | 0.00068  |               |               |
| TKN-0        | A | TKN_351.2P   | 0.39238 mg/l  | 4/8/2021 13:50 | MR | 0          | 0.10081  | -0.0002  | 0.10062  | -0.0002  |               |               |
| TKN-10       | A | TKN_351.2P   | 0.33669 mg/l  | 4/8/2021 13:52 | MA | 39         | 0.08601  | -0.00041 | 0.08561  | -0.00041 |               |               |
| TKN-10       | A | TKN_351.2P   | 0.51949 mg/l  | 4/8/2021 13:53 | MA | 19         | 0.10511  | -0.00025 | 0.10486  | -0.00025 |               |               |
| TKN-10       | A | TKN_351.2P   | 0.90879 mg/l  | 4/8/2021 13:55 | MA | 4          | 0.14838  | -0.00034 | 0.14804  | -0.00034 |               |               |
| TKN-10       | A | TKN_351.2P   | 1.84788 mg/l  | 4/8/2021 13:57 | MA | 4          | 0.26732  | 0.00004  | 0.26736  | 0.00004  |               |               |
| TKN-10       | A | TKN_351.2P   | 2.37051 mg/l  | 4/8/2021 13:59 | MA | 3          | 0.34242  | -0.00023 | 0.34219  | -0.00023 |               |               |
| TKN-10       | A | TKN_351.2P   | 5.14492 mg/l  | 4/8/2021 14:00 | MA | 1          | 0.8479   | -0.00018 | 0.84772  | -0.00018 |               |               |
| TKN-10       | A | TKN_351.2P   | 9.98308 mg/l  | 4/8/2021 14:02 | MA | 0          | 2.15926  | 0.00941  | 2.16867  | 0.00941  |               |               |
| TKN-0        | A | TKN_351.2P   | 0.41766 mg/l  | 4/8/2021 14:20 | MR | 0          | 0.10425  | -0.00028 | 0.10396  | -0.00028 |               |               |
| TKN-0        | A | TKN_351.2P   | 0.15867 mg/l  | 4/8/2021 14:42 | MA | 0          | 0.06817  | -0.00004 | 0.06812  | -0.00004 |               |               |
| ICB          | C | TKN_351.2P   | 0.23698 mg/l  | 4/8/2021 15:11 | MA | 0          | 0.07593  | 0.00025  | 0.07617  | 0.00025  |               |               |
| ICV          | C | TKN_351.2P   | 5.32237 mg/l  | 4/8/2021 15:12 | MA | 0          | 0.88635  | 0.00078  | 0.88712  | 0.00078  |               |               |
| 2103010-03   | P | TKN_351.2P   | 9.22313 mg/l  | 4/8/2021 15:13 | MA | 0          | 1.91711  | 0.00291  | 1.92001  | 0.00291  | Sample type 1 |               |
| 2103010-04   | P | TKN_351.2P   | 0.24506 mg/l  | 4/8/2021 15:15 | MA | 0          | 0.07673  | -0.00011 | 0.07662  | -0.00011 | Sample type 1 |               |
| B21D011-MR11 | P | TKN_351.2P   | 0.56014 mg/l  | 4/8/2021 15:15 | MA | 0          | 0.10946  | -0.00002 | 0.10944  | -0.00002 | Sample type 1 |               |
| B21D011-BLK1 | P | TKN_351.2P   | 0.20815 mg/l  | 4/8/2021 15:16 | MA | 0          | 0.07305  | -0.00002 | 0.07304  | -0.00002 | Sample type 1 |               |
| B21D011-BS1  | P | TKN_351.2P   | 2.02612 mg/l  | 4/8/2021 15:18 | MA | 0          | 0.29222  | 0.00004  | 0.29226  | 0.00004  | Sample type 1 |               |
| 2103007-01   | P | TKN_351.2P   | 11.50035 mg/l | 4/8/2021 15:19 | AR | 19,30, R   | 0.26503  | 0.0013   | 2.65633  | 0.0013   | Sample type 1 |               |
| B21D011-DUP1 | P | TKN_351.2P   | 11.66875 mg/l | 4/8/2021 15:19 | AR | 19,30, R   | 0.271005 | 0.00144  | 2.71149  | 0.00144  | Sample type 1 |               |
| B21D011-MS1  | P | TKN_351.2P   | 12.78503 mg/l | 4/8/2021 15:21 | AR | 3,19,30, R | 0.307479 | 0.00111  | 3.0759   | 0.00111  | Sample type 1 |               |
| 2103007-02   | P | TKN_351.2P   | 9.57534 mg/l  | 4/8/2021 15:22 | MA | 0          | 2.02766  | 0.00026  | 2.02792  | 0.00026  | Sample type 1 |               |
| 2103007-03   | P | TKN_351.2P   | 32.22951 mg/l | 4/8/2021 15:23 | AR | 0          | 9.42811  | 0.00062  | 9.42873  | 0.00062  | Sample type 1 |               |
| ICB          | C | TKN_351.2P   | 0.24576 mg/l  | 4/8/2021 15:24 | MA | 0          | 0.07681  | -0.00018 | 0.07662  | -0.00018 |               |               |
| ICV          | C | TKN_351.2P   | 5.33267 mg/l  | 4/8/2021 15:25 | MA | 0          | 0.8886   | -0.00023 | 0.88837  | -0.00023 |               |               |
| 2103007-04   | P | TKN_351.2P   | 32.20405 mg/l | 4/8/2021 15:26 | AR | 3,19,30, R | 0.941979 | 0.00032  | 9.42011  | 0.00032  | Sample type 1 |               |
| 2103007-05   | P | TKN_351.2P   | 32.20051 mg/l | 4/8/2021 15:27 | AR | 3,19,30, R | 0.941863 | 0.00013  | 9.41876  | 0.00013  | Sample type 1 |               |
| 2103007-06   | P | TKN_351.2P   | 9.62339 mg/l  | 4/8/2021 15:28 | MA | 0          | 2.04296  | 0.00106  | 2.04402  | 0.00106  | Sample type 1 |               |
| 2103007-07   | P | TKN_351.2P   | 4.95252 mg/l  | 4/8/2021 15:29 | MA | 0          | 0.80705  | 0.00013  | 0.80718  | 0.00013  | Sample type 1 |               |
| 2103007-08   | P | TKN_351.2P   | 7.16942 mg/l  | 4/8/2021 15:30 | MA | 0          | 1.33015  | 0.00032  | 1.33047  | 0.00032  | Sample type 1 |               |
| 2103007-09   | P | TKN_351.2P   | 0.24315 mg/l  | 4/8/2021 15:31 | MA | 0          | 0.07654  | -0.00014 | 0.0764   | -0.00014 | Sample type 1 |               |
| 2103010-01   | P | TKN_351.2P   | 15.38466 mg/l | 4/8/2021 15:32 | AR | 3,19,30, R | 0.39242  | 0.00191  | 3.92611  | 0.00191  | Sample type 1 |               |
| B21D011-DUP2 | P | TKN_351.2P   | 14.99121 mg/l | 4/8/2021 15:33 | AR | 3,19,30, R | 0.379564 | 0.00233  | 3.79797  | 0.00233  | Sample type 1 |               |
| B21D011-MS2  | P | TKN_351.2P   | 32.21655 mg/l | 4/8/2021 15:34 | AR | 3,19,30, R | 0.942388 | 0.00209  | 9.42596  | 0.00209  | Sample type 1 |               |
| 2103007-01   | P | TKN_351.2P   | 10.83648 mg/l | 4/8/2021 15:36 | MA | 9          | 0.16897  | -0.00014 | 0.16883  | -0.00014 | Sample type 1 |               |
| ICB          | C | TKN_351.2P   | 0.25401 mg/l  | 4/8/2021 15:37 | MA | 0          | 0.07763  | 0        | 0.07763  | 0        |               |               |
| ICV          | C | TKN_351.2P   | 5.35534 mg/l  | 4/8/2021 15:37 | MA | 0          | 0.89357  | -0.00019 | 0.89338  | -0.00019 |               |               |
| B21D011-DUP1 | P | TKN_351.2P   | 11.0004 mg/l  | 4/8/2021 15:40 | MA | 9          | 0.17093  | 0.00008  | 0.17102  | 0.00008  | Sample type 1 |               |
| B21D011-MS1  | P | TKN_351.2P   | 12.46871 mg/l | 4/8/2021 15:41 | MA | 9          | 0.18883  | -0.00013 | 0.1887   | -0.00013 | Sample type 1 |               |
| 2103007-03   | P | TKN_351.2P   | 29.33582 mg/l | 4/8/2021 15:43 | MA | 9          | 0.43048  | 0.00006  | 0.43054  | 0.00006  | Sample type 1 |               |
| ICB          | C | TKN_351.2P   | 0.26628 mg/l  | 4/8/2021 16:10 | MA | 0          | 0.07887  | -0.00004 | 0.07883  | -0.00004 |               |               |
| ICV          | C | TKN_351.2P   | 5.40695 mg/l  | 4/8/2021 16:10 | MA | 0          | 0.90493  | -0.0001  | 0.90483  | -0.0001  |               |               |
| ICB          | C | TKN_351.2P   | 0.27265 mg/l  | 4/8/2021 16:11 | MA | 0          | 0.07951  | 0.00003  | 0.07953  | 0.00003  |               |               |
| ICV          | C | TKN_351.2P   | 5.37355 mg/l  | 4/8/2021 16:13 | MA | 0          | 0.89757  | -0.00002 | 0.89755  | -0.00002 |               |               |
| 2103007-04   | P | TKN_351.2P   | 29.42627 mg/l | 4/8/2021 16:14 | MA | 9          | 0.43196  | 0.00014  | 0.43209  | 0.00014  | Sample type 1 |               |
| 2103007-05   | P | TKN_351.2P   | 29.38877 mg/l | 4/8/2021 16:16 | MA | 9          | 0.43134  | 0.01389  | 0.44523  | 0.01389  | Sample type 1 |               |
| 2103010-01   | P | TKN_351.2P   | 16.73119 mg/l | 4/8/2021 16:18 | MA | 9          | 0.24362  | -0.0001  | 0.24352  | -0.0001  | Sample type 1 |               |
| B21D011-DUP2 | P | TKN_351.2P   | 16.19201 mg/l | 4/8/2021 16:20 | MA | 9          | 0.23646  | -0.00024 | 0.23621  | -0.00024 | Sample type 1 |               |
| B21D011-MS2  | P | TKN_351.2P   | 18.34817 mg/l | 4/8/2021 16:21 | MA | 9          | 0.26552  | -0.00018 | 0.26535  | -0.00018 | Sample type 1 |               |
| 2103010-02   | P | TKN_351.2P   | 32.15372 mg/l | 4/8/2021 16:23 | AR | 9          | 0.40335  | 0.02265  | 9.426    | 0.02265  | Sample type 1 |               |
| ICB          | C | TKN_351.2P   | 0.28802 mg/l  | 4/8/2021 16:24 | MA | 0          | 0.08106  | -0.00009 | 0.08097  | -0.00009 |               |               |
| ICV          | C | TKN_351.2P   | 5.47129 mg/l  | 4/8/2021 16:24 | MA | 0          | 0.91918  | -0.00023 | 0.91895  | -0.00023 |               |               |
| ICB          | C | TKN_351.2P   | mg/l          | 4/8/2021 16:27 | AR | 1, R       |          |          |          |          |               |               |
| ICV          | C | TKN_351.2P   | mg/l          | 4/8/2021 16:27 | AR | 1, R       |          |          |          |          |               |               |
| 2103010-02   | P | TKN_351.2P   | 67.19382 mg/l | 4/8/2021 16:36 | MA | 9          | 0        | 1.21468  | -0.00029 | 1.21439  | -0.00029      | Sample type 1 |

|              |   |            |              |                |    |   |         |          |         |                       |
|--------------|---|------------|--------------|----------------|----|---|---------|----------|---------|-----------------------|
| ICB          | C | TKN_351.2P | 0.15742 mg/l | 4/8/2021 16:51 | MA | 0 | 0.06804 | 0.02974  | 0.09778 | 0.02974               |
| ICV          | C | TKN_351.2P | 5.3114 mg/l  | 4/8/2021 16:52 | MA | 0 | 0.88395 | 0.00306  | 0.88701 | 0.00306               |
| B21D011-BLK1 | P | TKN_351.2P | 0.20618 mg/l | 4/8/2021 16:53 | MA | 0 | 0       | 0.00259  | 0.07545 | 0.00259 Sample type 1 |
| ICB          | C | TKN_351.2P | 0.25533 mg/l | 4/8/2021 16:54 | MA | 0 | 0.07776 | -0.00032 | 0.07744 | -0.00032              |
| ICV          | C | TKN_351.2P | 5.36155 mg/l | 4/8/2021 16:55 | MA | 0 | 0.89493 | -0.00022 | 0.89472 | -0.00022              |



Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

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**Analytical Standard Record**

**US EPA Region 5 LSASD Analytical Services Branch**

**21D0711**

|                            |                               |                     |                       |
|----------------------------|-------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>TP - WCS (0.00 mg P/L)</u> |                     |                       |
| <b>Standard Type:</b>      | Other Solution                | <b>Expires:</b>     | May-07-21             |
| <b>Solvent:</b>            | Reagent water                 | <b>Prepared:</b>    | Apr-07-21             |
| <b>Final Volume (mls):</b> | 200                           | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Vials:</b>              | 1                             | <b>Department:</b>  | A&I                   |
| <b>Vendor:</b>             | Inorganic Ventures            | <b>Last Edit:</b>   | Apr-07-21 15:48 by NF |
| <b>Lot Number:</b>         | P2-P688018                    |                     |                       |

| Analyte                    | CAS Number | Concentration (ppm) |
|----------------------------|------------|---------------------|
| Total Dissolved Phosphorus | NA         | 0                   |
| Total Phosphorus           | NA         | 0                   |

| Parent Standards used in this standard: |                                      |           |               |           |                       |       |
|-----------------------------------------|--------------------------------------|-----------|---------------|-----------|-----------------------|-------|
| Standard                                | Description                          | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
| 21B2306                                 | Pipette (Electronic) -- 50 -1,000 uL | Feb-15-21 | Nidia Fuentes | Aug-31-21 | Apr-05-21 09:19 by AK | 0.2   |
| 20B0607                                 | Sulfuric Acid 9673-33                | Feb-06-20 | ** Vendor **  | Jul-11-21 | Mar-02-20 14:42 by CB | 0.2   |
| 21C0910                                 | TP-Stock Cal Standard (SCS)          | Apr-07-21 | Nidia Fuentes | Apr-07-22 | Apr-07-21 10:22 by NF | 0     |

**REVIEWED**

**By AK at 9:59 am, Apr 14, 2021**



## Environmental Protection Agency Region 5 Chicago Regional Laboratory

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### Analytical Standard Record US EPA Region 5 LSASD Analytical Services Branch

**21D0712**

|                            |                               |                     |                       |
|----------------------------|-------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>TP - WCS (3.00 mg P/L)</u> | <b>Expires:</b>     | May-07-21             |
| <b>Standard Type:</b>      | Other Solution                | <b>Prepared:</b>    | Apr-07-21             |
| <b>Solvent:</b>            | Reagent water                 | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Final Volume (mls):</b> | 100                           | <b>Department:</b>  | A&I                   |
| <b>Vials:</b>              | 1                             | <b>Last Edit:</b>   | Apr-07-21 15:39 by NF |
| <b>Vendor:</b>             | Inorganic Ventures            |                     |                       |
| <b>Lot Number:</b>         | P2-P688018                    |                     |                       |

| Analyte                    | CAS Number | Concentration (ppm) |
|----------------------------|------------|---------------------|
| Total Dissolved Phosphorus | NA         | 3                   |
| Total Phosphorus           | NA         | 3                   |

| Parent Standards used in this standard: |                                      |           |               |           |                       |       |
|-----------------------------------------|--------------------------------------|-----------|---------------|-----------|-----------------------|-------|
| Standard                                | Description                          | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
| 21B2307                                 | Pipette (Electronic) -- 200 -5000 uL | Feb-15-21 | Nidia Fuentes | Aug-31-21 | Apr-05-21 09:23 by AK | 3     |
| 21B2309                                 | Pipette (Electronic) -- 5 -100 uL    | Feb-15-21 | Nidia Fuentes | Aug-31-21 | Apr-05-21 09:33 by AK | 0.1   |
| 20B0607                                 | Sulfuric Acid 9673-33                | Feb-06-20 | ** Vendor **  | Jul-11-21 | Mar-02-20 14:42 by CB | 0.1   |
| 21C0910                                 | TP-Stock Cal Standard (SCS)          | Apr-07-21 | Nidia Fuentes | Apr-07-22 | Apr-07-21 10:22 by NF | 3     |

**REVIEWED**

**By AK at 9:59 am, Apr 14, 2021**



# Environmental Protection Agency Region 5

## Chicago Regional Laboratory

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### Analytical Standard Record

#### US EPA Region 5 LSASD Analytical Services Branch

21D0713

|                            |                               |                     |                       |
|----------------------------|-------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>TP - WcS (2.00 mg P/L)</u> |                     |                       |
| <b>Standard Type:</b>      | Other Solution                | <b>Expires:</b>     | May-07-21             |
| <b>Solvent:</b>            | Reagent water                 | <b>Prepared:</b>    | Apr-07-21             |
| <b>Final Volume (mls):</b> | 100                           | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Vials:</b>              | 1                             | <b>Department:</b>  | A&I                   |
| <b>Vendor:</b>             | Absolute Standards Inc.       | <b>Last Edit:</b>   | Apr-07-21 15:41 by NF |
| <b>Lot Number:</b>         | 012721                        |                     |                       |

| Analyte                    | CAS Number | Concentration (ppm) |
|----------------------------|------------|---------------------|
| Total Dissolved Phosphorus | NA         | 2                   |
| Total Kjeldahl Nitrogen    | NA         | 2                   |
| Total Phosphorus           | NA         | 2                   |

| Parent Standards used in this standard: |                                      |           |               |           |                       |       |
|-----------------------------------------|--------------------------------------|-----------|---------------|-----------|-----------------------|-------|
| Standard                                | Description                          | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
| 21B2309                                 | Pipette (Electronic) -- 5 -100 uL    | Feb-15-21 | Nidia Fuentes | Aug-31-21 | Apr-05-21 09:33 by AK | 0.1   |
| 21B2306                                 | Pipette (Electronic) -- 50 -1,000 uL | Feb-15-21 | Nidia Fuentes | Aug-31-21 | Apr-05-21 09:19 by AK | 0.2   |
| 20B0607                                 | Sulfuric Acid 9673-33                | Feb-06-20 | ** Vendor **  | Jul-11-21 | Mar-02-20 14:42 by CB | 0.1   |
| 21C1801                                 | TP&TKN Stock Control Std.            | Mar-16-21 | Nidia Fuentes | Jan-07-23 | Mar-18-21 09:14 by NF | 0.2   |

**REVIEWED**

**By AK at 10:02 am, Apr 14, 2021**



Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605  
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**Analytical Standard Record**

**US EPA Region 5 LSASD Analytical Services Branch**

**21D0714**

|                            |                               |                     |                       |
|----------------------------|-------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>TP - MRL (0.15 mg P/L)</u> |                     |                       |
| <b>Standard Type:</b>      | Reference Material            | <b>Expires:</b>     | May-07-21             |
| <b>Solvent:</b>            | Reagent water                 | <b>Prepared:</b>    | Apr-07-21             |
| <b>Final Volume (mls):</b> | 100                           | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Vials:</b>              | 1                             | <b>Department:</b>  | A&I                   |
| <b>Vendor:</b>             | Inorganic Ventures            | <b>Last Edit:</b>   | Apr-07-21 15:43 by NF |
| <b>Lot Number:</b>         | P2-P688018                    |                     |                       |

| Analyte                    | CAS Number | Concentration (ppm) | SRM Control Limits |
|----------------------------|------------|---------------------|--------------------|
| Total Dissolved Phosphorus | NA         | 0.15                | 0-200              |
| Total Phosphorus           | NA         | 0.15                | 0-200              |

| Parent Standards used in this standard: |                                      |           |               |           |                       |       |
|-----------------------------------------|--------------------------------------|-----------|---------------|-----------|-----------------------|-------|
| Standard                                | Description                          | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
| 21B2309                                 | Pipette (Electronic) -- 5 -100 uL    | Feb-15-21 | Nidia Fuentes | Aug-31-21 | Apr-05-21 09:33 by AK | 0.15  |
| 21B2306                                 | Pipette (Electronic) -- 50 -1,000 uL | Feb-15-21 | Nidia Fuentes | Aug-31-21 | Apr-05-21 09:19 by AK | 0.1   |
| 20B0607                                 | Sulfuric Acid 9673-33                | Feb-06-20 | ** Vendor **  | Jul-11-21 | Mar-02-20 14:42 by CB | 0.1   |
| 21C0910                                 | TP-Stock Cal Standard (SCS)          | Apr-07-21 | Nidia Fuentes | Apr-07-22 | Apr-07-21 10:22 by NF | 0.15  |

**REVIEWED**

**By AK at 9:59 am, Apr 14, 2021**





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**Analytical Standard Record**

**US EPA Region 5 LSASD Analytical Services Branch**

**21D0715**

|                            |                                    |                     |                       |
|----------------------------|------------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>TP-Stock Cal Standard (SCS)</u> |                     |                       |
| <b>Standard Type:</b>      | Analyte Spike                      | <b>Expires:</b>     | Apr-07-22             |
| <b>Solvent:</b>            | NA                                 | <b>Prepared:</b>    | Apr-07-21             |
| <b>Final Volume (mls):</b> | 125                                | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Vials:</b>              | 1                                  | <b>Department:</b>  | A&I                   |
| <b>Vendor:</b>             | Inorganic Ventures                 | <b>Last Edit:</b>   | Apr-13-21 14:43 by NF |
| <b>Lot Number:</b>         | P2-P688018                         |                     |                       |

Enter dates opened of each bottle under User-Defined Fields.

NOTE: Bottle expires one year after the package is opened (See date when opened) or the Expiration date 04/07/2022, whichever one is sooner.

| Analyte                    | CAS Number | Concentration (ppm) |
|----------------------------|------------|---------------------|
| Total Dissolved Phosphorus | NA         | 100                 |
| Total Phosphorus           | NA         | 100                 |

***REVIEWED***

***By AK at 9:58 am, Apr 14, 2021***

## 1.0 ACCREDITATION / REGISTRATION

**INORGANIC VENTURES** is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).



## 2.0 PRODUCT DESCRIPTION

Product Code: Single Analyte Mass Spec Solution  
 Catalog Number: MSP-100PPM  
 Lot Number: P2-P688018  
 Matrix: H<sub>2</sub>O  
 Value / Analyte(s): 100 µg/mL ea:  
 Phosphorus  
 Starting Material: H<sub>3</sub>PO<sub>4</sub>  
 Starting Material Lot#: 108587  
 Starting Material Purity: 100.0000%

**REVIEWED**

**By AK at 9:58 am, Apr 14, 2021**

## 3.0 CERTIFIED VALUES AND UNCERTAINTIES

**Certified Value:** 100.06 ± 0.70 µg/mL  
**Density:** 0.998 g/mL (measured at 20 ± 4 °C)

### Assay Information:

| ANALYTE | METHOD      | NIST SRM# | SRM LOT# |
|---------|-------------|-----------|----------|
| P       | ICP Assay   | 3139a     | 060717   |
| P       | Acidimetric | 84L       | 84L      |

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

#### Characterization of CRM/RM by Two or More Methods

Certified Value,  $X_{CRM/RM}$ , where two or more methods of characterization are used is the weighted mean of the results:

$$X_{CRM/RM} = \sum(w_i)(X_i)$$

$X_i$  = mean of Assay Method i with standard uncertainty  $u_{char i}$

$w_i$  = the weighting factors for each method calculated using the inverse square of the variance:

$$w_i = (1/u_{char i}^2) / (\sum(1/u_{char i}^2))$$

$$CRM/RM \text{ Expanded Uncertainty } (\pm) = U_{CRM/RM} = k(u_{char}^2 + u_{bb}^2 + u_{Its}^2 + u_{ts}^2)^{1/2}$$

k = coverage factor = 2

$u_{char} = [\sum(w_i)^2(u_{char i}^2)]^{1/2}$  where  $u_{char i}$  are the errors from each characterization method

$u_{bb}$  = bottle to bottle homogeneity standard uncertainty

$u_{Its}$  = long term stability standard uncertainty (storage)

$u_{ts}$  = transport stability standard uncertainty

#### Characterization of CRM/RM by One Method

Certified Value,  $X_{CRM/RM}$ , where one method of characterization is used is the mean of individual results:

$$X_{CRM/RM} = (X_a)(u_{char a})$$

$X_a$  = mean of Assay Method A with

$u_{char a}$  = the standard uncertainty of characterization Method A

$$CRM/RM \text{ Expanded Uncertainty } (\pm) = U_{CRM/RM} = k(u_{char a}^2 + u_{bb}^2 + u_{Its}^2 + u_{ts}^2)^{1/2}$$

k = coverage factor = 2

$u_{char a}$  = the errors from characterization

$u_{bb}$  = bottle to bottle homogeneity standard uncertainty

$u_{Its}$  = long term stability standard uncertainty (storage)

$u_{ts}$  = transport stability standard uncertainty

## 4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

#### 4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

#### 4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

#### 4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

### 5.0 TRACE METALLIC IMPURITIES (TMI ) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

|   |    |   |          |   |    |   |          |   |    |   |          |   |    |   |          |   |    |   |          |
|---|----|---|----------|---|----|---|----------|---|----|---|----------|---|----|---|----------|---|----|---|----------|
| M | Ag | < | 0.000040 | M | Eu | < | 0.000040 | O | Na | < | 0.000047 | M | Se | < | 0.003405 | M | Zn | < | 0.001054 |
| M | Al | < | 0.003405 | O | Fe | < | 0.000008 | M | Nb | < | 0.000243 | O | Si | < | 0.014924 | M | Zr | < | 0.001054 |
| M | As | < | 0.000324 | M | Ga | < | 0.000040 | M | Nd | < | 0.000040 | M | Sm | < | 0.000040 |   |    |   |          |
| M | Au | < | 0.000040 | M | Gd | < | 0.000040 | M | Ni | < | 0.003000 | M | Sn | < | 0.000040 |   |    |   |          |
| M | B  | < | 0.001216 | M | Ge | < | 0.000081 | M | Os | < | 0.000040 | M | Sr | < | 0.000040 |   |    |   |          |
| O | Ba | < | 0.000639 | M | Hf | < | 0.000040 | s | P  | < |          | M | Ta | < | 0.000040 |   |    |   |          |
| M | Be | < | 0.000121 | M | Hg | < | 0.000081 | M | Pb | < | 0.000040 | M | Tb | < | 0.000040 |   |    |   |          |
| M | Bi | < | 0.000040 | M | Ho | < | 0.000040 | M | Pd | < | 0.000040 | M | Te | < | 0.000324 |   |    |   |          |
| O | Ca | < | 0.000019 | M | In | < | 0.000040 | M | Pr | < | 0.000040 | M | Th | < | 0.000040 |   |    |   |          |
| M | Cd | < | 0.000040 | M | Ir | < | 0.000040 | M | Pt | < | 0.000040 | O | Ti | < | 0.001066 |   |    |   |          |
| M | Ce | < | 0.000040 | O | K  | < | 0.010660 | M | Rb | < | 0.000040 | M | Tl | < | 0.000040 |   |    |   |          |
| M | Co | < | 0.000081 | M | La | < | 0.000040 | M | Re | < | 0.000040 | M | Tm | < | 0.000040 |   |    |   |          |
| M | Cr | < | 0.000004 | O | Li | < | 0.000106 | M | Rh | < | 0.000040 | M | U  | < | 0.000040 |   |    |   |          |
| M | Cs | < | 0.000040 | M | Lu | < | 0.000040 | M | Ru | < | 0.000405 | M | V  | < | 0.000040 |   |    |   |          |
| O | Cu | < | 0.003837 | O | Mg | < | 0.000001 | O | S  | < | 0.031980 | M | W  | < | 0.000405 |   |    |   |          |
| M | Dy | < | 0.000040 | M | Mn | < | 0.000081 | M | Sb | < | 0.000002 | M | Y  | < | 0.000040 |   |    |   |          |
| M | Er | < | 0.000040 | M | Mo | < | 0.001216 | O | Sc | < | 0.001066 | M | Yb | < | 0.000040 |   |    |   |          |

M - Checked by ICP-MS      O - Checked by ICP-OES      i - Spectral Interference  
n - Not Checked For      s - Solution Standard Element

### 6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

### 7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

#### 7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit [www.inorganicventures.com/TCT](http://www.inorganicventures.com/TCT)

**Atomic Weight; Valence; Coordination Number; Chemical Form in Solution** - 30.97 +5 6  $\text{O}=\text{P}(\text{O})(\text{OH})_2$  -  
**Chemical Compatibility** -Soluble in HCl, HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub> and HF aqueous matrices water and NH<sub>4</sub>OH. Stable with all metals and inorganic anions at low to moderate ppm levels under acidic conditions; precipitates with several metals occur in neutral media at higher concentrations.  
**Stability** - 2-100 ppb levels- stability unknown - in 1% HNO<sub>3</sub> / LDPE container. 1-10,000 ppm solutions chemically stable for years in 0-1% HNO<sub>3</sub> / LDPE container.  
**P Containing Samples (Preparation and Solution)** -Metal (Never found free in nature ); Oxides (Water soluble); Ores (Naturally occurring only as the phosphate except for a few rare minerals found in meteorites - Na<sub>2</sub>CO<sub>3</sub> fusion in Pt0); Organic Matrices (Dry ash mixed with Na<sub>2</sub>CO<sub>3</sub> in Pt0 at 450EC then increase heat to 1000EC to fuse; or perform an H<sub>2</sub>SO<sub>4</sub> / H<sub>2</sub>O<sub>2</sub> acid digestion ).

**Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):**

| Technique/Line     | Estimated D.L.     | Order | Interferences (underlined indicates severe)            |
|--------------------|--------------------|-------|--------------------------------------------------------|
| ICP-MS 31 amu      | 6000+ ppt          | n/a   | 15N21H, 15N16O,<br>14N17O, 13C18O,<br>12C18O1H, 62Ni2+ |
| ICP-OES 177.495 nm | 0.01 / 0.005 µg/mL | 1     | Cu, Hf                                                 |
| ICP-OES 178.287 nm | 0.03 / 0.002 µg/mL | 1     | I                                                      |
| ICP-OES 213.618 nm | 0.08 / 0.03 µg/mL  | 1     | Cu, Mo                                                 |

## 8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

## 9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

## 10.0 QUALITY STANDARD DOCUMENTATION

### 10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

### 10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

### 10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

## 11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

### 11.1 Certification Issue Date

February 07, 2020

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

### 11.2 Lot Expiration Date

- **February 07, 2024**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

**11.3 Period of Validity**

- Sealed TCT Bag Open Date: \_\_\_\_\_

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

**12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS****Certificate Approved By:**

Michael Booth  
Manager, Quality Control

**Certifying Officer:**

Paul Gaines  
CEO, Senior Technical Director





Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

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**Analytical Standard Record**

**US EPA Region 5 LSASD Analytical Services Branch**

**21D0803**

**Description:** TP - WCS (0.15 mg P/L)

**Standard Type:** Other Solution

**Solvent:** Blank:21D0711

**Final Volume (mls):** 2

**Vials:** 1

**Vendor:** Inorganic Ventures

**Lot Number:** P2-P688018

**Expires:** Apr-09-21

**Prepared:** Apr-08-21

**Prepared By:** Nidia Fuentes

**Department:** A&I

**Last Edit:** Apr-12-21 08:37 by NF

Prepared by instrument (DA-3)

**REVIEWED**

**By AK at 9:56 am, Apr 14, 2021**

| Analyte                    | CAS Number | Concentration (ppm) |
|----------------------------|------------|---------------------|
| Total Dissolved Phosphorus | NA         | 0.15                |
| Total Phosphorus           | NA         | 0.15                |

| Parent Standards used in this standard: |                        |           |               |           |                       |       |
|-----------------------------------------|------------------------|-----------|---------------|-----------|-----------------------|-------|
| Standard                                | Description            | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
| 21D0712                                 | TP - WCS (3.00 mg P/L) | Apr-07-21 | Nidia Fuentes | May-07-21 | Apr-07-21 15:39 by NF | 0.1   |





## Environmental Protection Agency Region 5 Chicago Regional Laboratory

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### Analytical Standard Record

US EPA Region 5 LSASD Analytical Services Branch

21D0804

**Description:** TP - WCS (0.3 mg P/L)  
**Standard Type:** Other Solution  
**Solvent:** Blank: 21D0711  
**Final Volume (mls):** 2  
**Vials:** 1  
**Vendor:** Inorganic Ventures  
**Lot Number:** P2-P688018

**Expires:** Apr-09-21  
**Prepared:** Apr-08-21  
**Prepared By:** Nidia Fuentes  
**Department:** A&I  
**Last Edit:** Apr-12-21 08:37 by NF

Prepared by instrument (DA-3)

**REVIEWED**

**By AK at 9:56 am, Apr 14, 2021**

| Analyte                    | CAS Number | Concentration (ppm) |
|----------------------------|------------|---------------------|
| Total Dissolved Phosphorus | NA         | 0.3                 |
| Total Phosphorus           | NA         | 0.3                 |

#### Parent Standards used in this standard:

| Standard | Description            | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
|----------|------------------------|-----------|---------------|-----------|-----------------------|-------|
| 21D0712  | TP - WCS (3.00 mg P/L) | Apr-07-21 | Nidia Fuentes | May-07-21 | Apr-07-21 15:39 by NF | 0.2   |



## Environmental Protection Agency Region 5 Chicago Regional Laboratory

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### Analytical Standard Record US EPA Region 5 LSASD Analytical Services Branch

**21D0805**

|                            |                               |                     |                       |
|----------------------------|-------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>TP - WCS (0.75 mg P/L)</u> | <b>Expires:</b>     | Apr-09-21             |
| <b>Standard Type:</b>      | Other Solution                | <b>Prepared:</b>    | Apr-08-21             |
| <b>Solvent:</b>            | Blank: 21D0711                | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Final Volume (mls):</b> | 2                             | <b>Department:</b>  | A&I                   |
| <b>Vials:</b>              | 1                             | <b>Last Edit:</b>   | Apr-12-21 08:37 by NF |
| <b>Vendor:</b>             | Inorganic Ventures            |                     |                       |
| <b>Lot Number:</b>         | P2-P688018                    |                     |                       |

Prepared by instrument (DA-3)

**REVIEWED**  
**By AK at 9:57 am, Apr 14, 2021**

| Analyte                    | CAS Number | Concentration (ppm) |
|----------------------------|------------|---------------------|
| Total Dissolved Phosphorus | NA         | 0.75                |
| Total Phosphorus           | NA         | 0.75                |

| Parent Standards used in this standard: |                        |           |               |           |                       |       |
|-----------------------------------------|------------------------|-----------|---------------|-----------|-----------------------|-------|
| Standard                                | Description            | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
| 21D0712                                 | TP - WCS (3.00 mg P/L) | Apr-07-21 | Nidia Fuentes | May-07-21 | Apr-07-21 15:39 by NF | 0.5   |



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**Analytical Standard Record**

**US EPA Region 5 LSASD Analytical Services Branch**

**21D0806**

|                            |                              |                     |                       |
|----------------------------|------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>TP - WCS (1.0 mg P/L)</u> |                     |                       |
| <b>Standard Type:</b>      | Other Solution               | <b>Expires:</b>     | Apr-09-21             |
| <b>Solvent:</b>            | Blank:21D0711                | <b>Prepared:</b>    | Apr-08-21             |
| <b>Final Volume (mls):</b> | 2                            | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Vials:</b>              | 1                            | <b>Department:</b>  | A&I                   |
| <b>Vendor:</b>             | Inorganic Ventures           | <b>Last Edit:</b>   | Apr-12-21 08:38 by NF |
| <b>Lot Number:</b>         | P2-P688018                   |                     |                       |

Prepared by instrument (DA-3)

**REVIEWED**  
*By AK at 9:57 am, Apr 14, 2021*

| Analyte                    | CAS Number | Concentration (ppm) |
|----------------------------|------------|---------------------|
| Total Dissolved Phosphorus | NA         | 1                   |
| Total Phosphorus           | NA         | 1                   |

**Parent Standards used in this standard:**

| Standard | Description            | Prepared  | Prepared By   | Expires   | Last Edit             | (mls)     |
|----------|------------------------|-----------|---------------|-----------|-----------------------|-----------|
| 21D0712  | TP - WCS (3.00 mg P/L) | Apr-07-21 | Nidia Fuentes | May-07-21 | Apr-07-21 15:39 by NF | 0.6666666 |



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**Analytical Standard Record**

**US EPA Region 5 LSASD Analytical Services Branch**

**21D0807**

|                            |                              |                     |                       |
|----------------------------|------------------------------|---------------------|-----------------------|
| <b>Description:</b>        | <u>TP - WCS (1.5 mg P/L)</u> |                     |                       |
| <b>Standard Type:</b>      | Other Solution               | <b>Expires:</b>     | Apr-09-21             |
| <b>Solvent:</b>            | Blank:21D0711                | <b>Prepared:</b>    | Apr-08-21             |
| <b>Final Volume (mls):</b> | 2                            | <b>Prepared By:</b> | Nidia Fuentes         |
| <b>Vials:</b>              | 1                            | <b>Department:</b>  | A&I                   |
| <b>Vendor:</b>             | Inorganic Ventures           | <b>Last Edit:</b>   | Apr-12-21 08:38 by NF |
| <b>Lot Number:</b>         | P2-P688018                   |                     |                       |

Prepared by instrument (DA-3)

**REVIEWED**

**By AK at 10:00 am, Apr 14, 2021**

| Analyte                    | CAS Number | Concentration (ppm) |
|----------------------------|------------|---------------------|
| Total Dissolved Phosphorus | NA         | 1.5                 |
| Total Phosphorus           | NA         | 1.5                 |

**Parent Standards used in this standard:**

| Standard | Description            | Prepared  | Prepared By   | Expires   | Last Edit             | (mls) |
|----------|------------------------|-----------|---------------|-----------|-----------------------|-------|
| 21D0712  | TP - WCS (3.00 mg P/L) | Apr-07-21 | Nidia Fuentes | May-07-21 | Apr-07-21 15:39 by NF | 1     |

# ANALYSIS REAGENTS/STANDARDS

21B2417



Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

**Reagent Preparation Bench Sheet**

Parameter / SOP #: TP / AIG034B VER#7

Prepared by: Nidia Fuentes

Reagent: TP-NaCl Solution

Preparation Date: Feb-24-21

LIMS ID: 21B2417

Expiration Date: Feb-24-22

| Chemical Name (Formula) | LIMS ID | Mass or Volume<br>(specify units) |
|-------------------------|---------|-----------------------------------|
| Sodium Chloride (NaCl)  | 19C1203 | 4.0470g                           |
|                         |         |                                   |
|                         |         |                                   |
|                         |         |                                   |
|                         |         |                                   |

Total Volume : 100 mL

**Comments :**

See user defined fields for details  
Balance#17

**REVIEWED**

**By AK at 6:43 am, Mar 04, 2021**

**Analyst Signature:**

*Nidia Fuentes*



# Balance Check

BALANCE ID: #17

DATE: 2/24/2021

ANALYST: Colin Breslin

WEIGHT SET ID: TROEMNER S/N: 400026116

WGT SET # CONFIRMED: YES

WEIGHT SET 2 ID: \_\_\_\_\_

WGT SET # CONFIRMED: \_\_\_\_\_

INITIAL & DATE: CB 2/24/2021

\*NOTE: Confirm # of weights in weight set before and after use above. # of weights in weight sets are listed at bottom of page. Create IR if find that weights are missing. Note any weights that are missing in the comments field below and contact QAO to remove weight(s) from Qualtrax records.

| Analytical Balance Tolerance Limits |                   |          |          |
|-------------------------------------|-------------------|----------|----------|
| Standard Weight (g)                 | Actual Weight (g) | LCL (g)  | UCL (g)  |
| 0.0100                              | 0.0100            | 0.0099   | 0.0101   |
| 0.0200                              |                   | 0.0199   | 0.0201   |
| 0.0200*                             |                   | 0.0199   | 0.0201   |
| 0.0500                              |                   | 0.0499   | 0.0501   |
| 0.1000                              | 0.1000            | 0.0999   | 0.1001   |
| 0.2000                              |                   | 0.1999   | 0.2001   |
| 0.2000*                             |                   | 0.1999   | 0.2001   |
| 0.5000                              | 0.5000            | 0.4999   | 0.5001   |
| 1.0000                              | 1.0000            | 0.9999   | 1.0001   |
| 2.0000                              |                   | 1.9999   | 2.0001   |
| 2.0000*                             |                   | 1.9999   | 2.0001   |
| 5.0000                              | 5.0000            | 4.9999   | 5.0001   |
| 10.0000                             | 10.0000           | 9.9999   | 10.0001  |
| 20.0000                             |                   | 19.9999  | 20.0001  |
| 20.0000*                            |                   | 19.9999  | 20.0001  |
| 50.0000                             | 50.0001           | 49.9999  | 50.0001  |
| 100.0000                            | 100.0000          | 99.9997  | 100.0003 |
| 200.0000                            | 200.0001          | 199.9995 | 200.0005 |

| Top-Loading Balance Tolerance Limits |                   |         |         |
|--------------------------------------|-------------------|---------|---------|
| Standard Weight (g)                  | Actual Weight (g) | LCL (g) | UCL (g) |
| 0.01                                 |                   | 0.00    | 0.02    |
| 0.02                                 |                   | 0.01    | 0.03    |
| 0.02*                                |                   | 0.01    | 0.03    |
| 0.05                                 |                   | 0.04    | 0.06    |
| 0.10                                 |                   | 0.09    | 0.11    |
| 0.20                                 |                   | 0.19    | 0.21    |
| 0.20*                                |                   | 0.19    | 0.21    |
| 0.50                                 |                   | 0.49    | 0.51    |
| 1.00                                 |                   | 0.99    | 1.01    |
| 2.00                                 |                   | 1.99    | 2.01    |
| 2.00*                                |                   | 1.99    | 2.01    |
| 5.00                                 |                   | 4.99    | 5.01    |
| 10.00                                |                   | 9.99    | 10.01   |
| 20.00                                |                   | 19.99   | 20.01   |
| 20.00*                               |                   | 19.99   | 20.01   |
| 50.00                                |                   | 49.99   | 50.01   |
| 100.00                               |                   | 99.99   | 100.01  |
| 200.00                               |                   | 199.99  | 200.01  |
| 300.00                               |                   | 299.99  | 300.01  |
| 500.00                               |                   | 499.99  | 500.01  |
| 1000.00                              |                   | 999.99  | 1000.01 |

**Weight Sets:**

TROEMNER S/N: 4000017548: 21 weights

TROEMNER S/N: 4000020557: 16 weights

Denver Inst Co S/N: 01-25360-3: 1 weight

TROEMNER S/N: 06679: 5 weights

TROEMNER S/N: 400026116: 22 weights

COMMENTS:

# ANALYSIS REAGENTS/STANDARDS

21B2421



Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

Print Date: 2/24/2021

536 South Clark Street, Chicago, IL 60605  
 Phone: (312) 353-8370 Fax: (312) 886-2591

**Reagent Preparation Bench Sheet**

Parameter / SOP #: TP / AIG034B VER# 7

Prepared by: Nidia Fuentes

Reagent: TP-MolybdateAntimonySolution

Preparation Date: Feb-24-21

LIMS ID: 21B2421

Expiration Date: Feb-24-22

| Chemical Name (Formula)                                                                | LIMS ID                                                                                               | Mass or Volume<br>(specify units) |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-----------------------------------|
| Ammonium Molybdate tetrahydrate *                                                      | 19K1225                                                                                               | 0.8044g                           |
| Potassium antimonyl tartrate trihydrate **                                             | 19K0602                                                                                               | 0.0240g                           |
| * [(NH <sub>4</sub> ) <sub>6</sub> Mo <sub>7</sub> O <sub>24</sub> *4H <sub>2</sub> O] | ** [K <sub>2</sub> (C <sub>4</sub> H <sub>2</sub> O <sub>6</sub> Sb) <sub>2</sub> *3H <sub>2</sub> O] |                                   |
|                                                                                        |                                                                                                       |                                   |
|                                                                                        |                                                                                                       |                                   |

Total Volume : 100 mL

Comments :

Balance ID: 17

**REVIEWED**

**By AK at 6:48 am, Mar 04, 2021**

Analyst Signature:

*Nidia Fuentes*

# Balance Check

BALANCE ID: #17

DATE: 2/24/2021

ANALYST: Colin Breslin

WEIGHT SET ID: TROEMNER S/N: 400026116

WGT SET # CONFIRMED: YES

WEIGHT SET 2 ID: \_\_\_\_\_

WGT SET # CONFIRMED: \_\_\_\_\_

INITIAL & DATE: CB 2/24/2021

\*NOTE: Confirm # of weights in weight set before and after use above. # of weights in weight sets are listed at bottom of page. Create IR if find that weights are missing. Note any weights that are missing in the comments field below and contact QAO to remove weight(s) from Qualtrax records.

| Analytical Balance Tolerance Limits |                   |          |          |
|-------------------------------------|-------------------|----------|----------|
| Standard Weight (g)                 | Actual Weight (g) | LCL (g)  | UCL (g)  |
| 0.0100                              | 0.0100            | 0.0099   | 0.0101   |
| 0.0200                              |                   | 0.0199   | 0.0201   |
| 0.0200*                             |                   | 0.0199   | 0.0201   |
| 0.0500                              |                   | 0.0499   | 0.0501   |
| 0.1000                              | 0.1000            | 0.0999   | 0.1001   |
| 0.2000                              |                   | 0.1999   | 0.2001   |
| 0.2000*                             |                   | 0.1999   | 0.2001   |
| 0.5000                              | 0.5000            | 0.4999   | 0.5001   |
| 1.0000                              | 1.0000            | 0.9999   | 1.0001   |
| 2.0000                              |                   | 1.9999   | 2.0001   |
| 2.0000*                             |                   | 1.9999   | 2.0001   |
| 5.0000                              | 5.0000            | 4.9999   | 5.0001   |
| 10.0000                             | 10.0000           | 9.9999   | 10.0001  |
| 20.0000                             |                   | 19.9999  | 20.0001  |
| 20.0000*                            |                   | 19.9999  | 20.0001  |
| 50.0000                             | 50.0001           | 49.9999  | 50.0001  |
| 100.0000                            | 100.0000          | 99.9997  | 100.0003 |
| 200.0000                            | 200.0001          | 199.9995 | 200.0005 |

| Top-Loading Balance Tolerance Limits |                   |         |         |
|--------------------------------------|-------------------|---------|---------|
| Standard Weight (g)                  | Actual Weight (g) | LCL (g) | UCL (g) |
| 0.01                                 |                   | 0.00    | 0.02    |
| 0.02                                 |                   | 0.01    | 0.03    |
| 0.02*                                |                   | 0.01    | 0.03    |
| 0.05                                 |                   | 0.04    | 0.06    |
| 0.10                                 |                   | 0.09    | 0.11    |
| 0.20                                 |                   | 0.19    | 0.21    |
| 0.20*                                |                   | 0.19    | 0.21    |
| 0.50                                 |                   | 0.49    | 0.51    |
| 1.00                                 |                   | 0.99    | 1.01    |
| 2.00                                 |                   | 1.99    | 2.01    |
| 2.00*                                |                   | 1.99    | 2.01    |
| 5.00                                 |                   | 4.99    | 5.01    |
| 10.00                                |                   | 9.99    | 10.01   |
| 20.00                                |                   | 19.99   | 20.01   |
| 20.00*                               |                   | 19.99   | 20.01   |
| 50.00                                |                   | 49.99   | 50.01   |
| 100.00                               |                   | 99.99   | 100.01  |
| 200.00                               |                   | 199.99  | 200.01  |
| 300.00                               |                   | 299.99  | 300.01  |
| 500.00                               |                   | 499.99  | 500.01  |
| 1000.00                              |                   | 999.99  | 1000.01 |

**Weight Sets:**

TROEMNER S/N: 4000017548: 21 weights

TROEMNER S/N: 4000020557: 16 weights

Denver Inst Co S/N: 01-25360-3: 1 weight

TROEMNER S/N: 06679: 5 weights

TROEMNER S/N: 400026116: 22 weights

COMMENTS:

# ANALYSIS REAGENTS/STANDARDS

21D0801



Environmental Protection Agency Region 5  
**Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605  
Phone:(312)353-8370 Fax:(312)886-2591

**Reagent Preparation Bench Sheet**

Table of Contents

Print Date: 4/8/2021

Parameter / SOP #: Toal Phosphorus/ AIG034B ver#7

Prepared by: Nidia Fuentes

Reagent: TP- Ascorbic Acid

Preparation Date: Apr-08-21

LIMS ID: 21D0801

Expiration Date: Apr-22-21

| Chemical Name (Formula)                                       | LIMS ID | Mass or Volume<br>(specify units) |
|---------------------------------------------------------------|---------|-----------------------------------|
| Ascorbic acid (C <sub>6</sub> H <sub>8</sub> O <sub>6</sub> ) | 16K1407 | 6.0316                            |
| Acetone ((CH <sub>3</sub> ) <sub>2</sub> CO)                  | 19J0101 | 2 mL                              |
|                                                               |         |                                   |
|                                                               |         |                                   |
|                                                               |         |                                   |

Total Volume : 100 mL

Comments : Balance #17

**REVIEWED**

**By AK at 9:57 am, Apr 14, 2021**

Analyst Signature:

*Nidia Fuentes*



## Balance Check

BALANCE ID: #17

DATE: 4/8/2021

ANALYST: Nidia Fuentes

WEIGHT SET ID: TROEMNER S/N: 400026116

WGT SET # CONFIRMED: YES

WEIGHT SET 2 ID:

WGT SET # CONFIRMED: \_\_\_\_\_

INITIAL & DATE: 77 4/8/2021

\*NOTE: Confirm # of weights in weight set before and after use above. # of weights in weight sets are listed at bottom of page. Create IR if find that weights are missing. Note any weights that are missing in the comments field below and contact QAO to remove weight(s) from Qualtrax records.

| Analytical Balance Tolerance Limits |                   |          |          |
|-------------------------------------|-------------------|----------|----------|
| Standard Weight (g)                 | Actual Weight (g) | LCL (g)  | UCL (g)  |
| 0.0100                              | 0.0100            | 0.0099   | 0.0101   |
| 0.0200                              |                   | 0.0199   | 0.0201   |
| 0.0200*                             |                   | 0.0199   | 0.0201   |
| 0.0500                              |                   | 0.0499   | 0.0501   |
| 0.1000                              | 0.1000            | 0.0999   | 0.1001   |
| 0.2000                              |                   | 0.1999   | 0.2001   |
| 0.2000*                             |                   | 0.1999   | 0.2001   |
| 0.5000                              |                   | 0.4999   | 0.5001   |
| 1.0000                              | 1.0000            | 0.9999   | 1.0001   |
| 2.0000                              |                   | 1.9999   | 2.0001   |
| 2.0000*                             |                   | 1.9999   | 2.0001   |
| 5.0000                              | 5.0000            | 4.9999   | 5.0001   |
| 10.0000                             | 9.9999            | 9.9999   | 10.0001  |
| 20.0000                             | 20.0000           | 19.9999  | 20.0001  |
| 20.0000*                            |                   | 19.9999  | 20.0001  |
| 50.0000                             | 50.0001           | 49.9999  | 50.0001  |
| 100.0000                            | 100.0000          | 99.9997  | 100.0003 |
| 200.0000                            | 199.9998          | 199.9995 | 200.0005 |

| Top-Loading Balance Tolerance Limits |                   |         |         |
|--------------------------------------|-------------------|---------|---------|
| Standard Weight (g)                  | Actual Weight (g) | LCL (g) | UCL (g) |
| 0.01                                 |                   | 0.00    | 0.02    |
| 0.02                                 |                   | 0.01    | 0.03    |
| 0.02*                                |                   | 0.01    | 0.03    |
| 0.05                                 |                   | 0.04    | 0.06    |
| 0.10                                 |                   | 0.09    | 0.11    |
| 0.20                                 |                   | 0.19    | 0.21    |
| 0.20*                                |                   | 0.19    | 0.21    |
| 0.50                                 |                   | 0.49    | 0.51    |
| 1.00                                 |                   | 0.99    | 1.01    |
| 2.00                                 |                   | 1.99    | 2.01    |
| 2.00*                                |                   | 1.99    | 2.01    |
| 5.00                                 |                   | 4.99    | 5.01    |
| 10.00                                |                   | 9.99    | 10.01   |
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| 20.00*                               |                   | 19.99   | 20.01   |
| 50.00                                |                   | 49.99   | 50.01   |
| 100.00                               |                   | 99.99   | 100.01  |
| 200.00                               |                   | 199.99  | 200.01  |
| 300.00                               |                   | 299.99  | 300.01  |
| 500.00                               |                   | 499.99  | 500.01  |
| 1000.00                              |                   | 999.99  | 1000.01 |

**Weight Sets:**

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TROEMNER S/N: 4000020557: 21 weights

Denver Inst Co S/N: 01-25360-3A: 1 weight

TROEMNER S/N: 06679: 5 weights

TROEMNER S/N: 400026116: 22 weights

COMMENTS:

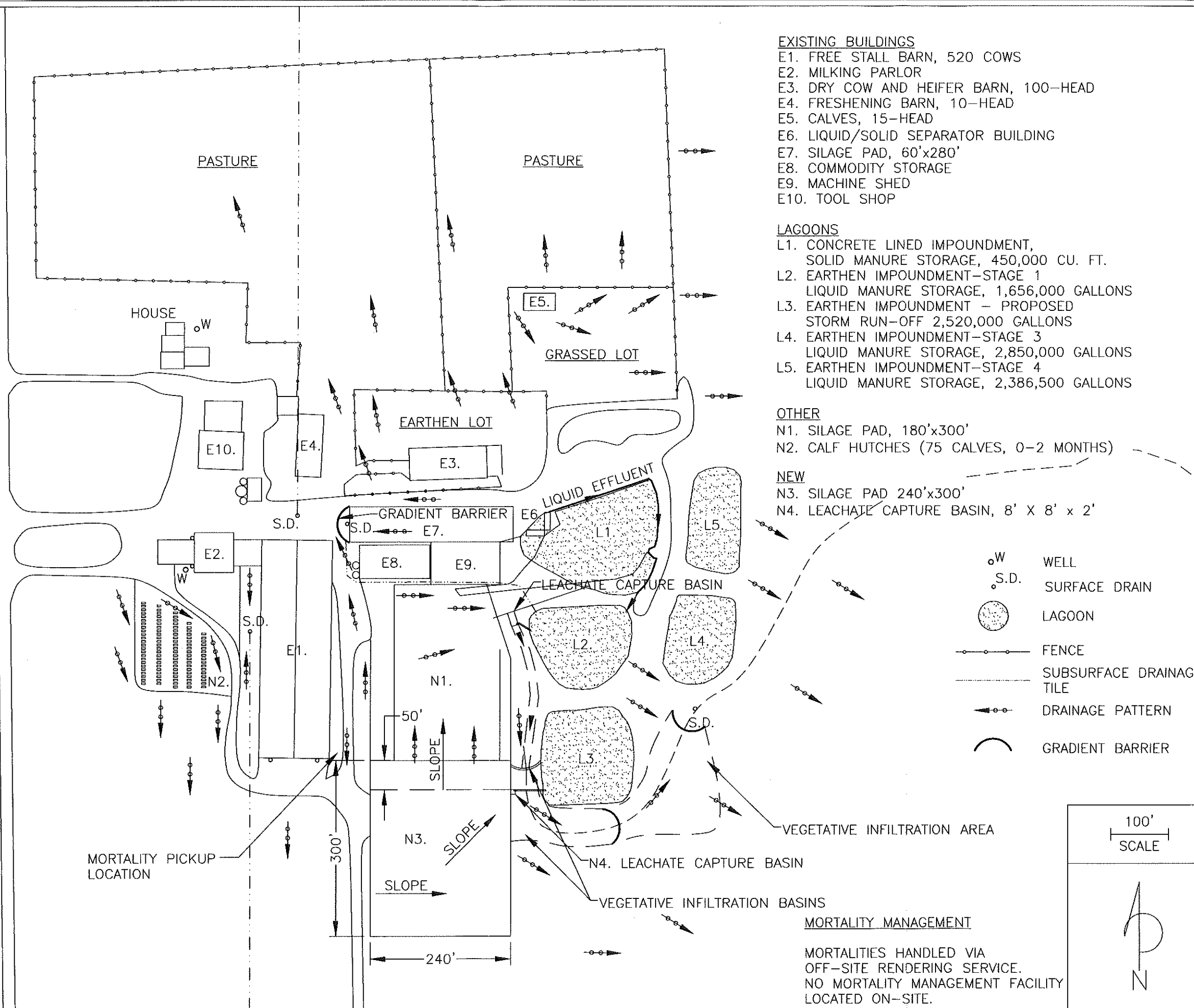
## **ATTACHMENT D**

RECEIVED

MAY 30 2017

DEPARTMENT OF  
ENVIRONMENTAL MANAGEMENT  
OFFICE OF LAND QUALITY

NORTH S.R. 19



# EXISTING BUILDINGS

- E1. FREE STALL BARN, 520 COWS
- E2. MILKING PARLOR
- E3. DRY COW AND HEIFER BARN, 100-HEAD
- E4. FRESHENING BARN, 10-HEAD
- E5. CALVES, 15-HEAD
- E6. LIQUID/SOLID SEPARATOR BUILDING
- E7. SILAGE PAD, 60'x280'
- E8. COMMODITY STORAGE
- E9. MACHINE SHED
- E10. TOOL SHOP

# LAGOONS

- L1. CONCRETE LINED IMPOUNDMENT, SOLID MANURE STORAGE, 450,000 CU. FT.
- L2. EARTHEN IMPOUNDMENT-STAGE 1 LIQUID MANURE STORAGE, 1,656,000 GALLONS
- L3. EARTHEN IMPOUNDMENT - PROPOSED STORM RUN-OFF 2,520,000 GALLONS
- L4. EARTHEN IMPOUNDMENT-STAGE 3 LIQUID MANURE STORAGE, 2,850,000 GALLONS
- L5. EARTHEN IMPOUNDMENT-STAGE 4 LIQUID MANURE STORAGE, 2,386,500 GALLONS

# OTHER

- N1. SILAGE PAD, 180'x300'
- N2. CALF HUTCHES (75 CALVES, 0-2 MONTHS)

# NEW

- N3. SILAGE PAD 240'x300'
- N4. LEACHATE CAPTURE BASIN, 8' X 8' X 2'

- W WELL
- S.D. SURFACE DRAIN
- LAGOON
- FENCE
- SUBSURFACE DRAINAGE TILE
- DRAINAGE PATTERN
- GRADIENT BARRIER

VEGETATIVE INFILTRATION AREA

VEGETATIVE INFILTRATION BASINS

# MORTALITY MANAGEMENT

MORTALITIES HANDLED VIA  
OFF-SITE RENDERING SERVICE.  
NO MORTALITY MANAGEMENT FACILITY  
LOCATED ON-SITE.

|                                                                                               |                                |                                |                                            |
|-----------------------------------------------------------------------------------------------|--------------------------------|--------------------------------|--------------------------------------------|
| MARK L. DEARDORFF<br>10729 N. STATE ROAD 19<br>MACY, INDIANA 46951<br>2017 RENEWAL-FARM #6024 | FARMSTEAD PLAN<br>SITE DETAILS | DATE: 05/26/17<br>DRAWN BY: MV | SHEET: 1A of 1A<br>DRAWING NO: MLD0117-01A |
|-----------------------------------------------------------------------------------------------|--------------------------------|--------------------------------|--------------------------------------------|

THE IDEAS, DESIGNS, AND DRAWINGS REPRESENTED HERE ARE THE PROPERTY OF LIVESTOCK ENGINEERING SOLUTIONS, INC. REPRODUCTION OR USE, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT WRITTEN AUTHORIZATION OF LIVESTOCK ENGINEERING SOLUTIONS, INC. IS PROHIBITED.

LIVESTOCK ENGINEERING SOLUTIONS, INC.  
MICHAEL A. VEENHUIZEN  
2967 S. HONEY CREEK ROAD, GREENWOOD, IN 46143



Frank O'Bannon  
Governor

John M. Hamilton  
Commissioner

100 North Senate Avenue  
P.O. Box 6015  
Indianapolis, Indiana 46206-6015  
(317) 232-8603  
(800) 451-6027  
[www.idem.org](http://www.idem.org)

March 16, 1999

**VIA CERTIFIED MAIL** Z 376 729 546

Mr. Mark Deardorff  
Route 1, Box 46  
Macy, Indiana 46951

Dear Mr. Deardorff:

Re: Confined Feeding Operation  
Section 36, T29N, R4E  
Miami County  
Approval Number AW - 4750

This letter acknowledges the approval of your submitted application for authorization to construct and operate a confined animal feeding operation in Miami County. The information was submitted to comply with Confined Feeding Control Law (IC 13-18-10).

Plans and specifications show existence of the following: a 450-head freestall barn; a 50-head dry cow barn; five(5) earthen manure control facilities for storage of the manure from the freestall barn and stormwater containment from the concrete loafing area of the dry cow barn. This facility has an approximate total capacity of 500 dairy cattle. The manure control facilities, including the availability of acreage for manure application, meet or exceed the minimum requirements established by IDEM.

The operation must be managed as required by IC 13-18-10 and the following conditions:

**Approval Conditions**

1. The confinement buildings and manure control facilities must be operated in accordance with the conditions in this letter and the approved plans and specifications.
2. The enclosed affidavit regarding the operation of the confined feeding facilities must be completed and returned to IDEM not more than 30 days after the effective date of the approval per IC 13-18-10.

Mr. Deardorff

Page 2

3. A manure management plan that outlines procedures for soil testing, manure testing and maps of application ground must be submitted to IDEM at least one (1) time every five (5) years to maintain valid approval for your
4. Manure must be handled in a manner that will not cause conditions which threaten to pollute waters of the state per IC 13-30-24.
5. Manure must be applied in a manner that will not cause runoff to any stream, drainage ditch or other body of water per IC 13-18- 4-5.
6. Manure application records must be maintained as described in technical guidance AW-1 (WASTE-0024-NPD), page 8, paragraph E. The records must be made available during inspections by IDEM personnel.

#### **GENERAL INFORMATION**

1. The Confined Feeding Program, Department of Environmental Management should be notified immediately of any significant change at the operation including, but not limited to the following: if a transfer of ownership occurs, if the operation goes out of business or if there is a change in the number or type of livestock/poultry the operation maintains.
2. The following enclosed attachments address manure handling practices and should be maintained for easy reference.
  - Attachment I- Manure Application Rates
  - Attachment II- Best Management Practices for Manure Handling
  - Attachment III- Containing, Reporting and Responding to a Spill

## **APPEAL PROCEDURES**

Requests for an administrative review must be filed in compliance with the procedures and time frames identified below. If you have procedural or scheduling questions concerning your petition, you may contact the Office of Environmental Adjudication at 317/232-8591.

This decision becomes effective eighteen (18) days after mailing unless a person aggrieved or adversely affected by the decision files a request for a stay. If a request to stay the effective date of this decision accompanies an appeal request, the effective date of any part of this decision within the scope of the stay request is stayed an additional fifteen (15) days. The portions of the decision for which a stay request has been filed will take effect at the expiration of the additional fifteen (15) days, unless or until the OEA stays this decision in whole or in part.

An appeal is initiated by filing a written petition for administrative review with the OEA pursuant to IC 4-21.5-3-7, within eighteen (18) days of the mailing date of this decision. Identifying the decision or other order for which you seek review by decision number, name of the applicant, location or date of this notice will expedite review of the petition. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing: (1) the date the document is delivered to the OEA, (2) the date of the postmark on the envelope containing the document, if the document is mailed to the OEA by U.S. mail, (3) the date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier. The petition must further include facts demonstrating that the person requesting review is either the applicant, a person aggrieved or adversely affected by this decision, or otherwise entitled to review by law.

Pursuant to IC 4-21.5-3-5(d), the OEA will provide the petitioner or any person requesting notice with notice of prehearing conferences, preliminary hearings, hearings, stays or orders disposing of the petition for review if a written request for such notice is received by the OEA. Nonparties may also receive such notices without intervening and formally become parties by requesting copies of such notices from the OEA.

Any such request shall be mailed or delivered to:

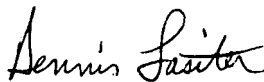
Office of Environmental Adjudication  
ISTA Building  
150 West Market Street, Suite 618  
Indianapolis, Indiana 46204



Mr. Deardorff  
Page 4

Questions concerning issuance of the approval should be directed to the Confined Feeding Program at 317/232-3111, 800/451-6027 Ext. 2-3111 or FAX at 317/232-3403.

Sincerely,

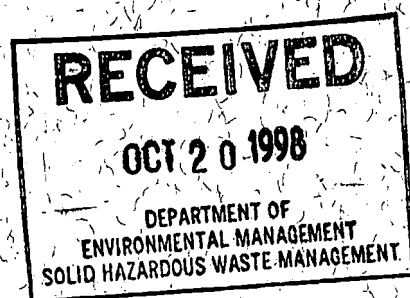
A handwritten signature in cursive script, appearing to read "Dennis Lasiter".

Dennis Lasiter  
Land Use Section  
Office of Solid and Hazardous Waste Management

Enclosures

cc: County Health Department  
County Board of Commissioners  
Mayor/Town Council President  
USDA-Natural Resources Conservation Service

6024 AI



**Mark Deardorff**

**Dairy Confinement  
of Existing Site**

10/98

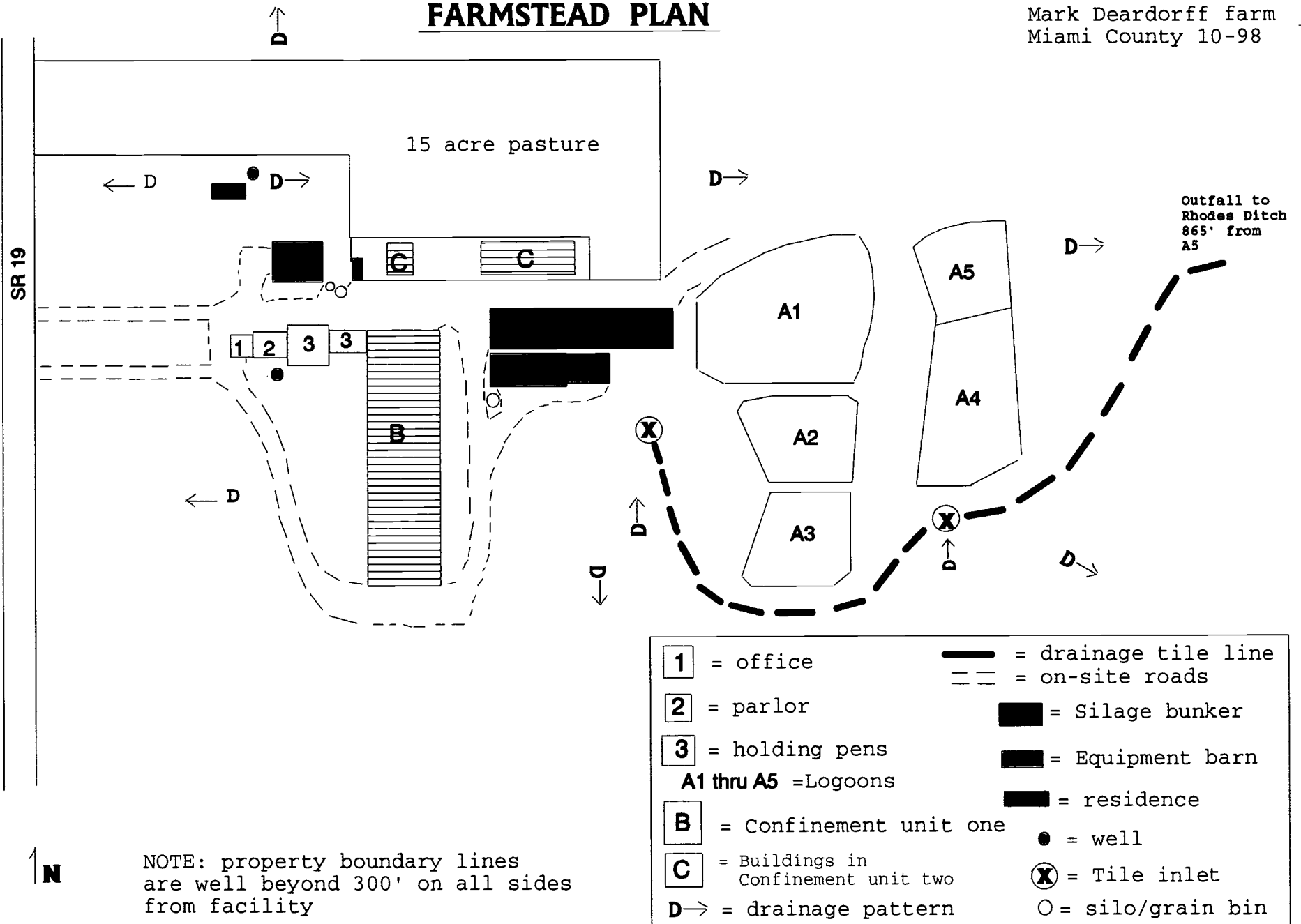
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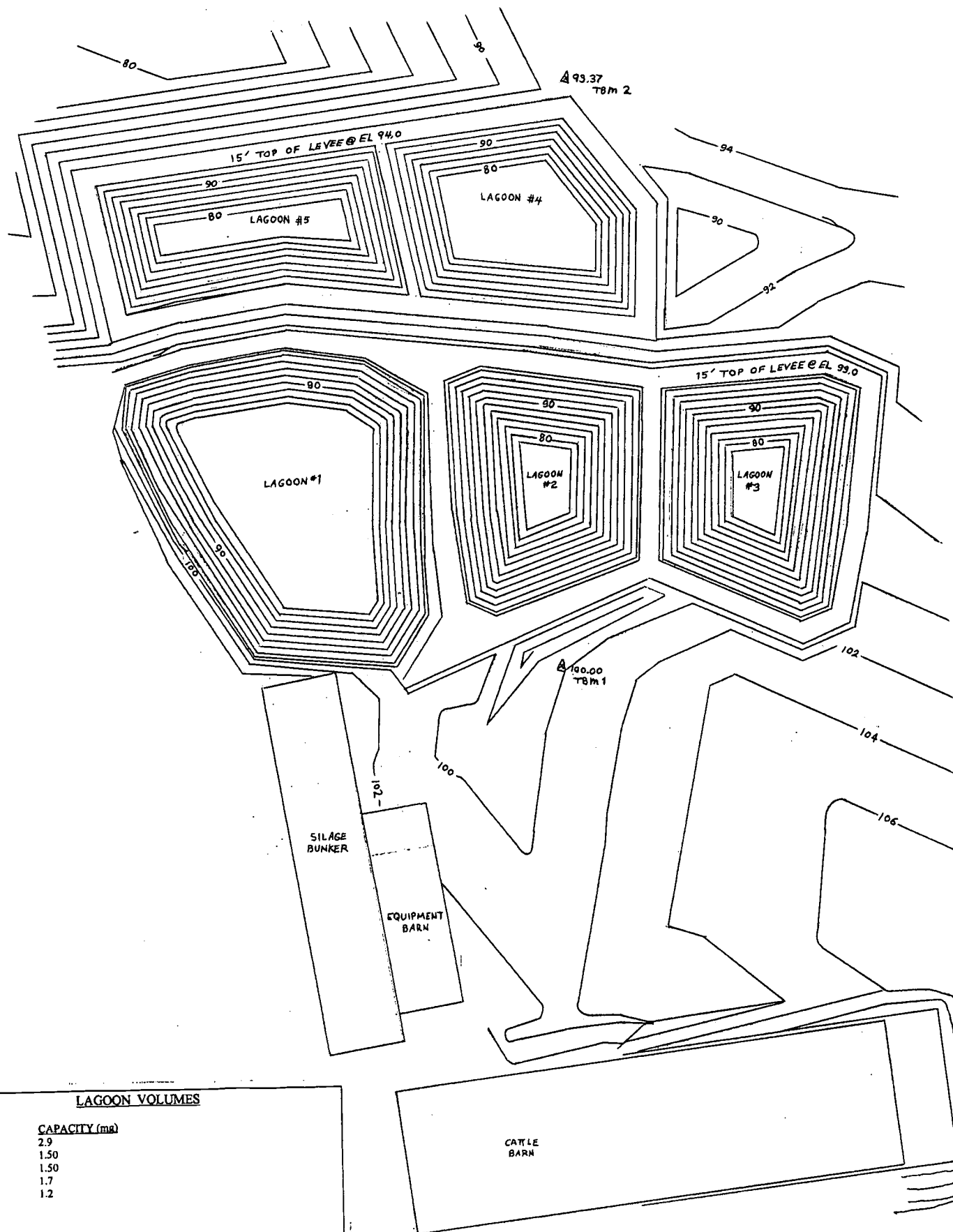
**Rt. 1, Box 46    Macy, Indiana 46951**

---

# FARMSTEAD PLAN

Mark Deardorff farm  
Miami County 10-98





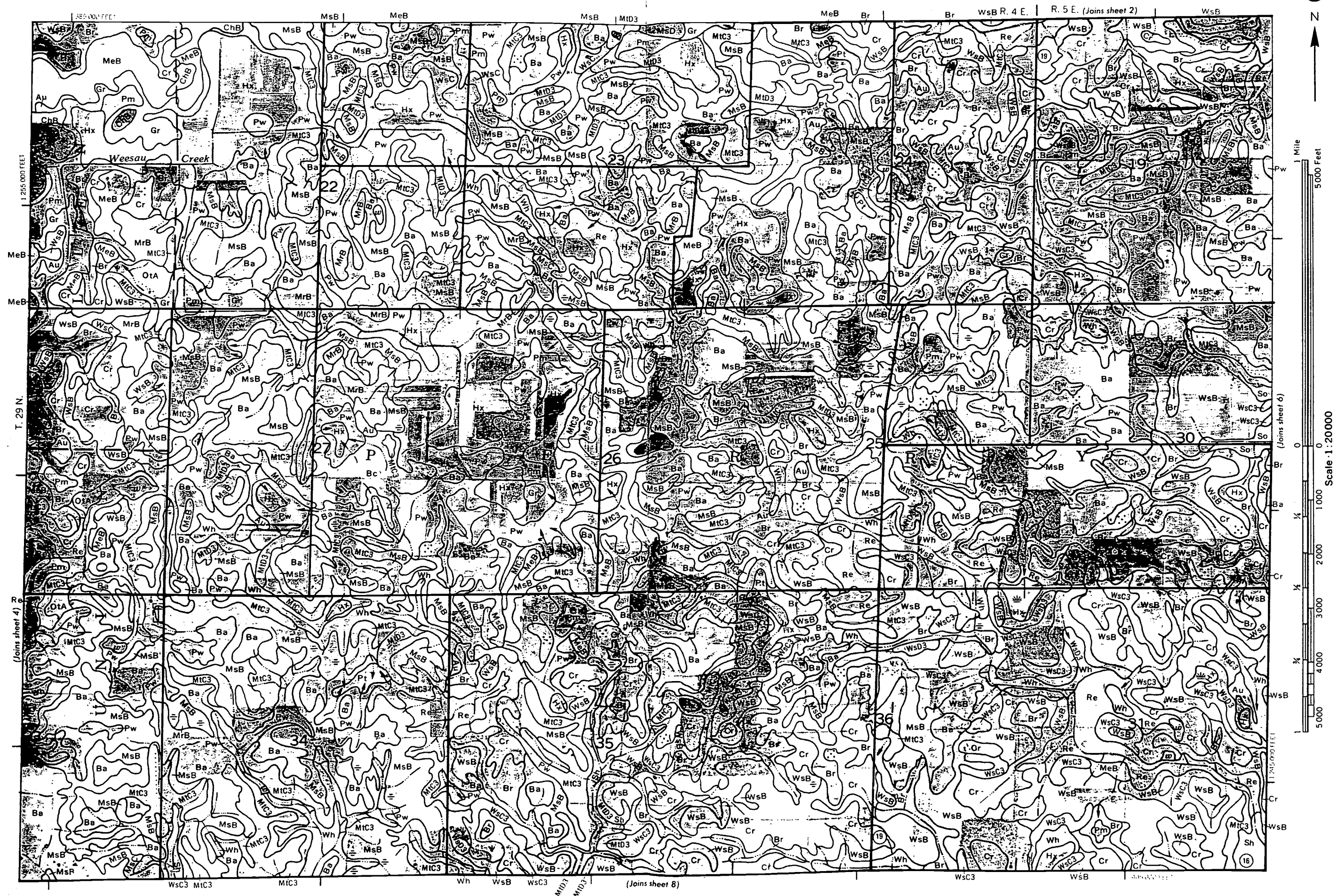
#### LAGOON VOLUMES

| LAGOON | CAPACITY (mg) |
|--------|---------------|
| 1      | 2.9           |
| 2      | 1.50          |
| 3      | 1.50          |
| 4      | 1.7           |
| 5      | 1.2           |

#### NOTES:

1. Elevations based upon field survey completed June 15, 1996. Lagoon capacities based upon slope of 2.5H:1V interior. Exterior slopes 4H:1V
2. Maximum pool elevation of lagoons 1, 2, and 3 to be 98.0, and of lagoons 4 and 5 92.0.

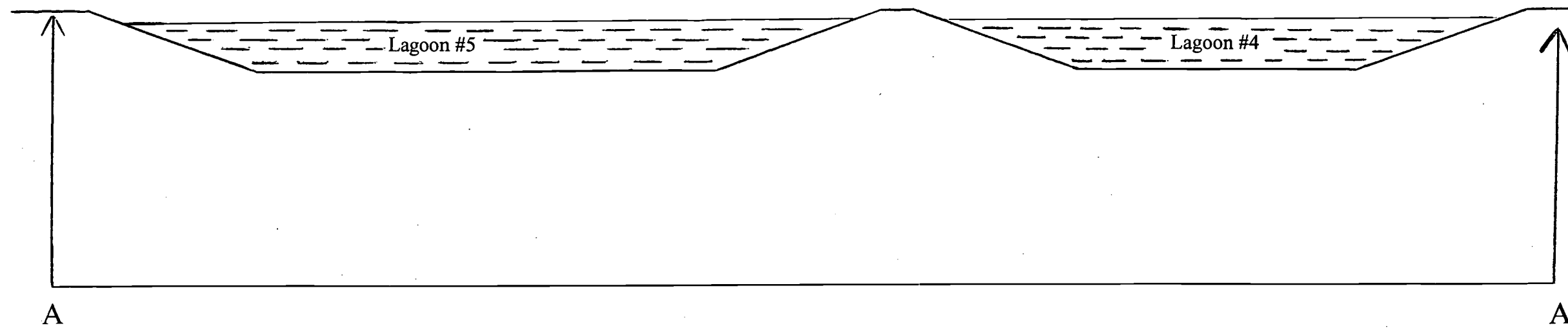
<- N  
Graphic Scale:  
1 inch = 100ft.



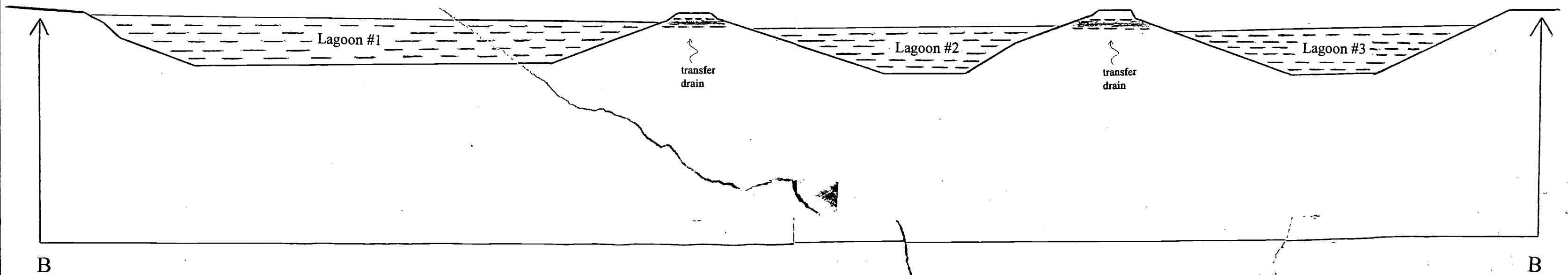
# CROSS SECTION

## LAGOONS 1-5

Mark Deardorff  
Dairy Confinement Site



transfer  
drain from  
lagoon 3 to  
lagoon 4



**SCALE**

3 Inches = 100 ft.





**GDC**  
**ENVIRONMENTAL SERVICES, INC.**

---

729 Red Oaks Lane - Lafayette, IN 47905 - 765/477-0709 FAX 474-4247

---

March 3, 1999

Mr. John Long  
Indiana Dept. of Environmental Management  
100 North Senate Ave., P.O. Box 6015  
Indianapolis, IN 46206-6015

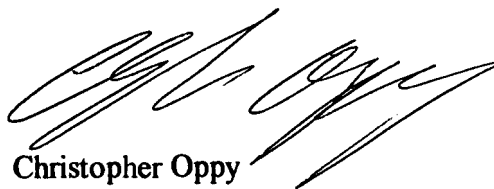
Dear Mr. Long:

Enclosed is the information you requested last week regarding a cross section of lagoons and boring information for the Deardorff farm in Miami County, Indiana.

If you should have further questions or thoughts, please feel free to contact Mr. Deardorff or myself @ 765/477-0709.

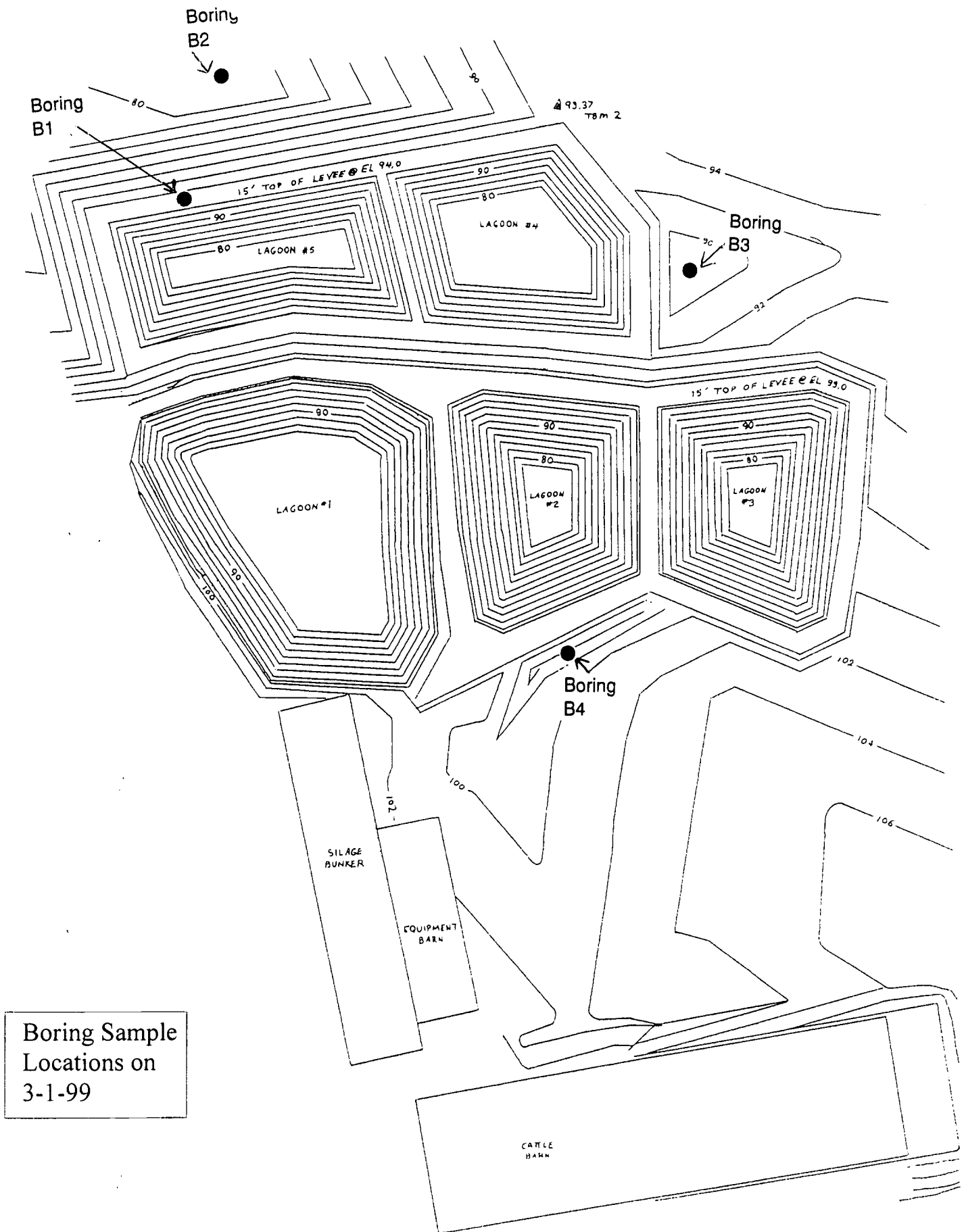
Very truly yours,

GDC Environmental Services



Christopher Oppy  
President

cc: M. Deardorff



Boring Sample  
Locations on  
3-1-99

< N  
Graphic Scale  
1 inch = 100 ft.

## Boring #1

|  |                     |                         |
|--|---------------------|-------------------------|
|  | topsoil<br>to 1 ft. | grayish brown clay      |
|  | 1 ft -<br>2 ft      | grayish hard clay       |
|  | 2 ft -<br>3 ft      | grayish hard clay       |
|  | 3 ft -<br>4 ft      | grayish clay            |
|  | 4 ft -<br>5 ft      | grayish clay            |
|  | 5 ft -<br>6 ft      | grayish clay            |
|  | 6 ft -<br>7 ft      | brownish gray clay      |
|  | 7 ft -<br>8 ft      | brownish dark gray clay |
|  | 8 ft -<br>9 ft      | grayish brown clay      |
|  | 9 ft -<br>10 ft     | brownish dark gray clay |

NOTE: This Boring was made on east wall of Lagoon #5 at Deardorff dairy farm on 3-1-99. Photo taken.

Boring made with hydraulic auger on small bobcat.  
Extension added to reach maximum depth of 10'.

With 10' depth, all but bottom 4' of lagoon is assessed for soil content and lateral movement through wall. Soil content appears adequate quality of clay content, and no observation of waste content in material.

To address potential of lateral movement through bottom 4' of this lagoon's wall or of vertical movement, which also addresses movement of remaining higher-elevation lagoons, see boring #2.

## Boring #2

|                     |                          |
|---------------------|--------------------------|
| topsoil<br>to 1 ft. | grayish clay             |
| 1 ft -<br>2 ft      | light brown clay         |
| 2 ft -<br>3 ft      | brownish dark gray clay  |
| 3 ft -<br>4 ft      | brownish silty gray clay |
| 4 ft -<br>5 ft      | silty grayish clay       |
| 5 ft -<br>6 ft      | grayish clay             |

### NOTE :

Boring made east of lagoon #5 at Deardorff dairy farm on 3-1-99. Photo taken.

Boring #2 addresses down gradient from lagoons.

Ground elevation of Boring #2 is same as bottom elevation of lagoon #5 and #4, is within 2 feet of bottom elevation of lagoon #2 and #3, and is 4 ft below the bottom elevation of lagoon #1. Therefore, 6 foot boring at this location puts most sample material clearly below bottom elevation of all lagoons.

Boring #2 samples should address possibility of vertical movement from lagoons. Material appears to be adequate.

### Boring #3

|  |                     |                          |
|--|---------------------|--------------------------|
|  | topsoil<br>to 1 ft. | brown silty clay         |
|  | 1 ft -<br>2 ft      | silty gray clay          |
|  | 2 ft -<br>3 ft      | brownish silty gray clay |
|  | 3 ft -<br>4 ft      | brownish silty gray clay |
|  | 4 ft -<br>5 ft      | silty grayish clay       |
|  | 5 ft -<br>6 ft      | brownish silty gray clay |

**NOTE :**

Boring made south of lagoon #4 at Deardorff dairy farm on 3-1-99.

Boring #3 addresses side gradient from lagoons.

## Boring #4

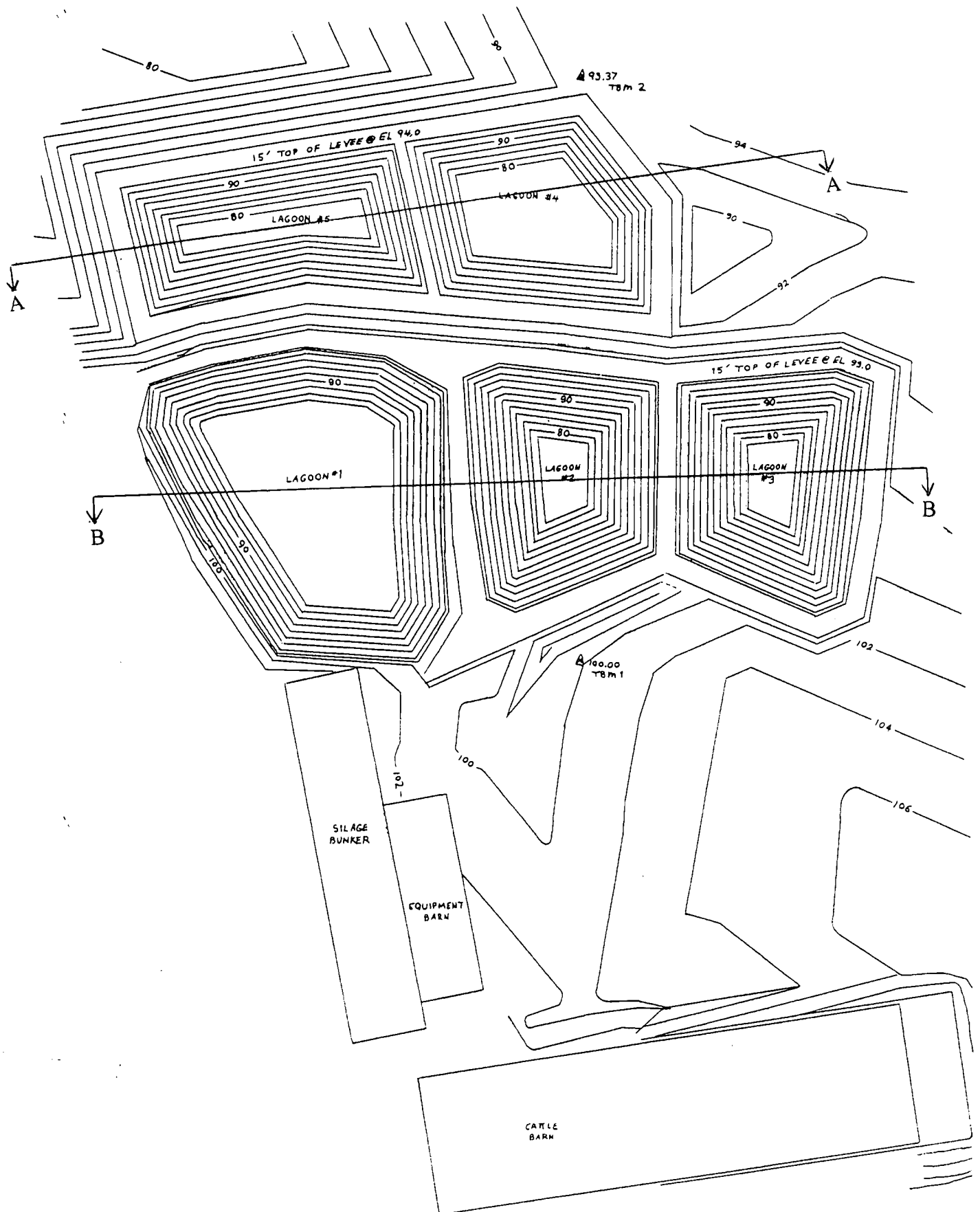
|                     |                     |
|---------------------|---------------------|
| topsoil<br>to 1 ft. | brownish silty clay |
| 1 ft -<br>2 ft      | silty gray clay     |
| 2 ft -<br>3 ft      | silty gray clay     |
| 3 ft -<br>4 ft      | silty gray clay     |
| 4 ft -<br>5 ft      | brownish silty clay |
| 5 ft -<br>6 ft      | silty gray clay     |
| 6 ft -<br>7 ft      | silty gray clay     |

**NOTE :**

Boring made west of lagoon #2 at Deardorff dairy farm on 3-1-99.

Boring #4 addresses up gradient from lagoons.





## MANURE MANAGEMENT PLAN

### Manure Testing Procedure:

#### General sampling procedure

Contents are agitated before sampling for

a well-mixed specimen. Sample is placed in quart size

plastic bottle, 1/2 full, with lid tightened well.

sample is preserved via immediate freezing.

#### Approximate sampling frequency

Sampled upon each hauling, which is normally once

per year.

### Soil testing procedure:

#### Soil sampling procedure

☐ Management unit (field level)

☒ Grid method one every ten acres where manure is applied.

☐ By soil type

☐ Other

#### Approximate sampling frequency

Every three years

Additional comments

\_\_\_\_\_

\_\_\_\_\_

Consult Purdue University Cooperative Extension Service Publication ID205 and other extension publications for guidance on manure and soil testing procedures and development of manure management plans.

Application areas available:

☒ Attach soil survey map showing boundary areas of all spreading areas currently available for application of manure. (Note: soil survey maps are available at most county NRCS and CES offices). Please identify your fields on the map.

## CHECKLIST

☐ Solid System    ☐ Liquid System    ☒ Lagoon

Other systems in use

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Submitted by:

*Mark Green Deane*

Date:

*10-14-98*

6024A1

1

10/14/98

PLEASE COMPLETE THIS FORM IN ITS ENTIRETY AND RETURN TO:

Confined Feeding Program  
Land Use Section  
Department of Environmental Management  
100 North Senate Avenue  
P.O. Box 6015  
Indianapolis, Indiana 46206-6015  
Phone: (317)233-3111 or (800)451-6027  
FAX: (317)232-3403

**CONFINED FEEDING APPLICATION FORM**

Provide all information that applies to your operation. Place check marks or X's in the boxes and fill in the blanks.

**I. IDENTIFICATION**

A. Name of Confined Feeding Operation Owner Mark Deardorff

Address Rt. 1, Box 46 Macy 46951  
(Street or RFD) (City) (Zip Code)  
Telephone: Business 765/985-2209  
Residence 765/985-2209  
FAX 765/985-2209

B. Name of Confined Feeding Operation Lessee Not applicable

Address \_\_\_\_\_  
(Street or RFD) (City) (Zip Code)  
Telephone: Business \_\_\_\_\_  
Residence \_\_\_\_\_  
FAX \_\_\_\_\_

C. Name of Confined Feeding Operation Manager Same as IA above

Address \_\_\_\_\_  
(Street or RFD) (City) (Zip Code)  
Telephone: Business \_\_\_\_\_  
Residence \_\_\_\_\_  
FAX \_\_\_\_\_

## II. LOCATION OF CONFINED FEEDING OPERATION

U.S. Geological Survey Quadrangle Deedsville

Section 36 Township No. Perry 29N

Range No. 4 East County

Give directions from the nearest town to the confined feeding operation

1/2 mile north of S.R. 16 & S.R. 19 junction on S.R. 19

The following distance request should be measured from the nearest existing or proposed treatment/control facility, whichever is closest.

## III. NEAREST STREAM

A. Distance and direction of nearest stream, drainage ditch or other body of water

1,036 feet east

B. Name of nearest stream, drainage ditch or other body of water

Wilson Rhodes Ditch

## IV. WATER SUPPLY

A. Well(s) 2 Depth 1) 290ft. 2) 140ft

Distance 1) 425 ft 2) 100ft

Use (Residential. Livestock) 1) Residential 2) livestock

B. Surface water 0 Used for watering livestock - -  
Used for cleaning/flushing - -

C. Cistern - -

D. Public Water Supply 0

V. FACILITY DETAILS

A. DETAIL LIVESTOCK/POULTRY CONFINEMENT UNIT NUMBER ONE

1. In operation (existing) Yes Date constructed 1991
2. Planned (proposed) - - Date of start of construction - -

B. LIVESTOCK PER CONFINEMENT UNIT

| Type                           | Maximum number at any one time |
|--------------------------------|--------------------------------|
| <u>Cows</u>                    |                                |
| Beer Cattle                    |                                |
| Dairy Cows <u>Yes</u>          | 450                            |
| Veal Calves                    |                                |
| Bulls                          |                                |
| <u>Swine</u>                   |                                |
| Nursery Pigs (40 lbs. or less) |                                |
| Finishing Hogs (over 40 lbs.)  |                                |
| Boars                          |                                |
| Sows with Litters              |                                |
| Gestating Sows                 |                                |
| <u>Poultry</u>                 |                                |
| Laying Hens                    |                                |
| Pullets                        |                                |
| Broilers                       |                                |
| Turkeys                        |                                |
| Ducks                          |                                |
| <u>Sheep</u>                   |                                |
| <u>Other</u>                   |                                |



C. Confinement Area (Building, Feeding Floor, Earthen Lot, etc.)

1. Roofed YES Solid Floor 112 ft. x 380 ft.  
 Slotted Floor \_\_\_\_\_ ft. x \_\_\_\_\_ ft.  
 2. Unroofed \_\_\_\_\_ Earth Floor \_\_\_\_\_ ft. x \_\_\_\_\_ ft.  
 Paved Floor \_\_\_\_\_ ft. x \_\_\_\_\_ ft.  
 Slotted Floor \_\_\_\_\_ ft. x \_\_\_\_\_ ft.

D. Treatment/Control Facility Serving Confinement Unit Number One

1. Solid System

- a. Scraping and land application \_\_\_\_\_  
 b. Concrete \_\_\_\_\_ Earthen \_\_\_\_\_  
 c. Manure storage area \_\_\_\_\_ ft. x \_\_\_\_\_ ft.  
 d. Shallow pit (poultry) \_\_\_\_\_ ft. x \_\_\_\_\_ ft.  
 x \_\_\_\_\_ ft. deep  
 e. Deep dry compost pit (poultry) \_\_\_\_\_ ft. x \_\_\_\_\_ ft.  
 x \_\_\_\_\_ ft. deep

2. Liquid System

- a. Concrete pit beneath slotted floors  
 \_\_\_\_\_ ft. x \_\_\_\_\_ ft. x \_\_\_\_\_ deep.  
 b. Non-earthen fabricated storage  
 Concrete \_\_\_\_\_ Steel \_\_\_\_\_  
 Above ground \_\_\_\_\_ Below ground \_\_\_\_\_  
 If circular, diameter \_\_\_\_\_ If rectangular, width \_\_\_\_\_ length \_\_\_\_\_  
 Depth \_\_\_\_\_  
 c. Earthen treatment/control facility 5 lagoons, see enclosed  
 Inside dimensions measured from top of berm map ft. x \_\_\_\_\_ ft.  
 Depth \_\_\_\_\_ ft. Side slope \_\_\_\_\_  
 Type of sealant \_\_\_\_\_  
 d. Is this system shared with another unit? \_\_\_\_\_ yes X no  
 Which one(s)? \_\_\_\_\_  
 e. If flush gutter system is used  
 Flushing frequency 1 hour 45 minutes  
 Flush volume 5,000 gallons  
 Source of flush water

\_\_\_\_\_ clean well or pond water

X recycled earthen treatment/control facility water

3. Area contributing runoff to treatment/control facility:

roofed & diverted Concrete confinement area 42,560 sq. ft.  
 Earthen confinement area \_\_\_\_\_ sq. ft.  
 Undiverted concrete or roofed areas \_\_\_\_\_ sq. ft.  
 Undiverted earthen area \_\_\_\_\_ sq. ft.

4. No provisions made for runoff control Yes

5. Other (explain) \_\_\_\_\_

E. Uncontaminated Runoff Water Diversion

1. Has all runoff from pasture and crop land adjacent to the operation been diverted from the confinement area and treatment/control facility?  
Yes X No
2. If yes, how?
  - a. Diversion ditches
  - b. Levees
  - c. Concrete curbs
  - d. Natural drainage X
  - e. Other (explain)
3. If no, how much surface area (other than from confined feeding area) drains into the treatment/control facility?  
       sq. ft.
4. Closest field tile to treatment/control facility. Does this tile have an exposed standpipe? Yes        No X  
distance 350 ft.  
depth 3 ft.  
location around confinement

F. Additional Water Uses

1. Is the confined feeding area periodically cleaned with water?  
Yes X No         
If yes, how often? flushed every 1.75 hours  
Amount of water used for cleaning each time 5,000 gallons
2. Milk house and Milking Parlor Washwater 200 gallons per day
3. Contaminated livestock truck/trailer washwater and disposal  
Amount of water used 0 gallons none here  
How is washwater disposed?
  - a. Conveyed to treatment/control facility?  
Yes        No
  - b. Other (explain) hauler is responsible for disposal elsewhere; confinement & parlor goes to lagoon.

VI. FINAL DISPOSAL OF MANURE AND RUNOFF

A. Manure Application Equipment

1. Solid Manure

a. Frequency of spreading \_\_\_\_\_

2. Liquid Manure

a. Frequency of spreading Once per year

3. Irrigation System

a. Type - mobile \_\_\_\_\_ stationary \_\_\_\_\_

b. Frequency of application \_\_\_\_\_

4. Custom Application \_\_\_\_\_ yes \_\_\_\_\_ no

If yes, please name applicator \_\_\_\_\_

B. Manure Application Area Available

1. Total area over which manure is spread during the year.

Cropland 600 acres maximum, applied where needed  
Permanent pasture \_\_\_\_\_ acres

2. Is all of this acreage owned by the applicant? Yes X No \_\_\_\_\_

If no, enclose land application agreements signed by the land owner  
indicating the amount of acreage and its location.

A. DETAIL LIVESTOCK/POULTRY CONFINEMENT UNIT NUMBER TWO

1. In operation (existing) Yes Date constructed 1960s
2. Planned (proposed)        Start date of construction

B. LIVESTOCK PER CONFINEMENT UNIT

| Type                           | Maximum number at any one time |
|--------------------------------|--------------------------------|
| <u>Cows</u>                    |                                |
| Beef Cattle                    |                                |
| Dairy Cows        Yes          | 50                             |
| Veal Calves                    |                                |
| Bulls                          |                                |
| <u>Swine</u>                   |                                |
| Nursery Pigs (40 lbs. or less) |                                |
| Finishing Hogs (over 40 lbs.)  |                                |
| Boars                          |                                |
| Sows with Litters              |                                |
| Gestating Sows                 |                                |
| <u>Poultry</u>                 |                                |
| Laying Hens                    |                                |
| Pullets                        |                                |
| Broilers                       |                                |
| Turkeys                        |                                |
| Ducks                          |                                |
| <u>Sheep</u>                   |                                |
| <u>Other</u>                   |                                |

C. Confinement Area (Building, Feeding Floor, Earthen Lot, etc.)

1. Roofed Yes Solid Floor 50 ft. x 125 ft.  
 Slotted Floor \_\_\_\_\_ ft. x \_\_\_\_\_ ft.
2. Unroofed Yes Earth Floor ----- ft. x ----- ft. - 15.2 acre  
 Paved Floor 100 ft. x 75 ft. (15 pasture &  
 Slotted Floor \_\_\_\_\_ ft. x \_\_\_\_\_ ft. .2 acre earth lot)

D. Treatment/Control Facility Serving Confinement Unit Number Two

## 1. Solid System

- a. Scraping and land application Yes
- b. Concrete \_\_\_\_\_ Earthen \_\_\_\_\_
- c. Manure storage area \_\_\_\_\_ ft. x \_\_\_\_\_ ft.
- d. Shallow pit (poultry) \_\_\_\_\_ ft. x \_\_\_\_\_ ft.  
 x \_\_\_\_\_ ft. deep
- e. Deep dry compost pit (poultry) \_\_\_\_\_ ft. x \_\_\_\_\_ ft.  
 x \_\_\_\_\_ ft. deep

## 2. Liquid System

- a. Concrete pit beneath slotted floors  
 \_\_\_\_\_ ft. x \_\_\_\_\_ ft. x \_\_\_\_\_ ft. deep
- b. Non-earthen fabricated storage  
 Concrete \_\_\_\_\_ Steel tanks \_\_\_\_\_  
 Above ground \_\_\_\_\_ Below ground \_\_\_\_\_  
 If circular, diameter \_\_\_\_\_ If rectangular, width \_\_\_\_\_, length \_\_\_\_\_  
 Depth \_\_\_\_\_
- c. Earthen treatment/control facility  
 Inside dimensions measured from top of berm \_\_\_\_\_ ft. x \_\_\_\_\_ ft.  
 Depth \_\_\_\_\_ ft. Side slope \_\_\_\_\_  
 Type of sealant \_\_\_\_\_
- d. Is this system shared with another unit? \_\_\_\_\_ yes \_\_\_\_\_ no  
 Which one(s)? \_\_\_\_\_
- e. If flush gutter system is used  
 Flushing frequency \_\_\_\_\_  
 Flush volume \_\_\_\_\_  
 Source of flush water

\_\_\_\_\_ clean well or pond water

\_\_\_\_\_ recycled earthen treatment/control facility water

## 3. Area contributing runoff to treatment/control facility:

- Concrete confinement area \_\_\_\_\_ sq. ft.  
 Earthen confinement area \_\_\_\_\_ sq. ft.  
 Undiverted concrete or roofed areas \_\_\_\_\_ sq. ft.  
 Undiverted earthen area \_\_\_\_\_ sq. ft.

4. No provisions made for runoff control Yes

## 5. Other (explain) \_\_\_\_\_

VI. FINAL DISPOSAL OF MANURE AND RUNOFF

A. Manure Application Equipment

1. Solid Manure

a. Frequency of spreading place solid floor manure in  
15 acre pasture when required

2. Liquid Manure

a. Frequency of spreading \_\_\_\_\_

3. Irrigation System

a. Type - mobile \_\_\_\_\_ stationary \_\_\_\_\_

b. Frequency of application \_\_\_\_\_

4. Custom Application \_\_\_\_\_ yes \_\_\_\_\_ no

If yes, please name applicator \_\_\_\_\_

B. Manure Application Area Available

1. Total area over which manure is spread during the year.

Cropland \_\_\_\_\_ acres

Permanent pasture 15 acres

2. Is all of this acreage owned by the applicant? Yes X No \_\_\_\_\_

If no, enclose land application agreements signed by the land owner  
indicating the amount of acreage and its location.

See enclosure agreement allowing  
use of pasture adjacent north of operation



E. Uncontaminated Runoff Water Diversion

1. Has all runoff from pasture and crop land adjacent to the operation been diverted from the confinement area and treatment/control facility?  
Yes X No

2. If yes, how? ..

- a. Diversion ditches         
b. Levees         
c. Concrete curbs         
d. Natural drainage X  
e. Other (explain)

3. If no, how much surface area (other than from confined feeding area) drains into the treatment/control facility?  
       sq. ft.

4. Closest field tile to treatment/control facility. Does this tile have an exposed standpipe? Yes        No X

distance 350 ft.

depth 3 ft.

location around confinement

F. Additional Water Uses

1. Is the confined feeding area periodically cleaned with water?

Yes        No X

If yes, how often?         
Amount of water used for cleaning each time        gallons

2. Milk house and Milking Parlor Washwater        gallons per day

3. Contaminated livestock truck/trailer washwater and disposal

Amount of water used 0 gallons

How is washwater disposed?

- a. Conveyed to treatment/control facility?

Yes        No       

- b. Other (explain) hauler is responsible for disposal elsewhere

The Administrative Orders & Procedures Act IC 4-21.5 requires that the Department of Environmental Management (DEM) give notice of its decision on your application to the following persons:

- a. each person to whom the decision is specifically directed:
- b. each person to whom a law requires notice be given:
- c. each person who has provided the DEM with a written request for notification of the decision:
- d. each person who has a substantial and direct proprietary interest in the issuance of the approval:
- e. Each person whose absence as a party in the proceeding concerning the approval decision would deny another party complete relief in the proceeding or who claims an interest related to the issuance of the approval and is so situated that the disposition of the matter, in the person's absence may:
  1. as a practical matter impair or impede the person's ability to protect that interest, or
  2. leave any other person who is a party to a proceeding concerning the approval subject to a substantial risk of incurring multiple or otherwise inconsistent obligations by reason of the person's claimed interest.

IC 4-21.5 provides that we may request your assistance in identifying these people. Your failure to properly identify these people could result in reversal on procedural grounds of any decision which is made.

I have reviewed the treatment/control facility plans and specifications, and the information contained in the foregoing form. To the best of my knowledge and belief, such information is true, complete, and accurate.

**THIS MUST BE SIGNED**

owner/operator/manager  
(TITLE - CONFINED FEEDING OPERATION OWNER, LESSEE, MANAGER)

W. J. Lee  
(SIGNATURE OF CONFINED FEEDING OPERATION OWNER, LESSEE OR MANAGER)

10-14-98  
(DATE APPLICATION SIGNED)

**IF ANY OF THE REQUESTED MATERIALS ARE NOT PROVIDED, YOUR**

VII. APPLICATION CHECKLIST

Please review each item below and indicate yes or no. A brief cover letter may be appropriate to answer the questions. Each question is relevant for review of your application.

1. Are there any previously issued confined feeding approvals for this operation?  
Yes \_\_\_\_\_ No X If yes, what was the Approval Number AW \_\_\_\_\_
2. Have you modified the type or number of animals confined at the approved operation?  
Yes \_\_\_\_\_ No X If yes, please detail.
3. Has your acreage available for manure application decreased since receiving your last application? Yes \_\_\_\_\_ No X If yes, number of acres \_\_\_\_\_
4. Have you correctly identified the ownership and/or management arrangement for this operation?  
Yes X No \_\_\_\_\_
5. Have you detailed the separation distances as requested by the application and AW-1? Yes X No \_\_\_\_\_
6. Has a separate "FACILITY DETAILS" ( section V) of this application been completed for each existing and proposed treatment control facility at the operation (other than treatment/control facilities previously approved by the Department of Environmental Management)? Yes X No \_\_\_\_\_
7. Have soil survey maps, topographic maps, farmstead plan and waste treatment/control facility plans (side and end view drawings) been included with this application?  
Yes X No \_\_\_\_\_
8. Have copies of all land use agreements been included with this application?  
Yes X No \_\_\_\_\_
9. Has a Manure-Management Plan as required by IC 13 -18- 10 been included with this application?  
Yes X No \_\_\_\_\_
10. Has the \$100.00 application fee been submitted as required by IC 13-18-10?  
Yes X No \_\_\_\_\_
11. Have you complied with public notification requirements as detailed on page 14 of this application and identified potentially affected parties on page 15?  
Yes X No \_\_\_\_\_

AGREEMENT

This is a written agreement dated 9-15-98 between Alec Lefebvre and Mark Deardorff acknowledging that Alec Lefebvre gives consent to Mark Deardorff to utilize his adjacent acreage, which is owned by Alec Lefebvre, for the purposes of confinement activity if he so desires, including but not limited to the use of dairy manure application.

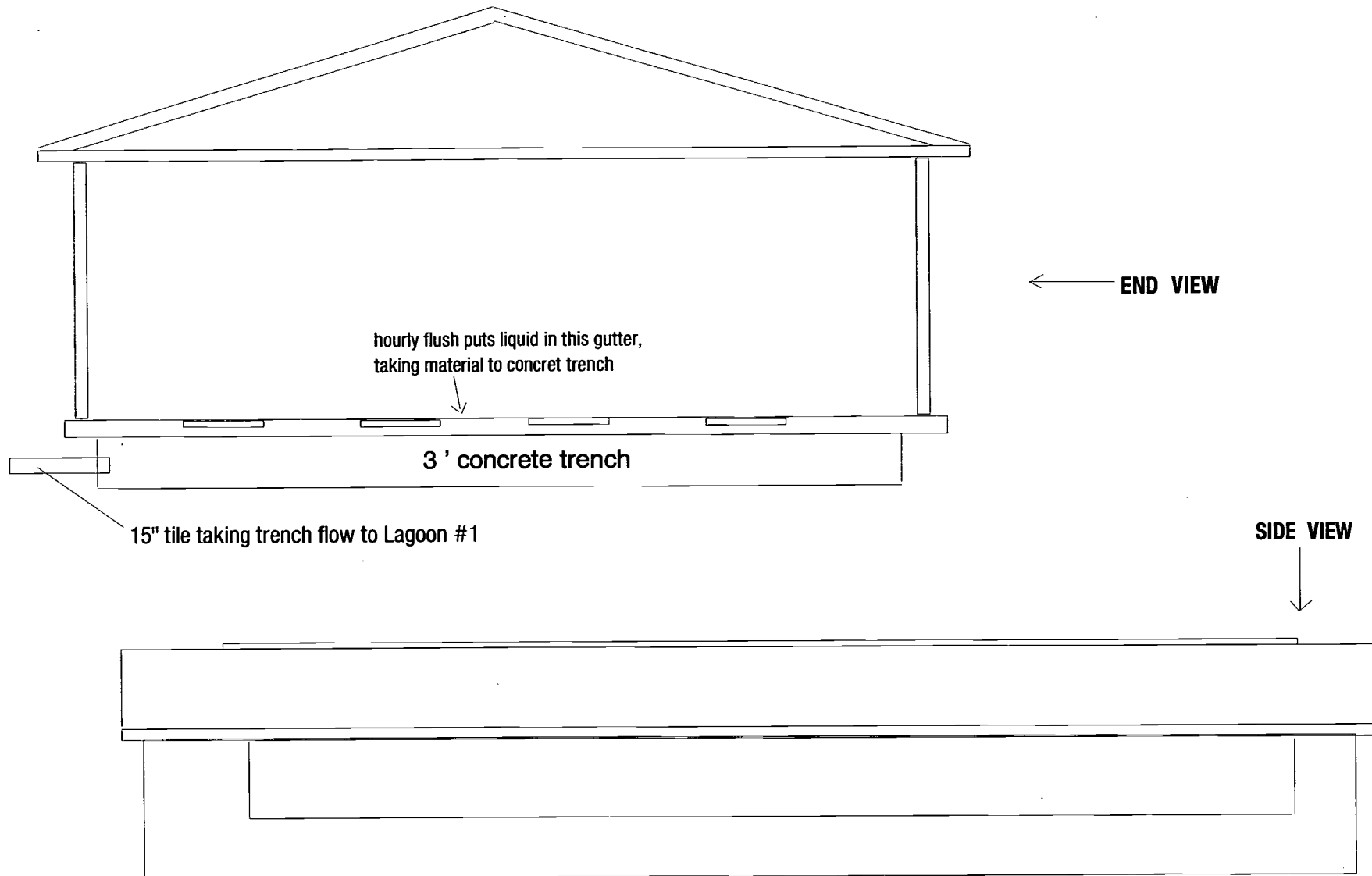
Alec Lefebvre

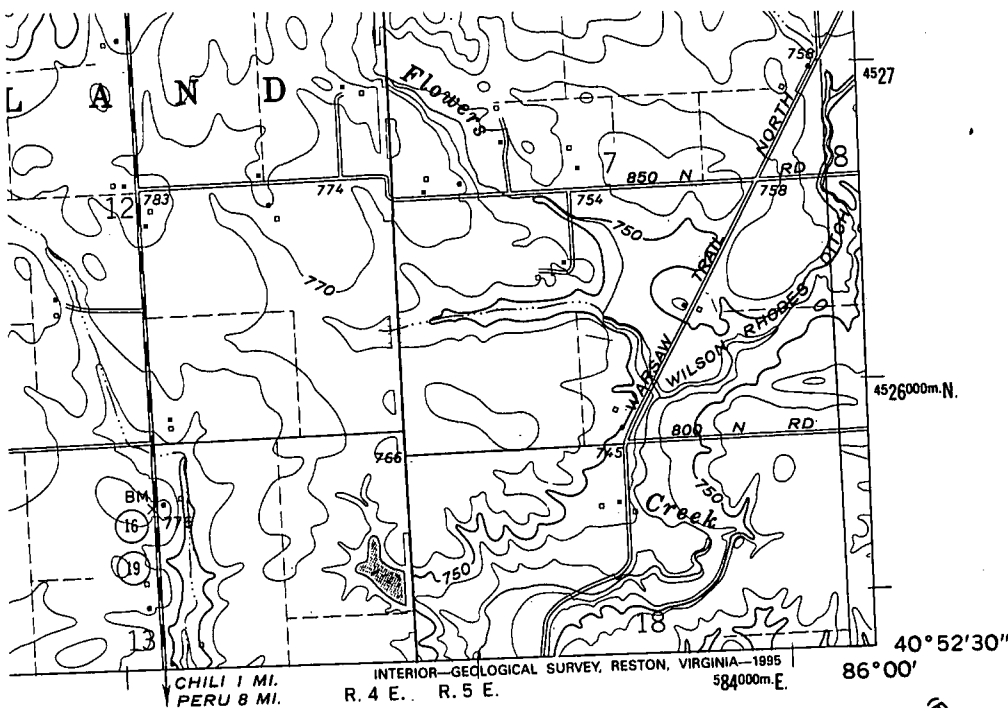
Mark Deardorff

Alec Lefebvre  
Mark Deardorff

## Cross-section of Confinement Building

Mark Deardorff farm  
10-98





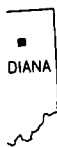
ROAD CLASSIFICATION

Medium-duty ——— Light-duty ———

Unimproved dirt =====

○ State Route

(RICH VALLEY)  
3865 IV SW



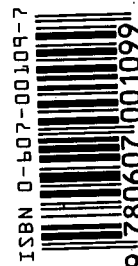
GLE LOCATION

6024

DEEDSVILLE, IND.  
40086-H1-TF-024

1992

DMA 3765 I NE-SERIES V851



One additional  
large document





## INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

*We Protect Hoosiers and Our Environment.*

100 N. Senate Avenue • Indianapolis, IN 46204

(800) 451-6027 • (317) 232-8603 • [www.idem.IN.gov](http://www.idem.IN.gov)

Eric J. Holcomb  
Governor

June 6, 2017

Bruno L. Pigott  
Commissioner

Mark L. Deardorff  
Mark Lee Deardorff Farms  
10729 N State Road 19  
Macy, Indiana 46951

Dear Mr. Deardorff:

Re: Confined Feeding Operation  
Approval Renewal  
Mark L. Deardorff  
Miami County  
Farm ID # 6024  
Animal Waste Number AW- 6224

Your confined feeding operation (CFO) application seeking approval to renew your existing dairy cattle operation in Miami County is approved. This approval renewal will become effective on June 29, 2017.

The application and supporting information was determined to satisfy both the Confined Feeding Control Law (IC 13-18-10), and the Confined Feeding Operation regulation (327 IAC 19). Your CFO Approval and the other enclosures to this letter provide important information about your responsibilities as a CFO owner or operator. Please take time to review these documents before putting them in your operating record. Feel free to contact us if you have any questions.

You can view public records for CFO Approvals on IDEM's Virtual File Cabinet (VFC) website. Go to <http://vfc.idem.in.gov/Default.aspx> and use the "**Document Search**" tab. In the "**Alternate Field**" tab select "**CFO/CAFO**" from the dropdown menu. Type the farm ID #, **6024**, in the box to the right of the "**Alternate Field**". Click the **Search** button. We post documents within approximately 5 days of when we send or receive them. Contact us if you cannot locate a particular document.

A weekly posting of pending permits is located on our agency website at: <http://www.in.gov/idem/landquality/2349.htm>.

This decision becomes effective immediately upon issuance unless a person aggrieved or adversely affected by the decision files a request for an administrative review and stay of the decision. If a request to stay the effective date of this decision accompanies an appeal request, the effective date of any part of this decision within the scope of the stay request is stayed an additional fifteen (15) days. The portions of the decision for which a stay request has been filed will take effect at the expiration of the additional fifteen (15) days, unless or until the OEA stays this decision in whole or in part.

Mark Lee Deardorff  
Miami County, Farm ID# 6024  
Page 2

For more information on appealing this decision, please refer to the attached Appeal Procedures.

### CONTACT INFORMATION

Questions concerning issuance of this approval should be directed to the Confined Feeding Program at (317) 232-4473, or by FAX at (317) 232-3403.

Sincerely,



Joseph E. Williams, Chief  
Confined Feeding Permits Section  
Office of Land Quality

Enclosures: Appeal Procedures  
CFO Approval  
CFO Operating Record Checklist  
CFO Record Book  
CFO Rule 327 IAC 19  
CFO Guidance Manual

cc: Michael A. Veenhuizen – Livestock Engineering Solutions, Inc.  
Miami County Health Department  
Miami County Board of Commissioners  
Macy, Indiana Mayor/Town Council President  
USDA-Natural Resources Conservation Service

## **APPEAL PROCEDURES**

If you disagree with this decision and wish to challenge it, IC 13-15-6-1 and IC 4-21.5-3-7 require that you file a petition for administrative review. If you want the permit put on hold during this administrative review ("stayed") you must also file a petition for stay. These petitions must be submitted to the Office of Environmental Adjudication (OEA) at the following address within 15 days of your receipt of this notice:

**Office of Environmental Adjudication  
Government Center North, Room 501  
100 North Senate Avenue  
Indianapolis, Indiana 46204-2241**

You will need to include the following in your petitions:

1. Information identifying the decision you are appealing, including the following:
  - name of the facility
  - name of the applicant/owner/operator
  - farm ID number
  - date of this notice
2. Information showing you are either:
  - the applicant
  - someone "aggrieved or adversely affected" by the decision, i.e., the decision has a negative impact on you, or
  - someone otherwise entitled by the law
3. Your name and address, or that of the person making the request that you represent
4. Your interest in the decision, or the interest of the person you represent
5. Identification of any persons represented by the person making the request
6. The reasons for the request, with particular detail
7. The issues involved, with particular detail
8. Identification of appropriate new approval terms and conditions that you would like to see used to replace existing ones in the approval that you feel do not comply with the laws governing this kind of approval

### **Deadlines and Timeframes**

Please remember that you must file your petition(s) within 15 days after the date you received ("are served") this notice. IC 13-15-6-7(c) states a notice is served when either:

1. You are personally given the notice, or
2. Three days after the notice is placed into the US mail and addressed to you, i.e., the date the notice is postmarked.

In addition, if you read this notice in a newspaper, the deadline is within 15 days after the date the notice was published in the newspaper.

The date your petition(s) will be considered received by ("filed with") the OEA is based on the following:

1. If you or someone else personally brings the petition to OEA, the date you do this.
2. If you mail the petition through the regular US mail, the postmark date on the envelope containing the petition, or
3. If you send the petition to OEA through a private carrier like UPS, Federal Express, etc., the date you gave the document to the carrier, as shown by the sales receipt you receive from the carrier.

### **Receiving Updates on the Status of this Decision**

The OEA will provide you with notice of any pre-hearing conferences, preliminary hearings, hearings, stays, or orders regarding this decision if you submit a written request to the OEA. If you do not provide a written request to the OEA, you will no longer be notified of any proceedings pertaining to this decision. [IC 4-21.5-3-5(d)]

### **How to Obtain Additional Information**

If you have procedural or scheduling questions regarding your petition, you may contact the OEA by dialing (317) 232-8591.

**CONFINED FEEDING OPERATION (CFO) APPROVAL**

Applicant: (Permittee) Mark L. Deardorff Farm ID : 6024 AW# 6224  
Operation Name: Mark Lee Deardorff Farms Operation County: Miami  
Property Owner: Mark Lee & Loretta A. Deardorff Manager/Operator or  
Contact Person: Mark L. Deardorff  
Operation Location: 10729 N State Road 19 Macy, Indiana 46951

| Approval Type                         |                                                       |                                             |                                    |                                          |  |
|---------------------------------------|-------------------------------------------------------|---------------------------------------------|------------------------------------|------------------------------------------|--|
| <input type="checkbox"/> Construction | <input type="checkbox"/> Approval w/o<br>Construction | <input checked="" type="checkbox"/> Renewal | <input type="checkbox"/> Amendment | <input type="checkbox"/> Facility Change |  |
| <input type="checkbox"/> Transfer     | <input type="checkbox"/> Other                        | Notes:                                      |                                    |                                          |  |

Effective Date: June 29, 2017

Expiration Date: June 29, 2022

Renewal Submission Deadline: May 30, 2022

Permit renewal applications must be submitted no less than 30 days prior to the permit expiration date. If the renewal submission deadline falls on a Sunday or holiday, the renewal must be submitted prior to that date.

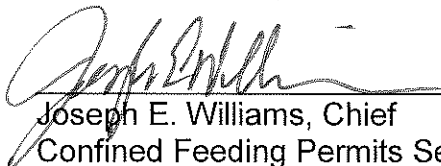
The purpose of the CFO approval program is to protect water quality in Indiana through standards for constructing and operating CFOs and associated manure management structures.

As the owner/operator, you must:

- meet all terms and conditions of this approval, the Confined Feeding Control Law IC 13-18-10, the Confined Feeding Operation regulations 327 IAC 19, and the Spill Rule 327 IAC 2-6.1;
- allow representatives of IDEM to enter your CFO and review your records, inspect the operation, and sample or monitor the operation when needed; and
- keep a copy of this approval as part of your operating record.

In order to receive approval to operate your CFO beyond the expiration date listed above, you must submit a complete application for an approval renewal to the IDEM by the renewal submission deadline.

This CFO Approval is authorized under IC 13-18-10 and becomes effective on the date listed above.

  
Joseph E. Williams, Chief  
Confined Feeding Permits Section

Applicant: (Permittee) **Mark L. Deardorff**  
Operation Name: **Mark Lee Deardorff Farms**

Farm ID #: **6024**

## **FACILITY DESCRIPTION**

The existing CFO and associated manure control facilities were previously renewed June 29, 2012, Animal Waste Number AW-6224. The following **existing** and or previously approved structures are reapproved:

- One previously approved free stall dairy cow barn identified as E1. This barn contains solid floor alleys flushed with recycled water from earthen impoundments for the removal of manure from 520 cows. Flush water and manure is collected in a 3 ft. deep collection gutter at the end of the barn. Manure and flush water is directed to a liquid-solid separator in E4, and manure solids are stored in impoundment L1 while liquid is stored in lagoons L2, L3, L4 and L5.
- One milking building identified as E2. The milking center contains three areas that are connected into one building. This includes a cow holding area, milking parlor, and milk storage room. The milking parlor wash water is directed to liquid storage lagoons L2, L3, L4, and L5.
- One previously approved freestall barn identified as E3. This barn has access to a 75'x100' concrete apron, an 8,700 square foot earthen lot, and 15 acres of pasture. Solid manure from 100 dry cows and heifers is scraped to a three sided concrete solid manure stack area.
- One previously approved freshening barn for 10 cows, identified as E4. This barn has solid manure bedded pack with access to outdoor pens.
- One previously approved solid manure bedded pack building with pasture access for 15 dairy calves, identified as E5.
- One liquid/solid manure separator building identified as E6. Solids are collected and stored in a concrete based impoundment L1. Liquids are directed and stored in lagoons L2, L3, L4, and L5.
- One previously approved silage pad with dimensions of 60'-0"x 280'-0", identified as E7. All silage leachate and stormwater is captured in a concrete leachate capture basin and is directed to lagoons L2, L3, L4 and L5. A surface drain is located on the west edge of the silage pad with a raised/rounded concrete curb gradient barrier to collect and direct accumulated silage leachate into the the drain.
- One previously approved commodity storage building identified as E8. The building is concrete floored and side-walled with contained feedstuffs/commodity storage.
- One previously approved 180'x 300' silage pad identified as N1. This concrete floored silage pad directs all silage leachate and stormwater to a leachate capture basin and the L2, L3, L4 and L5 liquid earthen lagoons.
- One previously approved area for individual calf hutches identified as N2. Individual calf hutches each have a solid floor and solid manure bedded stack for one dairy calf for a total of 75 dairy calves. This area is located west of the E1 freestall building and an existing surface drainage tile inlet. An access drive drainage diversion is located along the west side of the drive between the calf hutch area and the driveway to provide a gradient barrier/ access driveway diversion to control and direct any contaminated stormwater toward the south and away from the surface drainage tile inlet.

Applicant: (Permittee) **Mark L. Deardorff**  
Operation Name: Mark Lee Deardorff Farms

Farm ID #: **6024**

- One 240'x300' silage pad expansion identified as N3. This concrete floored silage pad is located south of N1, and includes a concrete retaining wall on the west side and an earthen berm on the east side to contain feedstuffs and direct leachate and stormwater to the leachate collection basin N4. The leachate is collected and directed to lagoons L3, L4, and L5.
- One concrete collection basin identified as N4. This concrete collection basin has a sloped floor for collecting leachate from silage pad (N3) and directing it to lagoons L3, L4, and L5.
- One previously approved concrete impoundment identified as L1. This impoundment collects solids from the solid/liquid separator E6. The separator effluent is directed to the L2 lagoon.
- One previously approved earthen storage lagoon for stage 1 storage identified as L2. This lagoon receives process wastewater from freestall barn E1 and milking center E2. Liquid effluent from E6 liquid/solid separator is sent here.
- One previously approved earthen storage lagoon for stage 2 storage identified as L3. This lagoon receives overflow from stage 1 lagoon (L2) and surface runoff from silage pad N1.
- One previously approved earthen storage lagoon for stage 3 storage identified as L4. This lagoon receives overflow from stage 2 lagoon (L3).
- One previously approved earthen storage lagoon for stage 4

*Mortalities are handled via off-site rendering service. No mortality management facility is located on-site.*

Your CFO is approved for total capacity of 30 dairy heifers, 90 dairy calves, and 600 mature dairy cattle for a total of 720 animals as detailed on the attached facility detail sheet and farmstead plan. The manure control facilities, including the availability of acreage for manure application, meet or exceed the requirements of the Confined Feeding Operation regulations 327 IAC 19.

*(Remainder of page intentionally left blank)*



#### IV. FACILITY DETAIL INFORMATION

| Label on Farmstead Plan | Animal Type          | Number of Animals | Solid or Liquid | Date Constructed<br>(for existing buildings) | Water Uses<br>(gallons/unit of time)                                         | Brief Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------|----------------------|-------------------|-----------------|----------------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E1                      | Dairy cows – Milking | 520 head          | Liquid          | 1991                                         | Flushing system<br><br>Reconstituted / recycled water<br><br>120,000 gal/day | Approved March 15, 1999; Log #6024; AW #4750.<br><br>Total building dimensions:<br>120'-0" x 371'-8" O.D.<br><br>Free stall dairy cow barn for 520 cows with solid floor alleys flushed with recycle water from earthen impoundments. Flush water and manure is collected in a 3 foot deep collection gutter at end of barn. Manure and flush water is directed to liquid-solid separator in E4. Manure solids stored in impoundment L1. Liquid is stored in impoundments L2, L3, L4, and L5. |
| E2                      | N/A                  | N/A               | Liquid          | 1990                                         | 200 gallons per day                                                          | Approved March 15, 1999; Log #6024; AW #4750.<br><br>Milking Center<br>The milking center includes three areas that are connected into one building.<br>1. Cow holding area – 44'-7" x 47'-0" O.D.<br>2. Milking parlor – 67'-9" x 67'-0" O.D.<br>3. Milk storage room – 41'-4" x 62'-6" O.D.<br><br>Milking parlor wash water is directed to liquid storage impoundments L2, L3, L4, and L5.                                                                                                 |

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#### IV. FACILITY DETAIL INFORMATION

| Label on Farmstead Plan | Animal Type                | Number of Animals                              | Solid or Liquid | Date Constructed<br>(for existing buildings) | Water Uses<br>(gallons/unit of time) | Brief Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------|----------------------------|------------------------------------------------|-----------------|----------------------------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E3                      | Dry cows and Dairy heifers | 70 cows (approx.)<br>&<br>30 heifers (approx.) | Solid           | 1975                                         | N/A                                  | <p>Approved March 15, 1999; Log #6024; AW #4750.</p> <p>Freestall barn for 100 dry cows and heifers. Barn has access to a 75' x 100' concrete apron, an 8,700 ft<sup>3</sup> earthen lot and a 15 acre pasture. Solid manure is scraped to a three sided concrete solid manure stack area. Not shared with another confined feeding structure.</p> <p>Total building dimensions:<br/>54'-9" x 131'-7" O.D.</p> <p>Solid manure stack storage capacity:<br/>6,500 ft<sup>3</sup> / 128 days</p> |
| E4                      | Dairy cows & heifers       | 10 head                                        | Solid           | 1956                                         | N/A                                  | <p>Approved March 15, 1999; Log #6024; AW #4750.</p> <p>Freshening building for 10 cows and heifers. Solid manure bedded pack building with access to outdoor pens. Not shared with another confined feeding structure.</p> <p>Total building dimensions:<br/>43'-4" x 106'-0" O.D.</p> <p>Solid manure stack storage capacity:<br/>7,600 ft<sup>3</sup> / 415 days</p>                                                                                                                        |

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#### IV. FACILITY DETAIL INFORMATION

| Label on Farmstead Plan | Animal Type  | Number of Animals | Solid or Liquid | Date Constructed<br>(for existing buildings) | Water Uses<br>(gallons/unit of time) | Brief Description                                                                                                                                                                                                                                                                                                                    |
|-------------------------|--------------|-------------------|-----------------|----------------------------------------------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E5                      | Dairy calves | 15 head           | Solid           | 1975                                         | N/A                                  | <p>Approved March 15, 1999; Log #6024; AW #4750.</p> <p>Solid manure bedded pack building with pasture access for 15 dairy calves. Not shared with another confined feeding structure.</p> <p>Total building dimensions:<br/>52'-0" x 30'-0" O.D.</p> <p>Solid manure stack storage capacity:<br/>1500 ft<sup>3</sup> / 365 days</p> |
| E6                      | ---          | ---               | Liquid / Solid  | 2005                                         | N/A                                  | <p>Approved June 29, 2012. Log #6024; AW #6224.</p> <p>Liquid/solid manure separator building. Solids are collected and stored in a concrete based impoundment L1. Liquids are directed and stored in impoundments L2, L3, L4, and L5.</p>                                                                                           |
| E7                      | ---          | ---               | ---             | 1993                                         | N/A                                  | <p>Approved March 15, 1999; Log #6024; AW #4750.</p> <p>Silage Pad. Silage leachate is collected and directed to impoundments L2, L3, L4 and L5.</p> <p>Silage pad dimensions:<br/>60'-0" x 280'-0"</p>                                                                                                                              |

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#### IV. FACILITY DETAIL INFORMATION

| Label on Farmstead Plan | Animal Type | Number of Animals | Solid or Liquid | Date Constructed<br>(for existing buildings) | Water Uses<br>(gallons/unit of time) | Brief Description                                                                                                                                                                               |
|-------------------------|-------------|-------------------|-----------------|----------------------------------------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E8                      | ---         | ---               | ---             | 1993                                         | ---                                  | Commodity storage building<br><br>Total building dimensions:<br>60'-0" x 120'-0" O.D.                                                                                                           |
| E9                      | ---         | ---               | ---             | ---                                          | ---                                  | Equipment and machine storage building<br><br>Total building dimensions:<br>69'-0" x 120'-0" O.D.                                                                                               |
| E10                     | ---         | ---               | ---             | ---                                          | ---                                  | Farm shop<br><br>Total building dimensions:<br>Approx. 73'-0" x 113'-0" O.D.                                                                                                                    |
| N1                      | ---         | ---               | ---             | 2004                                         | ---                                  | Approved June 29, 2012; Log #6024; AW #6224.<br><br>Silage Pad. Silage leachate is collected and directed to impoundments L2, L3, L4 and L5.<br><br>Silage pad dimensions:<br>180'-0" x 300'-0" |

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#### IV. FACILITY DETAIL INFORMATION

| Label on Farmstead Plan | Animal Type  | Number of Animals              | Solid or Liquid | Date Constructed (for existing buildings) | Water Uses (gallons/unit of time) | Brief Description                                                                                                                                                                                                                                                                |
|-------------------------|--------------|--------------------------------|-----------------|-------------------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| N2                      | Dairy calves | 75 head<br>(0-2 months of age) | Solid           | 1998                                      | N/A                               | <p>Approved June 29, 2012; Log #6024; AW #6224.</p> <p>Individual calf hutches with a solid floor and solid manure bedded stack for 75 dairy calves. Area is located west of freestall barn E1.</p> <p>Solid manure stack storage capacity:<br/>32 ft<sup>3</sup> / 246 days</p> |
| N3                      | ---          | ---                            | ---             | 2011                                      | N/A                               | <p>Approved June 29, 2012; Log #6024; AW #6224.</p> <p>Silage Pad Expansion. Silage leachate is collected and directed to impoundments L3, L4 and L5.</p> <p>Silage pad dimensions:<br/>240'-0" x 300'-0"</p>                                                                    |
| N4                      | ---          | ---                            | ---             | 2011                                      | ---                               | <p>Approved June 29, 2012; Log #6024; AW #6224.</p> <p>Concrete collection basin with a sloped floor for collecting leachate from silage pad (N3) and directing to impoundments L3, L4 and L5.</p> <p>Concrete basin inside dimensions:<br/>8'-0" x 8'-0" x 2'-0"</p>            |

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#### IV. FACILITY DETAIL INFORMATION

| Label on Farmstead Plan | Animal Type | Number of Animals | Solid or Liquid | Date Constructed<br>(for existing buildings) | Water Uses<br>(gallons/unit of time) | Brief Description                                                                                                                                                                                                                                          |
|-------------------------|-------------|-------------------|-----------------|----------------------------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| L1                      | ---         | ---               | Solid           | 1991                                         | N/A                                  | Approved March 15, 1999; Log #6024; AW #4750.<br><br>Concrete lined impoundment for solids from the solid/liquid separator.<br><br>Dry storage capacity:<br>450,000 ft <sup>3</sup> / 472 days                                                             |
| L2                      | ---         | ---               | Liquid          | 1991                                         | N/A                                  | Approved March 15, 1999; Log #6024; AW #4750.<br><br>Earthen storage impoundment – Stage 1. Receives process wastewater from freestall barn (E1) and milking center (E2).<br><br>Approved storage capacity:<br>221,376 ft <sup>3</sup> / 132 days          |
| L3                      | ---         | ---               | Liquid          | 1997                                         | N/A                                  | Approved March 15, 1999; Log #6024; AW #4750.<br><br>Earthen storage impoundment – Stage 2. Receives overflow from stage 1 impoundment (L2) and surface runoff from silage pad N1.<br><br>Approved storage capacity:<br>336,876 ft <sup>3</sup> / 201 days |

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**IV. FACILITY DETAIL INFORMATION**

| <b>Label on<br/>Farmstead<br/>Plan</b> | <b>Animal Type</b> | <b>Number of<br/>Animals</b> | <b>Solid<br/>or<br/>Liquid</b> | <b>Date<br/>Constructed<br/>(for existing<br/>buildings)</b> | <b>Water Uses<br/>(gallons/unit of<br/>time)</b> | <b>Brief Description</b>                                                                                                                                                                                             |
|----------------------------------------|--------------------|------------------------------|--------------------------------|--------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| L4                                     | ---                | ---                          | Liquid                         | 1997                                                         | N/A                                              | Approved March 15, 1999; Log #6024; AW #4750.<br><br>Earthen storage impoundment – Stage 3. Receives overflow from stage 2 impoundment (L3).<br><br>Approved storage capacity:<br>380,990 ft <sup>3</sup> / 227 days |
| L5                                     | ---                | ---                          | Liquid                         | 1997                                                         | N/A                                              | Approved March 15, 1999; Log #6024; AW #4750.<br><br>Earthen storage impoundment – Stage 4. Receives overflow from stage 3 impoundment (L4).<br><br>Approved storage capacity:<br>319,029 ft <sup>3</sup> / 190 days |
|                                        |                    |                              |                                |                                                              |                                                  |                                                                                                                                                                                                                      |

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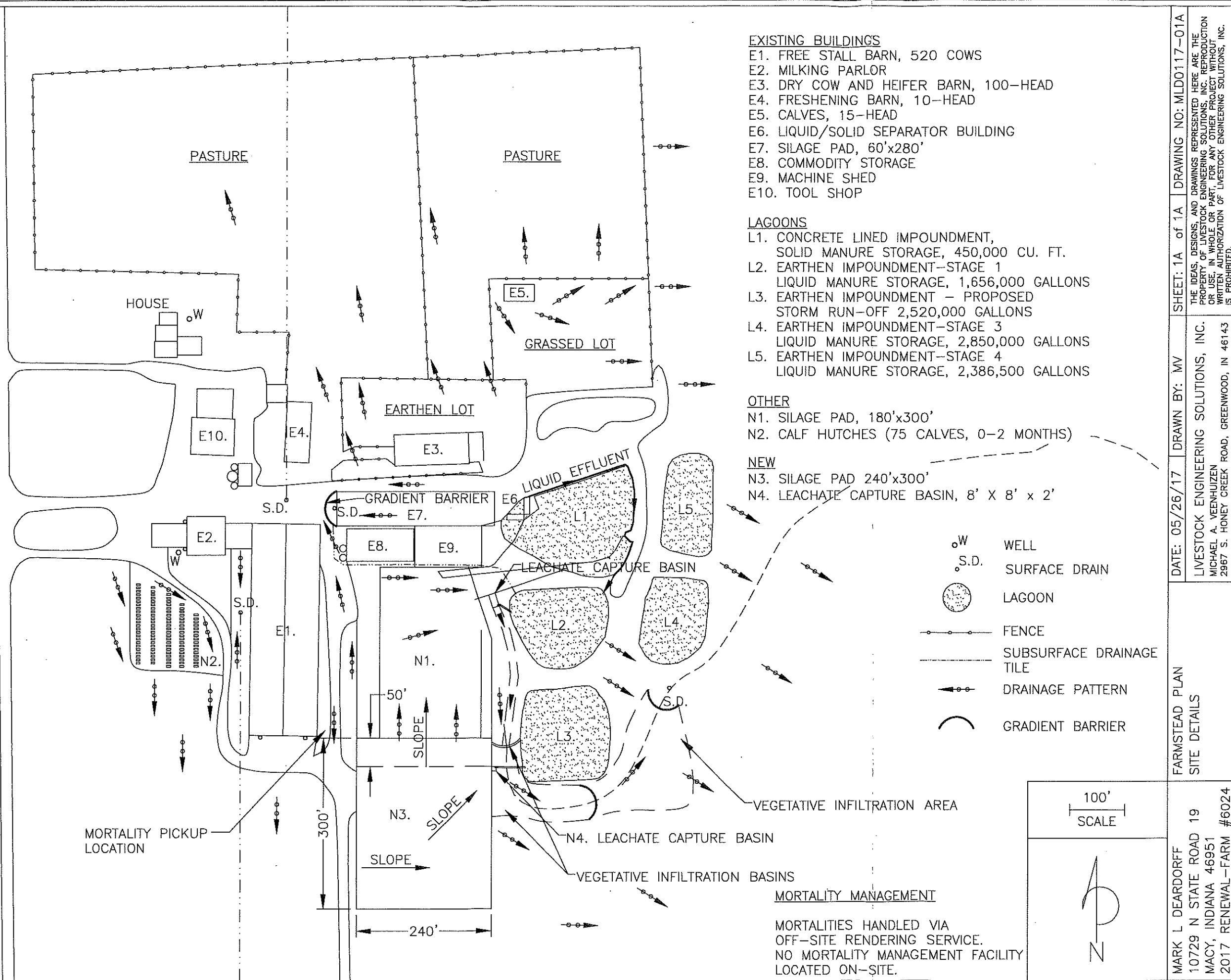


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NORTH S.R. 19



Applicant: (Permittee) **Mark L. Deardorff**  
Operation Name: Mark Lee Deardorff Farms

Farm ID #: **6024**

## **GENERAL APPROVAL CONDITIONS**

1. An Approval Renewal application must be submitted to IDEM no less than 30 days prior to the approval expiration date to maintain a valid approval for your operation. The application must include a Manure Management Plan (MMP) which details any changes made at the operation, outline procedures for soil testing and manure testing, and include a current farmstead plan and Natural Resource Conservation Service (NRCS) soil survey maps of application ground. The soil survey maps must detail the boundaries of the field(s) and include the property owner name and available spreadable acres after setbacks are subtracted. The MMP must also contain a request for land application acreage requirement waiver if a manure distribution program is used, or contain a description of alternate methods proposed for managing the manure.
2. This approval does not authorize any injury to any person or private property; the invasion of other private rights; the infringement of federal, state, or local laws or regulations; nor does it preempt any duty to comply with other federal, state or local requirements, permits or approvals.
3. Your request for an approval modification, revocation and reissuance, or termination does not suspend any approval term or condition. The approval may be modified, revoked and reissued, or terminated, for causing or threatening to cause harm to the environment.
4. The conditions of this approval are separable and if any condition of the approval is determined to be invalid the application of the condition to other circumstances and the remainder of this approval will not be affected.
5. You may not start construction of a CFO, or expansion of a CFO that increases animal capacity and/or manure containment capacity, without obtaining prior approval from IDEM as required by 327 IAC 19-1-2(b).

## **SPECIAL CONDITIONS**

This approval contains no special conditions.

*(Remainder of page intentionally left blank)*