

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

Purpose:

Compliance Evaluation Sampling Inspection

Facility:

Ranovael Dairy, LLC
1244 County Road U
De Pere, Wisconsin 54115
Oneida Reservation
Brown County
44.434399, -88.189796

WPDES Permit Number: WI-0062821

Date of Site Inspection:

07/15/2021 – Facility Walkthrough

07/22/2021 – Operator Interview

EPA Representatives:

Benjamin Atkinson, Inspector
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312-353-8243

Cheryl Burdett, Inspector
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312-886-1463

State Representatives:

Holly Stegemann, Agricultural Runoff Management Specialist
Holly.Stegemann@Wisconsin.gov

920-360-0794

Facility Representatives:

Ray Vanden Elzen, Co-Owner

920-366-5463

Shirley Vanden Elzen, Co-Owner

Report Prepared by:

Benjamin D. Atkinson, Inspector

Inspector Signature:

Atkinson, Benjamin

Digitally signed by Atkinson,
Benjamin
Date: 2021.09.29 10:40:41 -05'00'

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: 2021.09.29
14:30:13 -05'00'

1. BACKGROUND

The purpose of this report is to describe, evaluate and document the Ranovael Dairy, LLC's compliance with the Clean Water Act (CWA) at its De Pere, Wisconsin facility (the Facility) on 07/15/2021. This inspection was performed pursuant to Section 308(a) of the Federal Water Pollution Control Act, as amended.

At the time of the inspection, the Facility stated they had approximately 90 beef cattle confined. Within the past 12 months, the Facility had confined and fed or maintained for a total of 45 days or more 700 mature dairy cows and meets the definition of a Large Concentrated Animal Feeding Operation. The owners stated they were out of the dairy business and that their son had put the beef cattle on the south side of the facility.

An unnamed intermittent tributary to Dutchman Creek flows through the facility a distance of approximately 2.3 miles to its confluence with intermittent Dutchman Creek. Intermittent Dutchman Creek flows approximately 9 miles and becomes perennial Dutchman Creek. Perennial Dutchman Creek flows approximately 3 miles to the perennial Fox River a Traditionally Navigable Waterway.

The Facility is located within the boundary of the Oneida Nation of Wisconsin reservation. That Wisconsin Department of Natural Resources (WDNR) issued the facility a Wisconsin Pollutant Discharge Elimination System Permit (WPDES) No. WI-0062821. In April 2019, the State of Wisconsin issued a Stipulation for Judgement against the Facility related to discharges from the Facility's Vegetated Treatment Area.

2. SITE INSPECTION

Table 1: Site Entry and Opening Conference

Arrival Time:	8:22 AM
Temperature:	67° F
Precipitation:	.4 inches
Presented credentials?	Yes
Credentials presented to whom and at what time?	Ray and Shirley Vanden Elzen (the Owners)
Was an opening conference held? With whom?	Yes, with the Owners
If photographs or documents were taken, does the facility consider any to be Confidential Business Information (CBI)?	No
EPA vehicle parked in approved location?	Yes
Location where EPA vehicle was parked?	West of the milking parlor
Disposable boots worn?	Yes
Other bio-security measures taken (state vet contacted, etc.):	State Vet was contacted

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

Checklist(s) Used
R5 CAFO Inspection Checklist

Table 3: Facility Description

Type of Animal	Number of Animals	Capacity	Type of Confinement
Beef Cattle	90	700	Freestall barns and outdoor lots
Minimum Number of Animals in previous 5 years:			90
Maximum Number of Animals in previous 5 years:			700
Number of Animals that are stabled/confined and/or fed/maintained for 45 days or more in previous 12 months:			700
Amount of Liquid Manure Generated per year:			Unknown
Amount of Solid Manure Generated per year:			Unknown
Does the facility have an NPDES Permit?			The Facility was issued a WPDES permit.
SIC or NAICS code:			0241
CAFO Designation Reason (If a designated CAFO)			Number of animals
Do animals have direct access to WOUS?			Not in the production area.
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?			Not in the production area.
What is the area (acres) of the production area?			Approximately 10
What is the area (acres) of the pasture?			300
How many employees (not counting family members)?			None
Other facilities under common ownership (name and address):			
None			

Table 4: Livestock Waste Storage

Type of Storage	Storage Capacity	Type of Liner	Depth Markers Present	Last Time Waste was Removed	Amount of Waste Removed	Days of Storage
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Pond	1.5 Million Gallons	Clay	Yes	Fall 2020	Unknown	Unknown
Pond	400,000 Gallons	Clay	No	Spring 2020	Unknown	Unknown
Records at site of storage structure design?				No		
Is manure stored for the short term? If yes, describe where it is stored, how it is drained and where it drains to.				No		
Are records kept of the level of manure in the storage structures?				No		
When was the last time a storage structure was emptied, either partially or completely?				Fall 2020		
What amount of manure or process wastewater was removed the last time the storage structure was emptied, either partially or completely?				Unknown		
Do the facility personnel inspect and keep records of all diversion devices?				No		
Do the facility personnel inspect and keep records of all impoundments?				No		
Do the facility personnel inspect and keep records of all the water lines?				No		
Do the facility personnel perform routine visual inspections and keep records of the production area?				No		
Does the waste storage system have a managed outfall or discharge point? If yes, provide a description of the outfall and a description of the area receiving the discharge.				No		
Has the facility had any documented discharges of livestock waste to surface water in the past year?				None documented by the facility.		
Are there safety devices installed around any manure storage ponds? (Barriers at the end of manure push off platforms, fences around pond, signage.)				Yes		

Table 5: Livestock Waste Management

Describe the way manure is collected and disposed of at the facility:
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Waste on the south side of the facility is scraped or gravity flows to manure storage pond 2. Manure from the freestall barns on the north side of the facility was pumped to manure storage pond 1; however, these barns are no longer in use.	
Describe the way used bedding is collected and disposed of at the facility:	
No bedding is used.	
Are mortality records kept?	No
Describe the way mortalities are managed at the facility:	
A rendering service picks up mortalities.	
What type of method is used to provide drinking water for the animals?	Tanks with floats.
Describe the way spilled drinking water is collected and disposed of at the facility:	
Spilled water is collected with manure.	
Describe the way mist cooling water is collected and disposed of at the facility:	
No misting is used.	
Describe how chemicals are stored and how used or spilled chemicals are collected and disposed of at the facility:	
No chemicals are used as the facility is no longer a dairy.	
Describe the way water that has been used to wash/flush barns is collected and disposed of at the facility:	
No flushing occurs.	
Describe the way feed is contained and how runoff from feed is collected and disposed of at the facility:	
Feed is stored in the feed storage area, commodity barn, and in bagged hay bales. Leachate and runoff from the feed storage area gravity flows to the VTA.	

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

Does the facility perform and keep records of the manure testing?	The NMP writer kept the records.
When was the last time a sample was taken of the manure and/or process wastewater?	Fall 2020
Describe the process to take the manure and/or process wastewater sample.	Grab sample when pumping.
Number of acres available for land application:	300 Acres of pasture.
Are land application records kept?	The NMP writer kept the records.

Who applies the manure and process wastewater to the fields?	A hired manure spreader
Are weather conditions at time of application kept? (24 before – 24 after)	No
Does the facility perform and keep records of the soil testing?	Yes
Is manure transferred off-site to another party?	No

Table 7: Receiving Surface Waters

Describe the surface flow pathways:	
Surface runoff from the feed storage area flows to the VTA. All other stormwater flows to the unnamed intermittent tributary of Dutchman Creek.	
How many months out of the year is there flow in the nearest surface water pathway:	Most of the year.
Are there any storm water pathways entering the facility?	No
Are there any clean water ponds on site?	No
What is the name of the first waterway that is identified as a Traditional Navigable Water (TNW) for surface flow from the facility?	The Fox River
Is the surface water pathway nearest to the facility considered to be ephemeral, intermittent or perennial?	Intermittent
Has the surface water pathway nearest to the facility been assessed for water quality?	No

Table 8: Nutrient Management Plan

NMP on site?	No
Additional NMP comments:	NMP was last updated in 2019 and the NMP writer has it.

2.2 Walkthrough of the Facility

Ben Atkinson and Cheryl Burdett (the Inspectors) met offsite with WDNR inspector Holly Stegemann (WDNR) and proceeded to the site arriving at 8:22 A.M. The weather was clear. 0.4 inches of rain had been reported the night before the inspection. The Inspectors donned their biosecurity boots and went to the on-site residence to locate a facility representative. Mr. Ray Vanden Elzen and Mrs. Shirley Vanden Elzen (the Owners) came to the door. The Inspectors presented their credentials and explained that we were there to conduct an inspection to determine compliance with the Clean Water

Act. The Owners stated that they had ceased operating the dairy and sold all of the animals the previous fall. The Inspectors asked if there were any animals on the facility and the Owners stated that their son had some beef cattle on the south side of the facility. The Inspectors notified the Owners that having had the requisite number of animals to be considered a Concentrated Animal Feeding Operation (CAFO) for at least 45 days within the last 12 months meant that they were still considered a CAFO and requested permission to conduct the inspection. The owners granted permission and declined to accompany the Inspectors.

The Inspectors together with WDNR began by walking south from where their vehicles were parked past the machine shed to the feed storage area. The Inspectors observed two mounds of silage and multiple rows of plastic wrapped hay bales (photos 1 and 2). The Inspectors also observed darkly colored leachate and loose silage around the silage mounds. The inspectors observed the stormwater and leachate flowing to the south (photos 3-5). The Inspectors followed the flow path to the first flush collection system and vegetated treatment area (VTA). The Inspectors observed that the first flush collection system and spreader bar were completely submerged and the VTA was ponded with darkly colored water (photos 6 and 7).

The Inspectors then walked to the southwest around the west side of the VTA to the southwest side of the VTA. The Inspectors observed that the VTA was bermed on all sides and completely ponded with water. The Inspectors walked east along the southern berm and observed that the elevation of the ponded water in the VTA was level with the top of the berm in some places. The Inspectors observed that the ground of the berm was saturated. The Inspectors observed that liquid from the VTA was trickling over the berm, though it was difficult to see due to the tall grass and dense vegetation (photos 9 – 14). The Inspectors walked south toward the unnamed tributary and observed what appeared to be a spring or seep flowing from the side of the berm and flowing south toward the tributary (photos 15-22). The dense vegetation and wet, saturated soil conditions along the banks of the tributary made it difficult to document the flowpath to the tributary.

The Inspectors then walked northeast between the tributary and the VTA berm to the northeast side of the feed storage area (photos 23-26). The Inspectors observed the vacant barns on the north side of the facility and then crossed the bridge over the tributary. The Inspectors walked northeast around the north side of manure storage pond 1. Manure storage pond 1 was heavily crusted and had significant vegetation growing over the top of it. The inspectors noted that manure storage pond 1 was not at the top of its berms and no overtopping was observed (photos 28-31).

The Inspectors continued walking northeast and observed an eroded flow path with water flowing north to the tributary. The Inspectors followed the flow path to the southwest to document the source of the water and found that it appeared to fade away in the pastures east of the heifer barns on the south side of the facility (photos 32 – 48). No source of

water other than stormwater from the pasture area was observed for the water in the flow path.

The Inspectors then walked to the west to the southwest side of the facility. The Inspectors observed more plastic wrapped round hay bales south of the heifer barns on the south side of the facility (photo 49). The Inspectors observed runoff from feed pad flowing south into the field south of the heifer lots (photos 50 – 53). The Inspectors then walked north around the west side of the southwestern heifer barn and observed a solid manure stacking area, concrete lot, and flow path for the surface runoff of the heifer barns' pens (photos 54-58).

The Inspectors then observed manure storage pond 2. The inspectors observed that the pond had backed up on the concrete pad to the west. There was also a significant crust and abundant vegetation growing on the manure pond (photos 59 and 60). The Inspectors then walked around manure storage pond 2 and back south past the heifer barns (photos 61-64).

The Inspectors then returned to their vehicle, collected sampling supplies, and prepared the field blank (photo 65). The Inspectors then returned to the southwest side of the VTA. The Inspectors observed a small channelized flow path on the top of the southwest corner of the VTA berm. The Inspectors observed that the channelized flow path led from the top of the berm south to the unnamed intermittent tributary. The Inspectors observed that there was water in portion of the flow path closest to the VTA. The Inspectors also noted duck weed, an aquatic plant, deposited along the channel from the VTA to unnamed intermittent tributary (Photos 66-75).

The Inspectors collected sample S01 from the northern part of the channelized flow path at the top of the berm around the VTA (photos 76-77). The Inspectors then collected sample S02 from the ponded VTA (photos 78-79). The Inspectors then walked east, downstream, along the unnamed intermittent tributary approximately 20 feet and collected sample S03 (photo 80). The Inspectors then walked west and crossed County Road U and collected same S04 upstream of the confluence of the channelized flow path and the unnamed intermittent tributary (photos 81-83).

Following the collection of sample S04, the Inspectors returned to the Owners residence and held a brief closing conference and interview. The Inspectors notified the Owners that they needed to act immediately to prevent any unpermitted discharges from the facility.

A follow up phone call was held on July 22nd during which EPA completed the interview and checklist and repeated that the Owners should take immediate action to prevent unpermitted discharges from occurring.

2.3 Closing Conference and Post-Inspection

Table 12: Post Walk-Through

Was a closing conference held? With whom?	A brief closing conference and interview were held on-site with the Owners followed by a phone call to complete the interview closing conference on July 22 nd .	
Were specific Areas of Concern discussed with facility personnel?	Yes	
Who were the Areas of Concern discussed with?	The Owners.	
Were any deficiencies or areas of concern addressed or fixed during the inspection? If so, list what was done.	No	
Exit Time:	1:00 PM	
Disposable Boots Left at Facility?	Yes	
Vehicle Washed after leaving facility?	Yes	

Table 13a: Sampling Information

Were samples taken?	<u>Yes</u>
Were samples split with facility?	<u>No</u>
Number of samples taken?	<u>5</u>
Was a trip blank created (done prior to entering the facility)?	<u>No</u>
Were field duplicate samples taken (1 duplicate per 20 samples)?	<u>No</u>
Were equipment blanks taken (if more than one type of equipment was used to collect samples)?	<u>Yes</u>
Identify which samples were equipment blanks.	<u>B01</u>
List chain of custody for fecal coliform samples:	<u>5-65977</u>
List chain of custody for nutrient and general chemistry samples:	<u>5-65954</u>
Location where samples were preserved:	<u>On-site</u>
Name of people involved with sample preservation:	<u>Ben Atkinson</u> <u>Cheryl Burdett</u>
Time of sample preservation:	<u>12:45 PM</u>
Were samples shipped to a lab?	<u>No</u>
Did all inspectors involved with the sampling sign the chain of custody?	<u>Yes</u>
Weather conditions at the time of sample collection:	<u>Sunny</u>
Camera name and type used to photograph sample collection:	<u>RICOH WG-4</u> <u>GPS</u>

Table 14b: Facility Sample Information

Number	Name	Location	Date	Time	Collector	Color/ Smell	Photo #	Photo- grapher	Method of Collection	# of Sulfuric Acid Ampoules
B01	Ranovael	Vehicle	7/15/20 21	11:23 AM	BA CB	Clear	RIMG0065	CB	Grab	3 drops
S01	Overflow from VTA	North end of channelized flow path from VTA	7/15/20 21	11:49 AM	BA CB	Brownish green	RIMG0076- RIMG0077	CB	Grab	8 drops
S02	VTA	VTA	7/15/20 21	11:52 AM	BA CB	Greenish	RIMG0078- RIMG0079	CB	Grab	6 drops
S03	Downstream DC	Downstream of VTA path confluence	7/15/20 21	12:00 PM	BA CB	Slight brownish	RIMG0080	CB	Grab	5 drops
S04	Upstream DC	West of County Road U	7/15/20 21	12:07 PM	BA CB	Slight brownish	RIMG0081	CB	Grab	5 drops

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

Name of Laboratory where nutrients and general chemistry samples were taken: REGION 5 ANALYTICAL SERVICES BRANCH LABORATORY

Additional laboratory notes: _____

Table 15: Sample Results

Sample ID	Sample Description (all liquid samples unless otherwise noted)	Biochemical Oxygen Demand (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Nitrate- Nitrite N (mg/L)	Ammonia as N (mg/L)	Total Phosphorus (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Fecal Coliform (CFU/100ml)
<i>Typical limits</i>				<i>0.1 *</i>	<i>15</i>	<i>.05</i>	<i>1000</i>		<i>200**</i>
B01		3	U	U	U	U	U	U	NA
S01		57	15.2	0.08	2.95	9.56	425	710	45500
S02		34	11.1	U	2.58	9.66	428	51	18200
S03		7	2.59	2.25	0.28	1.30	244	51	173000
S04		7	2.36	2.47	0.36	1.33	240	39	155000

U = Not Detected

The typical limits are for general use waters and this data comes from the Illinois Water Quality Standards (IEPA 2004) unless otherwise noted. There are no Water Quality Standards for Biochemical Oxygen Demand, Total Kjeldahl Nitrogen, Nitrate-Nitrite, and Total Suspended Solids but some limits are provided and are meant to be a benchmark for comparison only.

* Maximum Nitrate-Nitrite amount for aquatic life (North Carolina State University Water Quality Group)

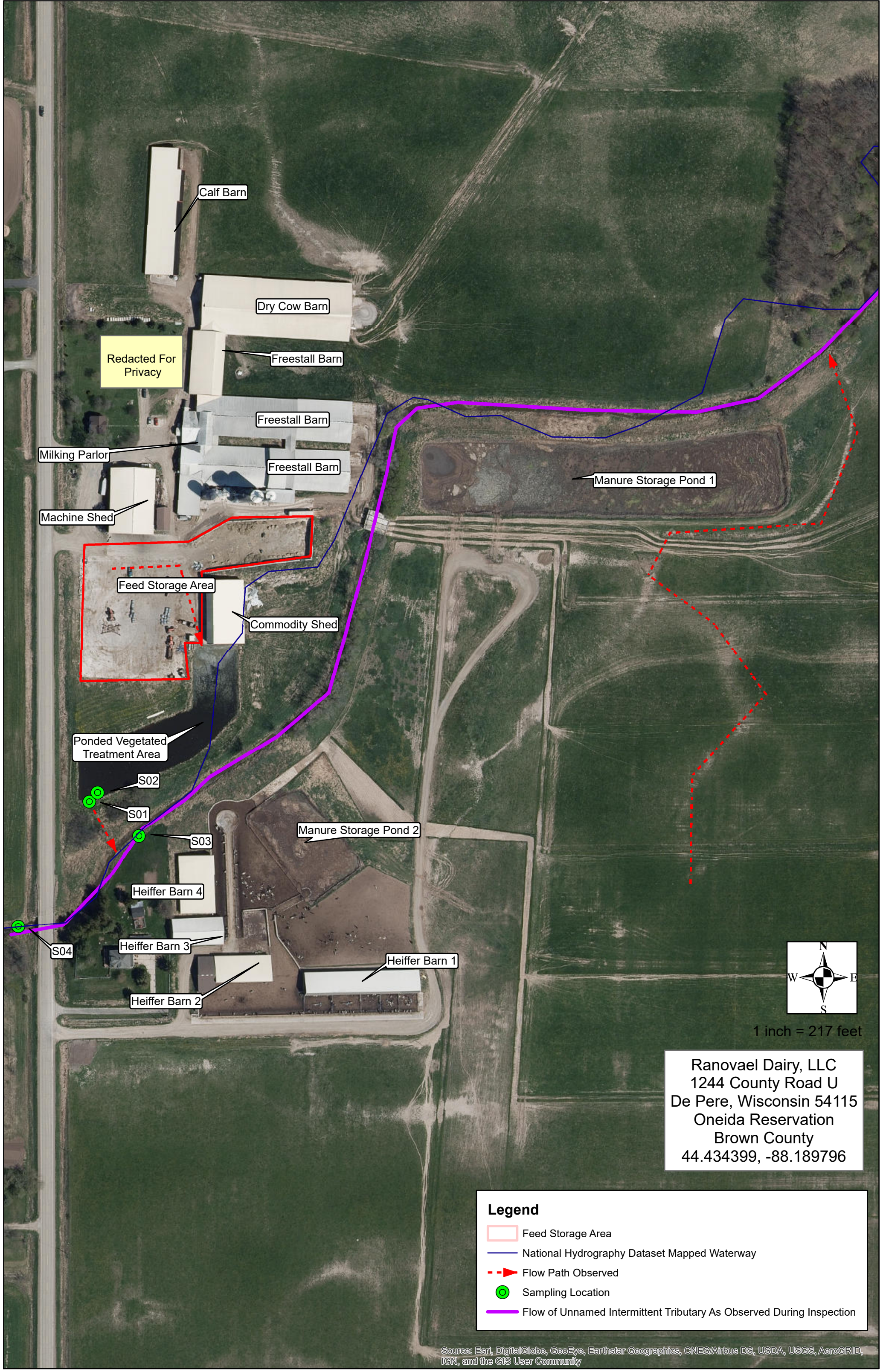
3. AREAS OF CONCERN

EPA observed these areas of concern:

1. The VTA was ponded with evidence of having overtopped and discharged through the channel located at the southwest corner.
2. Manure storage pond 2 was beyond its maximum capacity.

4. LIST OF ATTACHMENTS

- A) Aerial photograph of Ranovael Dairy with buildings, waterways and discharge pathways labeled.
- B) Photo Log
- C) Sampling Results



Redacted For Privacy

Calf Barn

Dry Cow Barn

Freestall Barn

Freestall Barn

Freestall Barn

Milking Parlor

Machine Shed

Feed Storage Area

Commodity Shed

Manure Storage Pond 1

Pondered Vegetated Treatment Area

S02

S01

S03

Manure Storage Pond 2

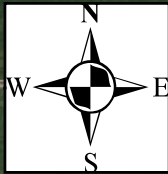
Heiffer Barn 4

Heiffer Barn 3

Heiffer Barn 2

Heiffer Barn 1

S04



1 inch = 217 feet

Ranovael Dairy, LLC
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Legend

-  Feed Storage Area
-  National Hydrography Dataset Mapped Waterway
-  Flow Path Observed
-  Sampling Location
-  Flow of Unnamed Intermittent Tributary As Observed During Inspection

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

RANOVAEL DAIRY LLC

EPA Inspection 07/15/2021

All photos taken by Cheryl Burdett, Environmental Scientist, U.S. EPA

Camera: RICOH WG-4 GPS

NOTE: Photos RIMG0001 – RIMG0008 were taken with an incorrect time and date set on the camera. Beginning with RIMG0009, the date and time were set by GPS. Times for photos RIMG0001-RIMG0008 are best estimates based on subsequent photos and elapsed time between photos.



1: RIMG0001

Description: Looking east along the north end of the feed storage area. Note the wrapped round hay bales (blue arrows), western silage mound (green arrow) and eastern silage mound (red arrow).

Location: Northwest corner of the feed storage area.

Camera Direction: East

Date/Time: 07/15/2021 ~8:43 AM Recorded as 1/1/2014 12:02 AM



2: RIMG0002

Description: Looking northeast from the north end of the western silage mound.

Location: North end of the feed storage area.

Camera Direction: Northeast

Date/Time: 07/15/2021 ~8:45 AM Recorded as 1/1/2014 12:04 AM



3: RIMG0003

Description: Looking southeast at the open end of the western silage mound. Note the darkly colored leachate at the base of the silage mound.

Location: North end of the feed storage area.

Camera Direction: Southeast

Date/Time: 07/15/2021 ~8:46 AM Recorded as 1/1/2014 12:05 AM



4: RIMG0004

Description: Looking south along the east side of the western silage mound. Note the flow path with darkly colored leachate and runoff. The ponded vegetated treatment area is in the distance. The red arrow indicates the direction of flow of the leachate and runoff.

Location: North end of the feed storage area and northeast of the western silage mound.

Camera Direction: South

Date/Time: 07/15/2021 ~8:46 AM Recorded as 1/1/2014 12:05 AM



5: RIMG0005

Description: Darkly colored leachate and runoff flowing toward the ponded vegetated treatment area.

Location: North end of the feed storage area and northeast of the western silage mound.

Camera Direction: South

Date/Time: 07/15/2021 ~8:47 AM Recorded as 1/1/2014 12:06 AM



6: RIMG0006

Description: North end of the ponded vegetated treatment area. This structure was designed to be a manually operated first flush collection system.

Location: North end of the ponded vegetated treatment area.

Camera Direction: Southwest

Date/Time: 07/15/2021 ~8:48 AM Recorded as 1/1/2014 12:07 AM



7: RIMG0007

Description: Looking south along the northern part of the ponded vegetated treatment area.

Location: North end of the ponded vegetated treatment area.

Camera Direction: South

Date/Time: 07/15/2021 ~8:48 AM Recorded as 1/1/2014 12:07 AM



8: RIMG0008

Description: :Looking east toward the west end of the eastern silage mound.

Location: The north end of the feed storage area.

Camera Direction: East

Date/Time: 07/15/2021 ~8:50 recorded as 1/1/2014 12:09 AM



9: RIMG0009

Description: Surface water observed on top of the southern berm of the ponded vegetated treatment area.

Location: Berm along the southside of the ponded vegetated treatment area.

Camera Direction: Down.

Date/Time: 07/15/2021 9:00 AM



10: RIMG0010

Description: Surface water flowing south toward the unnamed intermittent tributary.

Location: Berm along the southeast side of the ponded vegetated treatment area.

Camera Direction: Down

Date/Time: 07/15/2021 9:00 AM



11: RIMG0011

Description: Surface water flowing south toward the unnamed intermittent tributary.

Location: Berm along the southeast side of the ponded vegetated treatment area.

Camera Direction: Down

Date/Time: 07/15/2021 9:01 AM



12: RIMG0012

Description: Duckweed covered liquid within the ponded vegetated treatment area. Note the close proximity of the liquid elevation to the top of the berm.

Location: Berm along the southeast side of the ponded vegetated treatment area.

Camera Direction: North

Date/Time: 07/15/2021 9:03 AM



13: RIMG0013

Description: Duckweed covered liquid within the ponded vegetated treatment area. Note the close proximity of the liquid elevation to the top of the berm.

Location: Berm along the southeast side of the ponded vegetated treatment area.

Camera Direction: North

Date/Time: 07/15/2021 9:04 AM



14: RIMG0014

Description: Duckweed covered liquid within the ponded vegetated treatment area. Note the close proximity of the liquid elevation to the top of the berm.

Location: Berm along the southeast side of the ponded vegetated treatment area.

Camera Direction: North

Date/Time: 07/15/2021 9:04 AM



15: RIMG0015

Description: Water flowing toward the unnamed intermittent tributary within a chanelized flow path south of the ponded vegetated treatment area.

Location: North of the unnamed intermittent tributary and south of the ponded vegetated treatment area.

Camera Direction: Down

Date/Time: 07/15/2021 9:08 AM



16: RIMG0016

Description: Ponded water along the banks of the unnamed intermittent tributary.

Location: North of the unnamed intermittent tributary and south of the ponded vegetated treatment area.

Camera Direction: Southwest

Date/Time: 07/15/2021 9:08 AM



17: RIMG0017

Description: The unnamed intermittent tributary.

Location: South of the ponded vegetated treatment area.

Camera Direction: South

Date/Time: 07/15/2021 9:08 AM



18: RIMG0018

Description: The unnamed intermittent tributary.

Location: South of the ponded vegetated treatment area.

Camera Direction: South

Date/Time: 07/15/2021 9:08 AM



19: RIMG0019

Description: Facing south along the slope down to the unnamed intermittent tributary. There appeared to be a seep or spring coming from the embankment (red arrow) flowing down to the tributary.

Location: South of the ponded vegetated treatment area.

Camera Direction: South

Date/Time: 07/15/2021 9:10 AM



20: RIMG0020

Description: The unnamed intermittent tributary. Note that the tributary was high (water level indicated by blue line).

Location: South of the ponded vegetated treatment area.

Camera Direction: South

Date/Time: 07/15/2021 9:10 AM



21: RIMG0021

Description: The unnamed intermittent tributary. Note that the tributary was high (water level indicated by blue line).

Location: South of the ponded vegetated treatment area.

Camera Direction: South

Date/Time: 07/15/2021 9:10 AM



22: RIMG0022

Description: Water flowing south in flowpath towards the unnamed intermittent tributary.

Location: North of the unnamed intermittent tributary and south of southwest side of the vegetated treatment area.

Camera Direction: South

Date/Time: 07/15/2021 9:11 AM



23: RIMG0023

Description: View west along the north edge of the feed storage area.

Location: Northeast corner of the feed storage area.

Camera Direction: West

Date/Time: 07/15/2021 9:27 AM



24: RIMG0024

Description: View west along the north edge of the feed storage area.

Location: Top of the concrete wall in the northeast corner of the feed storage area.

Camera Direction: West

Date/Time: 07/15/2021 9:27 AM



25: RIMG0025

Description: Looking southwest.

Location: Top of the concrete wall in the northeast corner of the feed storage area.

Camera Direction: Southwest

Date/Time: 07/15/2021 9:27 AM



26: RIMG0026

Description: A mound of what appeared to be used bedding or waste feed located east of the feed storage area.

Location: East of the feed storage area.

Camera Direction: Southwest

Date/Time: 07/15/2021 9:29 AM



27: RIMG0027

Description: Looking north along cattle walkway at the east end of the (nearest to furthest away) freestall barn 1, freestall barn 2, and dry cow barn. These barns were not in use at the time of the inspection.

Location: Southeast of freestall barn 1.

Camera Direction: North

Date/Time: 07/15/2021 9:32 AM



28: RIMG0028

Description: Depth marker on western edge of manure storage pond 1. Note that the manure storage pond is crusted over and growing vegetation.

Location: Western edge of manure storage pond 1.

Camera Direction: East

Date/Time: 07/15/2021 9:35 AM



29: RIMG0029

Description: Depth marker on western edge of manure storage pond 1. Note that the manure storage pond is crusted over and growing vegetation.

Location: Western edge of manure storage pond 1.

Camera Direction: East

Date/Time: 07/15/2021 9:35 AM



30: RIMG0030

Description: Error photo.

Location:

Camera Direction:

Date/Time: 07/15/2021 9:36 AM



31: RIMG0031

Description: Looking east along the north side of the manure storage pond 1.

Location: Northwest corner of manure storage pond 1.

Camera Direction: East

Date/Time: 07/15/2021 9:39 AM



32: RIMG0032

Description: Water flowing north to the unnamed intermittent tributary northeast of the facility.

Location: Approximately 200 feet northeast of the northeast corner of manure storage pond 1.

Camera Direction: Down

Date/Time: 07/15/2021 9:56 AM



33: RIMG0033

Description: Water flowing north to the unnamed intermittent tributary northeast of the facility.

Location: Approximately 200 feet northeast of the northeast corner of manure storage pond 1.

Camera Direction: Down

Date/Time: 07/15/2021 9:56 AM



34: RIMG0034

Description: Looking north along the channel conveying flow to the unnamed intermittent tributary.

Location: Approximately 200 feet northeast of the northeast corner of manure storage pond 1.

Camera Direction: North

Date/Time: 07/15/2021 9:57 AM



35: RIMG0035

Description: Looking west, upstream, along the unnamed intermittent tributary.

Location: Approximately 200 feet northeast of the northeast corner of manure storage pond 1.

Camera Direction: West

Date/Time: 07/15/2021 9:57 AM



36: RIMG0036

Description: Looking east, downstream, along the unnamed intermittent tributary.

Location: Approximately 200 feet northeast of the northeast corner of manure storage pond 1.

Camera Direction: East

Date/Time: 07/15/2021 9:57 AM



37: RIMG0037

Description: Looking southeast along flow path.

Location: Northeast of manure storage pond 1.

Camera Direction: Southeast

Date/Time: 07/15/2021 9:58 AM



38: RIMG0038

Description: Close up of water in flow path.

Location: Northeast of manure storage pond 1.

Camera Direction: Down

Date/Time: 07/15/2021 9:59 AM



39: RIMG0039

Description: Following the flow path upstream as it passes under a wire fence. The blue line highlights the direction of the flowpath through the tall grass.

Location: Northeast of manure storage pond 1.

Camera Direction: Southeast

Date/Time: 07/15/2021 9:59 AM



40: RIMG0040

Description: Showing the flowpath conveying flow under the fence seen in photos 37 and 39.

Location: Northeast of manure storage pond 1.

Camera Direction: Southeast

Date/Time: 07/15/2021 10:00 AM



41: RIMG0041

Description: Water in the flowpath.

Location: Southeast of the southeast corner of manure storage pond 1.

Camera Direction: Southeast

Date/Time: 07/15/2021 10:07 AM



42: RIMG0042

Description: View east along the flowpath.

Location: Southeast of the southeast corner of manure storage pond 1.

Camera Direction: East

Date/Time: 07/15/2021 10:07 AM



43: RIMG0043

Description: Looking west along the flow path

Location: South of manure storage pond 1.

Camera Direction: West

Date/Time: 07/15/2021 10:09 AM



44: RIMG0044

Description: Looking west along the flow path

Location: South of manure storage pond 1.

Camera Direction: West

Date/Time: 07/15/2021 10:10 AM



45: RIMG0045

Description: Looking southwest along flowpath. Note culvert under animal walking path.

Location: South of manure storage pond 1 at entrance to pastures.

Camera Direction: Southwest

Date/Time: 07/15/2021 10:10 AM



46: RIMG0046

Description: Looking west at the upstream side of culvert under the animal walking path

Location: South of manure storage pond 1 at entrance to pastures.

Camera Direction: West

Date/Time: 07/15/2021 10:12 AM



47: RIMG0047

Description: Flow path entering culvert.

Location: South of manure storage pond 1.

Camera Direction: North

Date/Time: 07/15/2021 10:13 AM



48: RIMG0048

Description: Looking southwest across pastures. Heifer barn 2 visible in distance.

Location: South of manure storage pond 1.

Camera Direction: Southwest

Date/Time: 07/15/2021 10:15 AM



49: RIMG0049

Description: Looking east along the south end of the the southern portion of the facility.

Location: Southwest corner of the facility.

Camera Direction: East

Date/Time: 07/15/2021 10:31 AM



50: RIMG0050

Description: Outdoor lots associated with heifer barn 2 (near) and heifer barn 1 (in distance). Note runoff from feedlane flowing to the south (red arrow).

Location: South of heifer barn 2.

Camera Direction: West

Date/Time: 07/15/2021 10:33 AM



51: RIMG0051

Description: Solid manure stacked in outdoor lot of heifer barn 1.

Location: Southeast of heifer barn 1.

Camera Direction: Northwest

Date/Time: 07/15/2021 10:33 AM



52: RIMG0052

Description: Ponded water standing in gravel area where wrapped round hay bales are being stored.

Location: South of heifer barn 2.

Camera Direction: Southwest

Date/Time: 07/15/2021 10:33 AM



52: RIMG0053

Description: Field to the south of the gravel area where wrapped round hay bales are being stored.

Location: South of heifer barn 1.

Camera Direction: South

Date/Time: 07/15/2021 10:37 AM



53: RIMG0054

Description: Solid manure stacked in bunker north of heifer barn 1.

Location: North of heifer barn 1.

Camera Direction: Southeast

Date/Time: 07/15/2021 10:44 AM



54: RIMG0055

Description: Solid manure stacked in bunker north of heifer barn 1.

Location: North of heifer barn 1.

Camera Direction: East

Date/Time: 07/15/2021 10:45 AM



55: RIMG0056

Description: Solid manure stacked in bunker north of heifer barn 1.

Location: North of heifer barn 1.

Camera Direction: North

Date/Time: 07/15/2021 10:45 AM



56: RIMG0057

Description: Concrete lot with manure solids. Manure storage pond 2 in distance.

Location: North of heifer barn 1.

Camera Direction: East

Date/Time: 07/15/2021 10:46 AM



57: RIMG0058

Description: Concrete lot north of heifer barn 1 and heifer barn 2. Runoff from the heifer barns drains through this lot to the manure storage pond 2 to the left (blue arrow indicates direction of flow).

Location: Concrete lot north of heifer barn 1 and heifer barn 2

Camera Direction: South

Date/Time: 07/15/2021 10:47 AM



58: RIMG0059

Description: Manure storage pond 2. Note that the level of manure within the pond has backed up into the concrete lot to west.

Location: West side of manure storage pond 2.

Camera Direction: East

Date/Time: 07/15/2021 10:48 AM



59: RIMG0060

Description: Looking along the northeast side of manure storage pond 2 from the northeast corner. Heifer barn 2 in the distance to the right.

Location: Northeast corner of manure storage pond 2.

Camera Direction: Southeast

Date/Time: 07/15/2021 10:49 AM



60: RIMG0061

Description: Looking south along gravel access road northeast of heifer barn 2.

Location: East of manure storage pond 2.

Camera Direction: South

Date/Time: 07/15/2021 11:06 AM



61: RIMG0062

Description: Looking northeast across pastures.

Location: East of manure storage pond 2.

Camera Direction: Northeast

Date/Time: 07/15/2021 11:06 AM



62: RIMG0063

Description: Looking north along gravel access road east of manure storage pond 2 and heifer barn 2.

Location: East of manure storage pond 2.

Camera Direction: North

Date/Time: 07/15/2021 11:07 AM



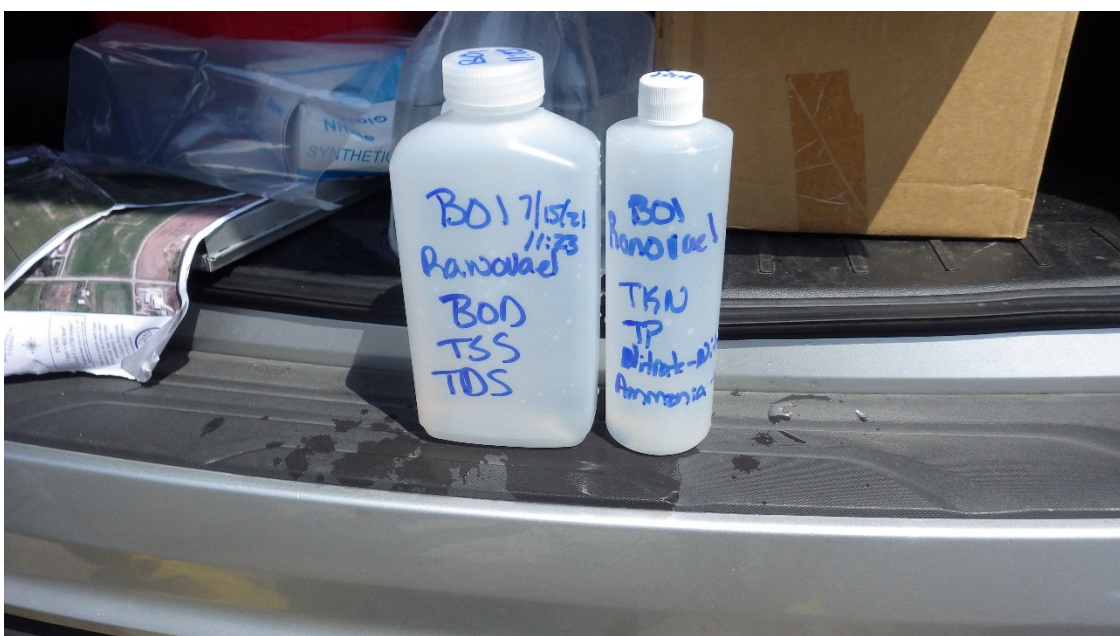
63: RIMG0064

Description: Ponded water in pasture east of heifer barn 2.

Location: East of heifer barn 2.

Camera Direction: East

Date/Time: 07/15/2021 11:08 AM



64: RIMG0065

Description: Field blank collected at vehicle while at facility.

Location: At vehicle.

Camera Direction: North

Date/Time: 07/15/2021 11:24 AM



65: RIMG0066

Description: Chanel at top of berm on southwest corner of the ponded vegetated treatment area.

Location: Southwest corner of ponded vegetated treatment area.

Camera Direction: North

Date/Time: 07/15/2021 11:44 AM



66: RIMG0067

Description: Flow path with duckweed present.

Location: Southwest corner of ponded vegetated treatment area.

Camera Direction: Down

Date/Time: 07/15/2021 11:44 AM



67: RIMG0068

Description: Duckweed within the ponded vegetated treatment area just before the channel observed in photos 66 and 67.

Location: Southwest corner of ponded vegetated treatment area.

Camera Direction: Down

Date/Time: 07/15/2021 11:44 AM



68: RIMG0069

Description: Erosional flow path from the top of the berm at the southwest corner of the ponded vegetated treatment area down to the unnamed intermittent tributary.

Location: Southwest corner of ponded vegetated treatment area.

Camera Direction: South

Date/Time: 07/15/2021 11:44 AM



69: RIMG0070

Description: Erosional flow path from the top of the berm at the southwest corner of the ponded vegetated treatment area down to the unnamed intermittent tributary.

Location: Southwest corner of ponded vegetated treatment area.

Camera Direction: South

Date/Time: 07/15/2021 11:45 AM



70: RIMG0071

Description: Duckweed in flow path.

Location: Erosional flow path from the top of the berm at the southwest corner of the ponded vegetated treatment area.

Camera Direction: Down

Date/Time: 07/15/2021 11:45 AM



71: RIMG0072

Description: Duckweed in flow path.

Location: Erosional flow path from the top of the berm at the southwest corner of the ponded vegetated treatment area

Camera Direction: Down

Date/Time: 07/15/2021 11:45 AM



72: RIMG0073

Description: Duckweed in flow path.

Location: Erosional flow path from the top of the berm at the southwest corner of the ponded vegetated treatment area.

Camera Direction: Down

Date/Time: 07/15/2021 11:45 AM



73: RIMG0074

Description: Flow path entering the unnamed intermittent tributary.

Location: Erosional flow path from the top of the berm at the southwest corner of the ponded vegetated treatment area.

Camera Direction: South.

Date/Time: 07/15/2021 11:45 AM



74: RIMG0075

Description: The unnamed intermittent tributary.

Location: South of the ponded vegetated treatment area.

Camera Direction: South

Date/Time: 07/15/2021 11:45 AM



75: RIMG0076

Description: Sample S01 collected from the channel at the top the berm.

Location: Erosional flow path from the top of the berm at the southwest corner of the ponded vegetated treatment area.

Camera Direction: Down

Date/Time: 07/15/2021 11:49 AM



76: RIMG0077

Description: Sample S01 collected from the channel at the top the berm.

Location: Erosional flow path from the top of the berm at the southwest corner of the ponded vegetated treatment area.

Camera Direction: North

Date/Time: 07/15/2021

11:50 AM



77: RIMG0078

Description: Sample S02, collected from the ponded vegetated treatment area.

Location: Southwest corner of the ponded vegetated treatment area.

Camera Direction: Down

Date/Time: 07/15/2021 11:53 AM



78: RIMG0079

Description: Sample S02, collected from the ponded vegetated treatment area.

Location: Southwest corner of the ponded vegetated treatment area.

Camera Direction: North

Date/Time: 07/15/2021 11:53 AM



79: RIMG0080

Description: Sample S03 from unnamed intermittent tributary downstream of erosional pathway.

Location: North bank of the unnamed intermittent tributary downstream of the erosional pathway.

Camera Direction: South

Date/Time: 07/15/2021 12:00 PM



80: RIMG0081

Description: Sample S04 from unnamed intermittent tributary upstream of discharge on the west side of County Road U.

Location: North bank of the unnamed intermittent tributary west of County Road U.

Camera Direction: South

Date/Time: 07/15/2021 12:08 PM



81: RIMG0082

Description: Looking upstream along the unnamed intermittent tributary from sampling location of sample S04.

Location: North bank of the unnamed intermittent tributary west of County Road U.

Camera Direction: Southwest

Date/Time: 07/15/2021



82: RIMG0083

Description: Looking southeast downstream under the County Road U bridge over the unnamed intermittent tributary from sample S04 collection location.

Location: North bank of the unnamed intermittent tributary west of County Road U.

Camera Direction: Southeast

Date/Time: 07/15/2021



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

US EPA Region 5 LSASD Analytical Services Branch

536 SOUTH CLARK STREET

CHICAGO, ILLINOIS 60605

Date: 8/26/2021

Title: ASB Data Report for Ranovael

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: Ranovael

Analyses included in this report:

BOD

Report Name: 2107010 BOD FINAL Aug 26 21 0911



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: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-26-21 09:11

Accredited Analyses included in this Report



Method: *SM 5210 B in Water*

Analysis: *BOD*

Analyte

Certifications

Biochemical Oxygen Demand

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

Project: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-26-21 09:11

ANALYSIS CASE NARRATIVE

General Information

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

<u>Sample</u>	<u>Analysis List</u>
2107010-01	BOD
2107010-02	BOD
2107010-03	BOD
2107010-04	BOD
2107010-05	BOD

All holding times were met.

The samples were prepared and analyzed using laboratory SOP AIG006A, Version #6, based on:

Method List
SM 5210 B

Additionally, a Pen&Ink document (ID# 23911) was used to document the SOP change from a dissolved oxygen membrane probe to a dissolved oxygen optical probe.

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. The MDL is not applicable to BOD.

Samples with laboratory identification numbers 2107010-04 and 2107010-05 did not have valid depletions of at least 2 mg/L dissolved oxygen (DO) from the initial day to the final day across the dilution series and were flagged as estimated. All other sample results had valid depletions. See below under quality control for additional impacts to sample results.

Quality Control

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



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: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-26-21 09:11

follows:

Blanks and Continuing Checks for the Dissolved Oxygen (DO) Probe:

Dilution water with no seed (DWNS) blank checks were recovered at 0.31 mg/L and 0.20 mg/L. One DWNS result was outside of the control limit and one was inside the limit of +/- 0.20 mg/L. One DO probe check on the final day of readings drifted a maximum of -0.26 mg/L from the expected DO result, which exceeded the allowance of +/- 0.20 mg/L. Sample results that were greater than ten times the absolute value of the DWNS blank exceedance were not qualified. Samples that were affected by the DO Probe check were flagged with a potential low bias, which was sample 2107010-02. Sample with laboratory identification number 2107010-01 was affected by the high DWNS blank and low DO probe drift, and was flagged as estimated for the offsetting factors, in addition to already being flagged for invalid depletions.



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: 7/20/2021 12:27:42PM

2107010

US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5

Project: Ranovael

Project Manager: Angela Ockrassa Davis

Project Number: 02BA2021

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: Aug-30-21 15:00 (45 day TAT)

Received By: Colin Breslin

Date Received: Jul-16-21 08:46

Logged In By: Kelsey O'Malley

Date Logged In: Jul-16-21 09:39

Sample tags/labels Yes Work Order Comments:
Seals Intact Yes
Received on ice Yes
Paperwork Included Yes

Cooler(s) information:

Default Cooler - 3.70 C

Sample ID: [2107010-01](#)

Sampled: [Jul-15-21 11:23](#)

Matrix: [Water](#)

Sample Name: [BO1](#)

Sample Location/Comments: [Ranovael](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:23	pH = 1
BOD	2	Jul-17-21 11:23	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:23	pH = 1
Solids, TDS	7	Jul-22-21 11:23	pH = 7
Solids, TSS	7	Jul-22-21 11:23	pH = 7
TKN DA	28	Aug-12-21 11:23	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:23	pH = 1

Sample ID: [2107010-02](#)

Sampled: [Jul-15-21 11:49](#)

Matrix: [Water](#)

Sample Name: [SO1](#)

Sample Location/Comments: [Overflow from VTA](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:49	pH = 1
BOD	2	Jul-17-21 11:49	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:49	pH = 1

2107010

US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5

Project Manager: Angela Ockrassa Davis

Project: Ranovael

Project Number: 02BA2021

Sample ID: [2107010-02](#) Sampled: [Jul-15-21 11:49](#) Matrix: [Water](#)Sample Name: [SO1](#) Sample Location/Comments: [Overflow from VTA](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Solids, TDS	7	Jul-22-21 11:49	pH = 7
Solids, TSS	7	Jul-22-21 11:49	pH = 7
TKN DA	28	Aug-12-21 11:49	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:49	pH = 1

Sample ID: [2107010-03](#) Sampled: [Jul-15-21 11:52](#) Matrix: [Water](#)Sample Name: [SO2](#) Sample Location/Comments: [VTA](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:52	pH = 1
BOD	2	Jul-17-21 11:52	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:52	pH = 1
Solids, TDS	7	Jul-22-21 11:52	pH = 7
Solids, TSS	7	Jul-22-21 11:52	pH = 7
TKN DA	28	Aug-12-21 11:52	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:52	pH = 1

Sample ID: [2107010-04](#) Sampled: [Jul-15-21 12:00](#) Matrix: [Water](#)Sample Name: [SO3](#) Sample Location/Comments: [Downstream DC](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 12:00	pH = 1
BOD	2	Jul-17-21 12:00	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 12:00	pH = 1
Solids, TDS	7	Jul-22-21 12:00	pH = 7
Solids, TSS	7	Jul-22-21 12:00	pH = 7
TKN DA	28	Aug-12-21 12:00	pH = 1
Total Phosphorus DA	28	Aug-12-21 12:00	pH = 1

WORK ORDER

Printed: 7/20/2021 12:27:42PM

2107010

US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5

Project: Ranovael

Project Manager: Angela Ockrassa Davis

Project Number: 02BA2021

Sample ID: [2107010-05](#) Sampled: [Jul-15-21 12:07](#) Matrix: [Water](#)Sample Name: [SO4](#) Sample Location/Comments: [Upstream DC](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 12:07	pH = 1
BOD	2	Jul-17-21 12:07	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 12:07	pH = 1
Solids, TDS	7	Jul-22-21 12:07	pH = 7
Solids, TSS	7	Jul-22-21 12:07	pH = 7
TKN DA	28	Aug-12-21 12:07	pH = 1
Total Phosphorus DA	28	Aug-12-21 12:07	pH = 1

WORK ORDER MEMO: CC 26042

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: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-26-21 09:11

BOD, 5 day, SM 5210 B (modified)

US EPA Region 5 LSASD Analytical Services Branch

BO1 (2107010-01)

Matrix: Water

Sampled: Jul-15-21 11:23

Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Biochemical Oxygen Demand	3	(BLK), (CCV), J		2	mg/L	1	B21G021	Jul-16-21	Jul-16-21

SO1 (2107010-02)

Matrix: Water

Sampled: Jul-15-21 11:49

Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Biochemical Oxygen Demand	57	(CCV), L		2	mg/L	1	B21G021	Jul-16-21	Jul-16-21

SO2 (2107010-03)

Matrix: Water

Sampled: Jul-15-21 11:52

Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Biochemical Oxygen Demand	34			2	mg/L	1	B21G021	Jul-16-21	Jul-16-21

SO3 (2107010-04)

Matrix: Water

Sampled: Jul-15-21 12:00

Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Biochemical Oxygen Demand	7	(BOD4), J		2	mg/L	1	B21G021	Jul-16-21	Jul-16-21

SO4 (2107010-05)

Matrix: Water

Sampled: Jul-15-21 12:07

Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Biochemical Oxygen Demand	7	(BOD4), J		2	mg/L	1	B21G021	Jul-16-21	Jul-16-21



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: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-26-21 09:11

Notes and Definitions

- L The identification of the analyte is acceptable; the reported value may be biased low. The actual value is expected to be greater than the reported value.
- J The identification of the analyte is acceptable; the reported value is an estimate.
- * This Quality Control measure meets the requirements of the CRL SOP for this analyte.
- (CCV) Continuing calibration verification criteria not met for this analyte
- (BOD4) The samples did not have valid depletions of at least 2 mg/L dissolved oxygen (DO) from the initial day to the final day across the dilution series.
- (BOD2) BLK3 & BLK4: DWS recommended range is ~0.6 - 1 mg/L.
- (BOD1) BS4: Average GGA result of BS1, BS2, and BS3 used for final evaluation of QC limit.
- (BLK) Method blank criteria not met for this analyte.
- U Not Detected
- NR Not Reported
- Q QC limit Exceeded



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

US EPA Region 5 LSASD Analytical Services Branch

536 SOUTH CLARK STREET

CHICAGO, ILLINOIS 60605

Date: 8/26/2021

Title: ASB Data Report for Ranovael

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

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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: Ranovael

Analyses included in this report:

Nitrate-Nitrite N DA, Enzymatic reduction

Report Name: 2107010 Nitrate-Nitrite N DA, Enzymatic reduction FINAL Aug 26 21 0926



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: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-26-21 09:26

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

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Chicago IL, 60604

Project: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-26-21 09:26

ANALYSIS CASE NARRATIVE

General Information

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

<u>Sample</u>	<u>Analysis List</u>
2107010-01	Nitrate-Nitrite N DA, Enzymatic reduction
2107010-02	Nitrate-Nitrite N DA, Enzymatic reduction
2107010-03	Nitrate-Nitrite N DA, Enzymatic reduction
2107010-04	Nitrate-Nitrite N DA, Enzymatic reduction
2107010-05	Nitrate-Nitrite N DA, Enzymatic reduction

All holding times were met.

The samples were prepared and analyzed using laboratory SOP AIG031B, Version #6, 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:

Laboratory Control Sample (LCS)/Blank Spike (BS)

B21G025-BS6

Recovery for Nitrate-Nitrite N (111%) was outside acceptance limits (90-110%) for Nitrate-Nitrite N DA, Enzymatic reduction. Affected sample results were qualified accordingly. Non-detect results were not impacted by the high bias and remain unflagged.



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Project: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-26-21 09:26



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: 7/20/2021 12:27:42PM

2107010

US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5

Project: Ranovael

Project Manager: Angela Ockrassa Davis

Project Number: 02BA2021

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: Aug-30-21 15:00 (45 day TAT)

Received By: Colin Breslin

Date Received: Jul-16-21 08:46

Logged In By: Kelsey O'Malley

Date Logged In: Jul-16-21 09:39

Sample tags/labels Yes Work Order Comments:
Seals Intact Yes
Received on ice Yes
Paperwork Included Yes

Cooler(s) information:

Default Cooler - 3.70 C

Sample ID: [2107010-01](#)

Sampled: [Jul-15-21 11:23](#)

Matrix: [Water](#)

Sample Name: [BO1](#)

Sample Location/Comments: [Ranovael](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:23	pH = 1
BOD	2	Jul-17-21 11:23	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:23	pH = 1
Solids, TDS	7	Jul-22-21 11:23	pH = 7
Solids, TSS	7	Jul-22-21 11:23	pH = 7
TKN DA	28	Aug-12-21 11:23	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:23	pH = 1

Sample ID: [2107010-02](#)

Sampled: [Jul-15-21 11:49](#)

Matrix: [Water](#)

Sample Name: [SO1](#)

Sample Location/Comments: [Overflow from VTA](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:49	pH = 1
BOD	2	Jul-17-21 11:49	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:49	pH = 1

2107010

US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5

Project Manager: Angela Ockrassa Davis

Project: Ranovael

Project Number: 02BA2021

Sample ID: [2107010-02](#) Sampled: [Jul-15-21 11:49](#) Matrix: [Water](#)Sample Name: [SO1](#) Sample Location/Comments: [Overflow from VTA](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Solids, TDS	7	Jul-22-21 11:49	pH = 7
Solids, TSS	7	Jul-22-21 11:49	pH = 7
TKN DA	28	Aug-12-21 11:49	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:49	pH = 1

Sample ID: [2107010-03](#) Sampled: [Jul-15-21 11:52](#) Matrix: [Water](#)Sample Name: [SO2](#) Sample Location/Comments: [VTA](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:52	pH = 1
BOD	2	Jul-17-21 11:52	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:52	pH = 1
Solids, TDS	7	Jul-22-21 11:52	pH = 7
Solids, TSS	7	Jul-22-21 11:52	pH = 7
TKN DA	28	Aug-12-21 11:52	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:52	pH = 1

Sample ID: [2107010-04](#) Sampled: [Jul-15-21 12:00](#) Matrix: [Water](#)Sample Name: [SO3](#) Sample Location/Comments: [Downstream DC](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 12:00	pH = 1
BOD	2	Jul-17-21 12:00	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 12:00	pH = 1
Solids, TDS	7	Jul-22-21 12:00	pH = 7
Solids, TSS	7	Jul-22-21 12:00	pH = 7
TKN DA	28	Aug-12-21 12:00	pH = 1
Total Phosphorus DA	28	Aug-12-21 12:00	pH = 1

WORK ORDER

Printed: 7/20/2021 12:27:42PM

2107010

US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5

Project: Ranovael

Project Manager: Angela Ockrassa Davis

Project Number: 02BA2021

Sample ID: [2107010-05](#) Sampled: [Jul-15-21 12:07](#) Matrix: [Water](#)Sample Name: [SO4](#) Sample Location/Comments: [Upstream DC](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 12:07	pH = 1
BOD	2	Jul-17-21 12:07	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 12:07	pH = 1
Solids, TDS	7	Jul-22-21 12:07	pH = 7
Solids, TSS	7	Jul-22-21 12:07	pH = 7
TKN DA	28	Aug-12-21 12:07	pH = 1
Total Phosphorus DA	28	Aug-12-21 12:07	pH = 1

WORK ORDER MEMO: CC 26042

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: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-26-21 09:26

Nitrate-Nitrite Nitrogen, Nitrate Reductase, NECi Method N07-0003 (modified) US EPA Region 5 LSASD Analytical Services Branch

BO1 (2107010-01) Matrix: Water Sampled: Jul-15-21 11:23 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Nitrate-Nitrite N	U		0.07	0.10	mg/L	1	B21G025	Jul-22-21	Jul-22-21

SO1 (2107010-02) Matrix: Water Sampled: Jul-15-21 11:49 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Nitrate-Nitrite N	0.08	(LCS), K	0.07	0.10	mg/L	1	B21G025	Jul-22-21	Jul-22-21

SO2 (2107010-03) Matrix: Water Sampled: Jul-15-21 11:52 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Nitrate-Nitrite N	U		0.07	0.10	mg/L	1	B21G025	Jul-22-21	Jul-22-21

SO3 (2107010-04) Matrix: Water Sampled: Jul-15-21 12:00 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Nitrate-Nitrite N	2.25	(LCS), K	0.07	0.10	mg/L	1	B21G025	Jul-22-21	Jul-22-21

SO4 (2107010-05) Matrix: Water Sampled: Jul-15-21 12:07 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Nitrate-Nitrite N	2.47	(LCS), K	0.07	0.10	mg/L	1	B21G025	Jul-22-21	Jul-22-21



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

Project: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-26-21 09:26

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.
- (LCS) Blank spike recovery criteria not met for this analyte
- U Not Detected
- NR Not Reported
- Q QC limit Exceeded



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

US EPA Region 5 LSASD Analytical Services Branch

536 SOUTH CLARK STREET

CHICAGO, ILLINOIS 60605

Date: 8/17/2021

Title: ASB Data Report for Ranovael

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

From: Christina Rice, Chemist
Rice.Christina@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.

A handwritten signature in cursive script that reads "Christina Rice". The signature is written in black ink on a light-colored background.

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: Ranovael

Analyses included in this report:

Solids, TDS

Report Name: 2107010 Solids, TDS FINAL Aug 17 21 1212



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: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-17-21 12:12

Accredited Analyses included in this Report



Method: *SM 2540 C in Water*

Analysis: *Solids, TDS*

Analyte

Certifications

Total Dissolved Solids

ISO/IEC 17025:2017

Analytes not listed above are not accredited by ANAB.



Environmental Protection Agency Region 5

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

Project: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-17-21 12:12

ANALYSIS CASE NARRATIVE

Analysis List

Solids, TDS

Analyst: Christina Rice
Phone #: 312-353-7358

General Information

Samples analyzed:

<u>Sample</u>	<u>Analysis List</u>
2107010-01	Solids, TDS
2107010-02	Solids, TDS
2107010-03	Solids, TDS
2107010-04	Solids, TDS
2107010-05	Solids, TDS

Holding times:

All holding times were met.

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, except for those listed in the Quality Control section. The original samples were split into a second set by the client for possible use at another laboratory prior to sample analysis as documented in CC 26042. Samples were requested and reported to the MDL. Sample 2107010-02 used a reduced sample size of 20 mL for filtration time exceeding 10 minutes.

SOP Based on:

Method List
SM 2540 C

Quality Control

All quality control audits were within ASB limits or did not result in qualification of the data.



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: 7/20/2021 12:27:42PM

2107010

US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5
Project: Ranovael

Project Manager: Angela Ockrassa Davis
Project Number: 02BA2021

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: Aug-30-21 15:00 (45 day TAT)
Received By: Colin Breslin
Logged In By: Kelsey O'Malley

Date Received: Jul-16-21 08:46
Date Logged In: Jul-16-21 09:39

Sample tags/labels Yes
Seals Intact Yes
Received on ice Yes
Paperwork Included Yes

Work Order Comments:

Cooler(s) information:

Default Cooler - 3.70 C

Sample ID: [2107010-01](#)

Sampled: [Jul-15-21 11:23](#)

Matrix: [Water](#)

Sample Name: [BO1](#)

Sample Location/Comments: [Ranovael](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:23	pH = 1
BOD	2	Jul-17-21 11:23	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:23	pH = 1
Solids, TDS	7	Jul-22-21 11:23	pH = 7
Solids, TSS	7	Jul-22-21 11:23	pH = 7
TKN DA	28	Aug-12-21 11:23	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:23	pH = 1

Sample ID: [2107010-02](#)

Sampled: [Jul-15-21 11:49](#)

Matrix: [Water](#)

Sample Name: [SO1](#)

Sample Location/Comments: [Overflow from VTA](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:49	pH = 1
BOD	2	Jul-17-21 11:49	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:49	pH = 1

2107010**US EPA Region 5 LSASD Analytical Services Branch****Client:** Water Division, US EPA Region 5**Project Manager:** Angela Ockrassa Davis**Project:** Ranovael**Project Number:** 02BA2021**Sample ID:** [2107010-02](#) **Sampled:** [Jul-15-21 11:49](#) **Matrix:** [Water](#)**Sample Name:** [SO1](#) **Sample Location/Comments:** [Overflow from VTA](#)**Sample Comments:**

Analysis	Hold time (days)	Expires	Comments
Solids, TDS	7	Jul-22-21 11:49	pH = 7
Solids, TSS	7	Jul-22-21 11:49	pH = 7
TKN DA	28	Aug-12-21 11:49	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:49	pH = 1

Sample ID: [2107010-03](#) **Sampled:** [Jul-15-21 11:52](#) **Matrix:** [Water](#)**Sample Name:** [SO2](#) **Sample Location/Comments:** [VTA](#)**Sample Comments:**

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:52	pH = 1
BOD	2	Jul-17-21 11:52	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:52	pH = 1
Solids, TDS	7	Jul-22-21 11:52	pH = 7
Solids, TSS	7	Jul-22-21 11:52	pH = 7
TKN DA	28	Aug-12-21 11:52	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:52	pH = 1

Sample ID: [2107010-04](#) **Sampled:** [Jul-15-21 12:00](#) **Matrix:** [Water](#)**Sample Name:** [SO3](#) **Sample Location/Comments:** [Downstream DC](#)**Sample Comments:**

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 12:00	pH = 1
BOD	2	Jul-17-21 12:00	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 12:00	pH = 1
Solids, TDS	7	Jul-22-21 12:00	pH = 7
Solids, TSS	7	Jul-22-21 12:00	pH = 7
TKN DA	28	Aug-12-21 12:00	pH = 1
Total Phosphorus DA	28	Aug-12-21 12:00	pH = 1

WORK ORDER

Printed: 7/20/2021 12:27:42PM

2107010

US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5
Project: Ranovael

Project Manager: Angela Ockrassa Davis
Project Number: 02BA2021

Sample ID: [2107010-05](#) Sampled: [Jul-15-21 12:07](#) Matrix: [Water](#)

Sample Name: [SO4](#) Sample Location/Comments: [Upstream DC](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 12:07	pH = 1
BOD	2	Jul-17-21 12:07	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 12:07	pH = 1
Solids, TDS	7	Jul-22-21 12:07	pH = 7
Solids, TSS	7	Jul-22-21 12:07	pH = 7
TKN DA	28	Aug-12-21 12:07	pH = 1
Total Phosphorus DA	28	Aug-12-21 12:07	pH = 1

WORK ORDER MEMO: CC 26042

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: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-17-21 12:12

Dissolved Solids, SM 2540C (modified)

US EPA Region 5 LSASD Analytical Services Branch

BO1 (2107010-01) Matrix: Water Sampled: Jul-15-21 11:23 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Total Dissolved Solids	U		16	20	mg/L	1	B21G023	Jul-20-21	Jul-20-21

SO1 (2107010-02) Matrix: Water Sampled: Jul-15-21 11:49 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Total Dissolved Solids	425		16	20	mg/L	1	B21G023	Jul-20-21	Jul-20-21

SO2 (2107010-03) Matrix: Water Sampled: Jul-15-21 11:52 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Total Dissolved Solids	428		16	20	mg/L	1	B21G023	Jul-20-21	Jul-20-21

SO3 (2107010-04) Matrix: Water Sampled: Jul-15-21 12:00 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Total Dissolved Solids	244		16	20	mg/L	1	B21G023	Jul-20-21	Jul-20-21

SO4 (2107010-05) Matrix: Water Sampled: Jul-15-21 12:07 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Total Dissolved Solids	240		16	20	mg/L	1	B21G023	Jul-20-21	Jul-20-21



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: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-17-21 12:12

Notes and Definitions

U	Not Detected
NR	Not Reported
Q	QC limit Exceeded



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

US EPA Region 5 LSASD Analytical Services Branch

536 SOUTH CLARK STREET

CHICAGO, ILLINOIS 60605

Date: 8/17/2021

Title: ASB Data Report for Ranovael

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

From: Christina Rice, Chemist
Rice.Christina@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.

A handwritten signature in cursive script that reads "Christina Rice". The signature is written in dark ink on a light-colored background.

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: Ranovael

Analyses included in this report:

Solids, TSS

Report Name: 2107010 Solids, TSS FINAL Aug 17 21 0908



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: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-17-21 09:08

Accredited Analyses included in this Report



Method: *SM 2540 D in Water*

Analysis: *Solids, TSS*

Analyte

Certifications

Total Suspended Solids

ISO/IEC 17025:2017

Analytes not listed above are not accredited by ANAB.



Environmental Protection Agency Region 5

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

Project: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-17-21 09:08

ANALYSIS CASE NARRATIVE

Analysis List

Solids, TSS

Analyst: Christina Rice
Phone #: 312-353-7358

General Information

Samples analyzed:

<u>Sample</u>	<u>Analysis List</u>
2107010-01	Solids, TSS
2107010-02	Solids, TSS
2107010-03	Solids, TSS
2107010-04	Solids, TSS
2107010-05	Solids, TSS

Holding times:

All holding times were met.

Sample Analysis and Results

The samples were analyzed using ASB SOP AIG018, 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, except for those listed in the Quality Control section. The original samples were split into a second set by the client for possible use at another laboratory prior to sample analysis as documented in CC 26042. Samples were requested and reported to the MDL. Sample 2107010-02 used a reduced sample size of 20 mL for filtration time exceeding 10 minutes. Duckweed plants were removed from samples 2107010-02 and 2107010-03.

SOP Based on:

Method List
SM 2540 D

Quality Control

All quality control audits were within ASB limits or did not result in qualification of the data.



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: 7/20/2021 12:27:42PM

2107010

US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5
Project: Ranovael

Project Manager: Angela Ockrassa Davis
Project Number: 02BA2021

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: Aug-30-21 15:00 (45 day TAT)
Received By: Colin Breslin
Logged In By: Kelsey O'Malley

Date Received: Jul-16-21 08:46
Date Logged In: Jul-16-21 09:39

Sample tags/labels Yes
Seals Intact Yes
Received on ice Yes
Paperwork Included Yes

Work Order Comments:

Cooler(s) information:

Default Cooler - 3.70 C

Sample ID: 2107010-01

Sampled: Jul-15-21 11:23

Matrix: Water

Sample Name: BO1

Sample Location/Comments: Ranovael

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:23	pH = 1
BOD	2	Jul-17-21 11:23	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:23	pH = 1
Solids, TDS	7	Jul-22-21 11:23	pH = 7
Solids, TSS	7	Jul-22-21 11:23	pH = 7
TKN DA	28	Aug-12-21 11:23	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:23	pH = 1

Sample ID: 2107010-02

Sampled: Jul-15-21 11:49

Matrix: Water

Sample Name: SO1

Sample Location/Comments: Overflow from VTA

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:49	pH = 1
BOD	2	Jul-17-21 11:49	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:49	pH = 1

2107010

US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5

Project: Ranovael

Project Manager: Angela Ockrassa Davis

Project Number: 02BA2021

Sample ID: [2107010-02](#) Sampled: [Jul-15-21 11:49](#) Matrix: [Water](#)Sample Name: [SO1](#) Sample Location/Comments: [Overflow from VTA](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Solids, TDS	7	Jul-22-21 11:49	pH = 7
Solids, TSS	7	Jul-22-21 11:49	pH = 7
TKN DA	28	Aug-12-21 11:49	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:49	pH = 1

Sample ID: [2107010-03](#) Sampled: [Jul-15-21 11:52](#) Matrix: [Water](#)Sample Name: [SO2](#) Sample Location/Comments: [VTA](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:52	pH = 1
BOD	2	Jul-17-21 11:52	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:52	pH = 1
Solids, TDS	7	Jul-22-21 11:52	pH = 7
Solids, TSS	7	Jul-22-21 11:52	pH = 7
TKN DA	28	Aug-12-21 11:52	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:52	pH = 1

Sample ID: [2107010-04](#) Sampled: [Jul-15-21 12:00](#) Matrix: [Water](#)Sample Name: [SO3](#) Sample Location/Comments: [Downstream DC](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 12:00	pH = 1
BOD	2	Jul-17-21 12:00	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 12:00	pH = 1
Solids, TDS	7	Jul-22-21 12:00	pH = 7
Solids, TSS	7	Jul-22-21 12:00	pH = 7
TKN DA	28	Aug-12-21 12:00	pH = 1
Total Phosphorus DA	28	Aug-12-21 12:00	pH = 1

WORK ORDER

Printed: 7/20/2021 12:27:42PM

2107010

US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5
Project: Ranovael

Project Manager: Angela Ockrassa Davis
Project Number: 02BA2021

Sample ID: [2107010-05](#) Sampled: [Jul-15-21 12:07](#) Matrix: [Water](#)

Sample Name: [SO4](#) Sample Location/Comments: [Upstream DC](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 12:07	pH = 1
BOD	2	Jul-17-21 12:07	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 12:07	pH = 1
Solids, TDS	7	Jul-22-21 12:07	pH = 7
Solids, TSS	7	Jul-22-21 12:07	pH = 7
TKN DA	28	Aug-12-21 12:07	pH = 1
Total Phosphorus DA	28	Aug-12-21 12:07	pH = 1

WORK ORDER MEMO: CC 26042

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: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-17-21 09:08

Total Suspended Solids, SM 2540 D (modified) US EPA Region 5 LSASD Analytical Services Branch

BO1 (2107010-01) Matrix: Water Sampled: Jul-15-21 11:23 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Total Suspended Solids	U		3	5	mg/L	1	B21G022	Jul-19-21	Jul-19-21

SO1 (2107010-02) Matrix: Water Sampled: Jul-15-21 11:49 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Total Suspended Solids	710		3	5	mg/L	1	B21G022	Jul-19-21	Jul-19-21

SO2 (2107010-03) Matrix: Water Sampled: Jul-15-21 11:52 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Total Suspended Solids	51		3	5	mg/L	1	B21G022	Jul-19-21	Jul-19-21

SO3 (2107010-04) Matrix: Water Sampled: Jul-15-21 12:00 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Total Suspended Solids	51		3	5	mg/L	1	B21G022	Jul-19-21	Jul-19-21

SO4 (2107010-05) Matrix: Water Sampled: Jul-15-21 12:07 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Total Suspended Solids	39		3	5	mg/L	1	B21G022	Jul-19-21	Jul-19-21



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: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-17-21 09:08

Notes and Definitions

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):	2107010
Primary Analyst:	Nidia Fuentes
Analysis:	Ammonia N DA, Distilled
Date:	August 26, 2021
Data Reporting Qualtrax Workflow ID:	26394

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: 2107010

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Client Project Name: Ranovael @2BA2021)
Work Order Number: 2107010

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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: 8/26/2021

Title: ASB Data Report for Ranovael

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: Ranovael

Analyses included in this report:

Ammonia N DA, Distilled

Report Name: 2107010 Ammonia N DA, Distilled FINAL Aug 26 21 1155



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: Ranovael
 Project Number: 02BA2021
 Project Manager: Ben Atkinson

Reported:
 Aug-26-21 11:55

Accredited Analyses included in this Report



Method: *SM 4500-H+ B in Water*

Analysis: *Ammonia N DA, Distilled*

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

Project: Ranovael
 Project Number: 02BA2021
 Project Manager: Ben Atkinson

Reported:
 Aug-26-21 11:55

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>
2107010-01	Ammonia N DA, Distilled
2107010-02	Ammonia N DA, Distilled
2107010-03	Ammonia N DA, Distilled
2107010-04	Ammonia N DA, Distilled
2107010-05	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 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.



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: 7/20/2021 12:27:42PM

2107010

US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5
Project: Ranovael

Project Manager: Angela Ockrassa Davis
Project Number: 02BA2021

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: Aug-30-21 15:00 (45 day TAT)

Received By: Colin Breslin

Logged In By: Kelsey O'Malley

Date Received: Jul-16-21 08:46

Date Logged In: Jul-16-21 09:39

Sample tags/labels	Yes	Work Order Comments:
Seals Intact	Yes	
Received on ice	Yes	
Paperwork Included	Yes	

Cooler(s) information:

Default Cooler - 3.70 C

Sample ID: [2107010-01](#)

Sampled: [Jul-15-21 11:23](#)

Matrix: [Water](#)

Sample Name: [BO1](#)

Sample Location/Comments: [Ranovael](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:23	pH = 1
BOD	2	Jul-17-21 11:23	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:23	pH = 1
Solids, TDS	7	Jul-22-21 11:23	pH = 7
Solids, TSS	7	Jul-22-21 11:23	pH = 7
TKN DA	28	Aug-12-21 11:23	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:23	pH = 1

Sample ID: [2107010-02](#)

Sampled: [Jul-15-21 11:49](#)

Matrix: [Water](#)

Sample Name: [SO1](#)

Sample Location/Comments: [Overflow from VTA](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:49	pH = 1
BOD	2	Jul-17-21 11:49	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:49	pH = 1

WORK ORDER

Printed: 7/20/2021 12:27:42PM

2107010

US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5

Project Manager: Angela Ockrassa Davis

Project: Ranovael

Project Number: 02BA2021

Sample ID: [2107010-02](#) Sampled: [Jul-15-21 11:49](#) Matrix: [Water](#)Sample Name: [SO1](#) Sample Location/Comments: [Overflow from VTA](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Solids, TDS	7	Jul-22-21 11:49	pH = 7
Solids, TSS	7	Jul-22-21 11:49	pH = 7
TKN DA	28	Aug-12-21 11:49	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:49	pH = 1

Sample ID: [2107010-03](#) Sampled: [Jul-15-21 11:52](#) Matrix: [Water](#)Sample Name: [SO2](#) Sample Location/Comments: [VTA](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:52	pH = 1
BOD	2	Jul-17-21 11:52	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:52	pH = 1
Solids, TDS	7	Jul-22-21 11:52	pH = 7
Solids, TSS	7	Jul-22-21 11:52	pH = 7
TKN DA	28	Aug-12-21 11:52	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:52	pH = 1

Sample ID: [2107010-04](#) Sampled: [Jul-15-21 12:00](#) Matrix: [Water](#)Sample Name: [SO3](#) Sample Location/Comments: [Downstream DC](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 12:00	pH = 1
BOD	2	Jul-17-21 12:00	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 12:00	pH = 1
Solids, TDS	7	Jul-22-21 12:00	pH = 7
Solids, TSS	7	Jul-22-21 12:00	pH = 7
TKN DA	28	Aug-12-21 12:00	pH = 1
Total Phosphorus DA	28	Aug-12-21 12:00	pH = 1

WORK ORDER

Printed: 7/20/2021 12:27:42PM

2107010**US EPA Region 5 LSASD Analytical Services Branch****Client:** Water Division, US EPA Region 5**Project Manager:** Angela Ockrassa Davis**Project:** Ranovael**Project Number:** 02BA2021**Sample ID:** [2107010-05](#) **Sampled:** [Jul-15-21 12:07](#) **Matrix:** [Water](#)**Sample Name:** [SO4](#) **Sample Location/Comments:** [Upstream DC](#)**Sample Comments:**

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 12:07	pH = 1
BOD	2	Jul-17-21 12:07	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 12:07	pH = 1
Solids, TDS	7	Jul-22-21 12:07	pH = 7
Solids, TSS	7	Jul-22-21 12:07	pH = 7
TKN DA	28	Aug-12-21 12:07	pH = 1
Total Phosphorus DA	28	Aug-12-21 12:07	pH = 1

WORK ORDER MEMO: CC 26042

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: Ranovael
 Project Number: 02BA2021
 Project Manager: Ben Atkinson

Reported:
 Aug-26-21 11:55

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

BO1 (2107010-01) Matrix: Water Sampled: Jul-15-21 11:23 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Ammonia as N	U		0.16	0.20	mg/L	1	B21G032	Jul-28-21	Aug-02-21

SO1 (2107010-02) Matrix: Water Sampled: Jul-15-21 11:49 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Ammonia as N	2.95		0.16	0.20	mg/L	1	B21G032	Jul-28-21	Aug-03-21

SO2 (2107010-03) Matrix: Water Sampled: Jul-15-21 11:52 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Ammonia as N	2.58		0.16	0.20	mg/L	1	B21G032	Jul-28-21	Aug-02-21

SO3 (2107010-04) Matrix: Water Sampled: Jul-15-21 12:00 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Ammonia as N	0.28		0.16	0.20	mg/L	1	B21G032	Jul-28-21	Aug-02-21

SO4 (2107010-05) Matrix: Water Sampled: Jul-15-21 12:07 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Ammonia as N	0.36		0.16	0.20	mg/L	1	B21G032	Jul-28-21	Aug-02-21



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

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Water Division, US EPA Region 5
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Chicago IL, 60604

Project: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-26-21 11:55

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: 8/26/2021

Analyst: Nidia Fuentes

Project: Ranovael

Analyte: Ammonia as N

Analysis: Ammonia N DA, Distilled

QC Sample Name	Result	Units	Flags / Qualifiers	MDL	Reporting Limit	Spike Level	Source Result	% REC or abs diff (pH)	% REC or abs diff (pH) Limits	% RPD or abs diff (pH)	%RPD or abs diff (pH) Limits
21H0203-CAL1	-0.02	mg/L		0.16	0.20	0.000		%			
21H0203-CAL2	0.11	mg/L		0.16	0.20	0.1000		112%			
21H0203-CAL3	0.21	mg/L		0.16	0.20	0.2000		106%			
21H0203-CAL4	0.40	mg/L		0.16	0.20	0.4000		100%			
21H0203-CAL5	0.81	mg/L		0.16	0.20	0.8000		101%			
21H0203-CAL6	1.99	mg/L		0.16	0.20	2.000		100%			
21H0203-CAL7	4.00	mg/L		0.16	0.20	4.000		100%			
21H0203-CCB1	-0.02	mg/L		0.16	0.20						
21H0203-CCV1	3.13	mg/L		0.16	0.20	3.000		104%	90-110		
21H0203-ICB1	0.0020	mg/L		0.16	0.20						
21H0203-ICV1	3.11	mg/L		0.16	0.20	3.000		104%	90-110		
21H0402-CAL1	-0.02	mg/L		0.16	0.20	0.000		%			
21H0402-CAL2	0.09	mg/L		0.16	0.20	0.1000		92%			
21H0402-CAL3	0.21	mg/L		0.16	0.20	0.2000		103%			
21H0402-CAL4	0.41	mg/L		0.16	0.20	0.4000		102%			
21H0402-CAL5	0.82	mg/L		0.16	0.20	0.8000		102%			
21H0402-CAL6	1.99	mg/L		0.16	0.20	2.000		99%			
21H0402-CAL7	4.00	mg/L		0.16	0.20	4.000		100%			
21H0402-CCB1	-0.01	mg/L		0.16	0.20						

Report Name: 2107010 Ammonia N DA, Distilled FINAL Aug 26 21 1155



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: 8/26/2021

Analyst: Nidia Fuentes

Project: Ranovael

Analyte: Ammonia as N

Analysis: Ammonia N DA, Distilled

QC Sample Name	Result	Units	Flags / Qualifiers	MDL	Reporting Limit	Spike Level	Source Result	% REC or abs diff (pH)	% REC or abs diff (pH) Limits	% RPD or abs diff (pH)	%RPD or abs diff (pH) Limits
21H0402-CCB2	-0.01	mg/L		0.16	0.20						
21H0402-CCB3	-0.02	mg/L		0.16	0.20						
21H0402-CCV1	3.09	mg/L		0.16	0.20	3.000		103%	90-110		
21H0402-CCV2	3.02	mg/L		0.16	0.20	3.000		101%	90-110		
21H0402-CCV3	3.15	mg/L		0.16	0.20	3.000		105%	90-110		
21H0402-ICB1	-0.02	mg/L		0.16	0.20						
21H0402-ICV1	2.97	mg/L		0.16	0.20	3.000		99%	90-110		
B21G032-BLK1	U	mg/L		0.16	0.20						
B21G032-BS1	2.03	mg/L		0.16	0.20	2.000		102%	73-120		
B21G032-DUP1 Source: 2107010-02	2.83	mg/L		0.16	0.20		2.95			4	14
B21G032-MRL1	0.22	mg/L		0.16	0.20	0.2000		109%	71-147		
B21G032-MS1 Source: 2107010-02	5.26	mg/L		1.60	2.00	2.000	2.95	116%	50-148		

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: 8/26/2021

Analyst: Nidia Fuentes

Project: Ranovael

A handwritten signature in blue ink that reads "Nidia Fuentes". The signature is written in a cursive style.

Nidia Fuentes



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

Data Verification Checklist

Work:	2107010	Project:	Ranovael
Analysis:	Ammonia N DA, Distilled		
CRL SOP Used:	AIG029B v9	Batch ID:	B21G032

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 NO
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: 2107010

Project: Ranovael

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: 2107010

Project: Ranovael

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? ID: 24456	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)? Notes/Comments: J:\Vol1\Projects (New File Structure)\Ranovael\1.A&I\NFuentes\DA-4\08022021-AMM\ARC_70.bak J:\Vol1\Projects (New File Structure)\Ranovael\1. A&I\NFuentes\DA-4\08032021-AMM\ARC_70.bak	YES

Accreditation

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

Analyst's Signature and Date*:

Fuentes, Nidia

Digitally signed by Fuentes, Nidia
Date: 2021.08.25 11:24:01 -05'00'

Work: 2107010**Project:** Ranovael**Reviewer's Signature and Date*:****ANNA KNOEBEL**Digitally signed by ANNA KNOEBEL
Date: 2021.08.26 10:38:43 -05'00'***Reviewer Concurs with Analyst Responses****Additional Notes/Comments (if applicable):**

Ammonia N DA, Distilled

BATCH

B21G032



US EPA Region 5 LSASD Analytical Services Branch

Date: 7/28/2021

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

AMMONIA DISTILLATION LOG (EASY STILL/MIDI) FOR WATER SAMPLES

Prepared Date: Jul-28-21
Analyst (initials): NF

Batch Number: B21G032
Analyses Included On This Benchsheet

Ammonia N DA, Distilled

Distillation #	Sample Number	Source ID	Spike Type	Spike ID	Spike Volume (uL)	Sample Volume (mL)	Adjusted pH is ~9.5 (Y/N)	Comments
1	2107010-01					50	Y	pH = 1
1	2107010-02					50	Y	pH = 1
1	2107010-03					50	Y	pH = 1
1	2107010-04					50	Y	pH = 1
1	2107010-05					50	Y	pH = 1
1	B21G032-BLK1					50	Y	
1	B21G032-BS1		Pre-Prep	21E0614	100	50	Y	
1	B21G032-DUP1	2107010-02				50	Y	
1	B21G032-MRL1	REVIEWED CONFIDENTIAL (FBI/DOJ/DOH)	Pre-Prep Static	21G2807	2500	50	Y	
1	B21G032-MS1	2107010-02	Pre-Prep	21E0614	100	50	Y	

Instrument ID: MIDIDISTI

atch Comments:



US EPA Region 5 LSASD Analytical Services Branch

Date: 7/28/2021

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

AMMONIA DISTILLATION LOG (EASY STILL/MIDI) FOR WATER SAMPLES

Prepared Date: Jul-28-21

Analyst (initials): NF

Batch Number: B21G032

Analyses Included On This Benchsheet

Ammonia N DA, Distilled

PREPARATION REAGENTS/STANDARDS/PIPETTES:			
21E0614:	NH3N-StockControlStandard	Prepared: May-06-21	Expires: Nov-03-22
21G2807:	NH3N-MRL Spike	Prepared: Jul-28-21	Expires: Jul-11-21 Aug-28-21
19F1209:	NH3N Distilled-Borate Buffer	Prepared: Jun-12-19	Expires: Dec-12-30
19F0521:	Sodium Hydroxide 10% (w/v)	Prepared: May-02-19	Expires: Apr-30-22
20K0528:	Test Strip: pH 5.0 - 10	Prepared: Nov-05-20	Expires: Oct-31-21
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
21G2803:	NH3NDistilled-ReceivingSol/BLK	Prepared: Jul-28-21	Expires: Aug-28-21

atch Comments:

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

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 (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

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 ³ /g)	1.00308
Relative Humidity (%)	41.00	Air Density (g/cm ³)	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 ³ /g)	1.00308
Relative Humidity (%)	41.00	Air Density (g/cm ³)	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

21G2803



Environmental Protection Agency Region 5

Chicago Regional Laboratory

Print Date: 8/6/2021

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

Copy was inadvertently not print

REVIEWED
 By NFUENTES at 9:39 am, Aug 09, 2021

Reagent Preparation Bench Sheet

Parameter / SOP #: NH3N Distilled/AIG029B v7.9Prepared by: Nidia FuentesReagent: NH3N Distilled-ReceivingSol/BLK

REVIEWED
 By NFUENTES at 2:10 pm, Aug 25, 2021

Preparation Date: Jul-28-21LIMS ID: 21G2803Expiration Date: Aug-28-21

Chemical Name (Formula)	LIMS ID	Mass or Volume (specify units)
Sulfuric Acid (H ₂ SO ₄)	21G0902	1 mL

Total Volume : 1000 mL

Comments :

See user defined fields for details

REVIEWED

By Anna Knoebel at 6:21 am, Aug 26, 2021

Analyst Signature:

Nidia Fuentes

SEQUENCE

21H0203

Sequence Date: 08/02/2021

Instrument: DA-4

Sequence Analyses:

Ammonia N DA, Distilled

ANALYSIS SEQUENCE

Printed: 8/26/2021 6:30:24AM

21H0203

Instrument:	DA-4	Analysis Date:	Aug-02-21	Calibration ID:	UNASSIGNED	Matrix:	Water	
Order	Container	Lab Number	Sample name or QC sample designation		Analysis	STD ID	Comments	
1		21H0203-CAL3	NH3-4	QC		21H0222		
2		21H0203-CAL4	NH3-4	QC		21H0223		
3		21H0203-CAL5	NH3-4	QC		21H0224		
4		21H0203-CAL6	NH3-4	QC		21H0225		
5		21H0203-CAL7	NH3-4	QC		21G2804		
6		21H0203-CAL1	NH3-0	QC		21G2806		
7		21H0203-CAL2	NH3-4	QC		21H0226		
8		21H0203-ICB1	ICB	QC				
9		21H0203-ICV1	ICV	QC		21G2805		
10		B21G032-MRL1	MRL Check	QC				
11		B21G032-BLK1	Blank	QC				
12	A	2107010-01	BO1	Ammonia N DA, Distilled			pH = 1	
13	A	2107010-03	SO2	Ammonia N DA, Distilled			pH = 1	
14	A	2107010-04	SO3	Ammonia N DA, Distilled			pH = 1	
15	A	2107010-05	SO4	Ammonia N DA, Distilled			pH = 1	
16		21H0203-CCB1	ICB	QC				
17		21H0203-CCV1	ICV	QC		21G2805		

Order	Container	Lab Number	Sample name or QC sample designation	Analysis	STD ID	Comments
<u>PREPARATION REAGENTS/STANDARDS/PIPETTES:</u>						
<u>21G2807:</u>	NH3N-MRL Spike		Prepared: Jul-28-21	Expires: Aug-28-21		
<u>21G2804:</u>	NH3N-WCS (4.00 mg/L)		Prepared: Jul-28-21	Expires: Aug-28-21		
<u>21G2805:</u>	NH3N-WCS (3 mg/L)		Prepared: Jul-28-21	Expires: Aug-28-21		
<u>21G2806:</u>	NH3N-WCS (0.00 mg/L)		Prepared: Jul-28-21	Expires: Aug-28-21		
<u>21H0222:</u>	NH3N - WCS (0.2 mg/L)		Prepared: Aug-02-21	Expires: Aug-03-21		
<u>21H0223:</u>	NH3N - WCS (0.4 mg/L)		Prepared: Aug-02-21	Expires: Aug-03-21		
<u>21H0224:</u>	NH3N - WCS (0.8 mg/L)		Prepared: Aug-02-21	Expires: Aug-03-21		
<u>21H0225:</u>	NH3N - WCS (2.0 mg/L)		Prepared: Aug-02-21	Expires: Aug-03-21		
<u>21H0226:</u>	NH3N - WCS (0.10 mg/L)		Prepared: Aug-02-21	Expires: Aug-03-21		
<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>21G2803:</u>	NH3NDistilled-ReceivingSol/BLK		Prepared: Jul-28-21	Expires: Aug-28-21		
<u>21H0221:</u>	NH3N-Sodium Hypochlorite Solution		Prepared: Aug-02-21	Expires: Aug-03-21		

Calibration results

Page 1 / 1

Ammonia_2 Version number 1.3

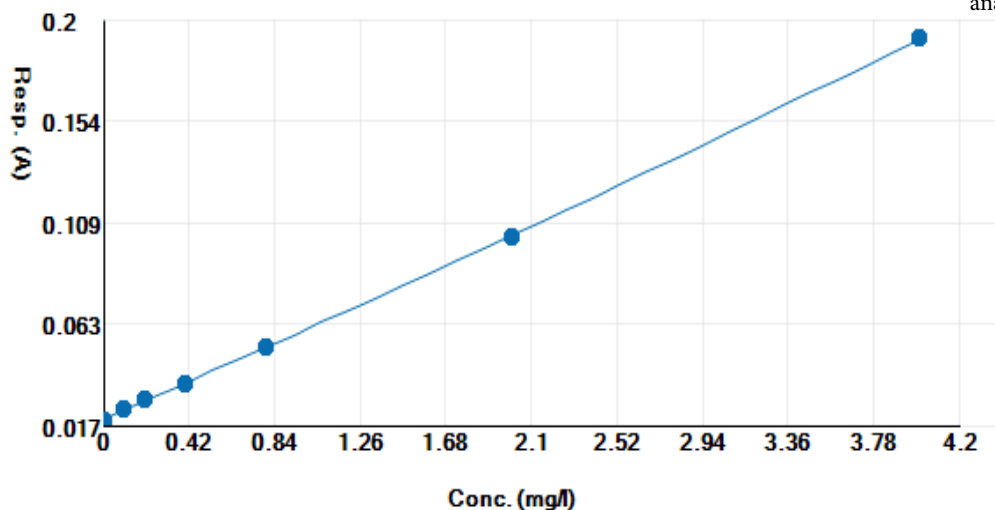
Date 8/2/2021 User NF
 Time 3:19:24PM Software version: 7.0
 Analyzer name DA-4

Test	Ammonia_2	Coeff. of deter.	0.999935
Status	Accepted	Total factor	23.385
Accepted	8/2/2021 3:19 PM		
Checked	8/2/2021 3:19 PM		
User name	NF	Zero-order factor	0.020
Comment		1st order factor	0.039
Errors		2nd order factor	0.001

Cal/Ctrl	Response	Calc. conc.	Given conc.	Lot	Errors
NH3-0	0.019	-0.02395	0.00000	Default	
NH3-4	0.025	0.11190	0.10000	Default	
NH3-4	0.029	0.21201	0.20000	Default	
NH3-4	0.036	0.39886	0.40000	Default	
NH3-4	0.053	0.80680	0.80000	Default	
NH3-4	0.102	1.99303	2.00000	Default	
NH3-4	0.191	4.00135	4.00000	Default	
CB	0.019	-0.0192	0.0000	Default	
CV	0.149	3.0753	3.0000	Default	

Outside calibration *

Data not used because CAL1 and CAL2 were reanalyzed after these results. ICB and ICV were analyzed at start of run.



REVIEWED
 By NFUENTES at 2:46 pm, Aug 25, 2021

Results by Test

Date 8/3/2021 User NF
Time 8:13:44AM Software version: 7.0

Test name Ammonia_2

Sample/ctrl ID	Test version	Result	Unit	Note	Dil. 1 +	Status	Errors
ICB	1.3	0.0020	mg/l		0.0	man acc	
ICV	1.3	3.1108	mg/l		0.0	man acc	
B21G032-MRL1	1.3	0.2189	mg/l		0.0	man acc	
B21G032-BLK1	1.3	0.0507	mg/l		0.0	man acc	
B21G032-BS1	1.3	2.4650	mg/l		0.0	man acc	Failed QC REVIEWED By NFUENTES at 9:17 am, Aug 05, 2021
2107010-01	1.3	0.0098	mg/l		0.0	man acc	
2107010-02	1.3	3.3826	mg/l		0.0	man acc	REVIEWED By NFUENTES at 2:47 pm, Aug 25, 2021
B21G032-DUP1	1.3	3.3324	mg/l		0.0	man acc	REVIEWED By NFUENTES at 2:47 pm, Aug 25, 2021
B21G032-MS1	1.3	3.0043	mg/l		0.0	man acc	Failed QC, reanalyzed
2107010-03	1.3	2.5797	mg/l		0.0	man acc	REVIEWED By NFUENTES at 8:24 am, Aug 06, 2021
2107010-04	1.3	0.2756	mg/l		0.0	man acc	
2107010-05	1.3	0.3624	mg/l		0.0	man acc	
ICB	1.3	-0.0213	mg/l		0.0	man acc	Outside calibration *
ICV	1.3	3.1335	mg/l		0.0	man acc	REVIEWED By NFUENTES at 3:22 pm, Aug 04, 2021
ICB	1.3	0.5098	mg/l		0.0	man acc	QC, Rule 1 violated Failed QC
ICV	1.3	3.2818	mg/l		0.0	man acc	
B21G032-BS1	1.3	2.8054	mg/l		0.0	man acc	
2107010-02	1.3	3.5772	mg/l		0.0	man acc	
B21G032-DUP1	1.3	3.5262	mg/l		0.0	man acc	
B21G032-MS1	1.3	-	mg/l		0.0	aut rej	Dil. limit High, Outside calibration
ICB	1.3	-0.0009	mg/l		0.0	man acc	Outside calibration
ICV	1.3	3.2458	mg/l		0.0	man acc	
B21G032-MS1	1.3	5.7328	mg/l		9.0	man acc	
ICB	1.3	0.0171	mg/l		0.0	man acc	
ICV	1.3	3.1680	mg/l		0.0	man acc	
ICV	1.3		mg/l		0.0	aut rej	Aut. rejected Ran out of standard
ICB	1.3	0.0028	mg/l		0.0	man acc	Not used
ICV	1.3	3.1974	mg/l		0.0	man acc	
B21G032-BS1	1.3	3.6858	mg/l		0.0	man acc	Failed QC
ICB	1.3	0.0011	mg/l		0.0	man acc	REVIEWED By NFUENTES at 3:18 pm, Aug 04, 2021

* within calibration

REVIEWED
By NFUENTES at 2:49 pm, Aug 25, 2021

Date 8/3/2021 User NF
Time 8:14:38 AM Software version: 7.0

Sample/ctrl ID	Pat/Ctrl/cal	Test name	Test type	Result	Result unit	Result time	STAT	Status	Errors	Notes	Dilution	1 - Manual dil	Response	Blank respo	Main abs.	Blank abs.	Sample type
NH3-0	A	Ammonia_P		0.05759	mg/l	8/2/2021 14:43		MR			0		0.02394	-0.00013	0.02381	-0.00013	
NH3-4	A	Ammonia_P		0.07179	mg/l	8/2/2021 14:45		MR			39		0.02447	-0.0001	0.02437	-0.0001	
NH3-4	A	Ammonia_P		0.21201	mg/l	8/2/2021 14:47		MA			19		0.02863	-0.00017	0.02846	-0.00017	
NH3-4	A	Ammonia_P		0.39886	mg/l	8/2/2021 14:49		MA			9		0.0361	-0.0002	0.0359	-0.0002	
NH3-4	A	Ammonia_P		0.8068	mg/l	8/2/2021 14:51		MA			4		0.0526	-0.00031	0.05228	-0.00031	
NH3-4	A	Ammonia_P		1.99303	mg/l	8/2/2021 14:53		MA			1		0.10215	-0.00004	0.1021	-0.00004	
NH3-4	A	Ammonia_P		4.00135	mg/l	8/2/2021 14:54		MA			0		0.19134	-0.00009	0.19124	-0.00009	
ICB	C	Ammonia_P		-0.01916	mg/l	8/2/2021 14:55		MA	30,		0		0.01947	-0.00021	0.01926	-0.00021	
ICV	C	Ammonia_P		3.07527	mg/l	8/2/2021 14:56		MA			0		0.14938	-0.00003	0.14935	-0.00003	
NH3-0	A	Ammonia_P		-0.02395	mg/l	8/2/2021 15:17		MA			0		0.01928	0.00147	0.02076	0.00147	
NH3-4	A	Ammonia_P		0.1119	mg/l	8/2/2021 15:18		MA			39		0.02465	-0.00035	0.0243	-0.00035	
ICB	C	Ammonia_P		0.00204	mg/l	8/2/2021 15:37		MA			0		0.02031	-0.00032	0.01999	-0.00032	
ICV	C	Ammonia_P		3.11081	mg/l	8/2/2021 15:37		MA			0		0.15096	-0.00006	0.15091	-0.00006	
B21G032-MRL1	P	Ammonia_P		0.21888	mg/l	8/2/2021 15:38		MA			0		0.0289	-0.00019	0.02871	-0.00019	Sample type 1
B21G032-BLK1	P	Ammonia_P		0.05071	mg/l	8/2/2021 15:39		MA			0		0.02223	-0.00007	0.02216	-0.00007	Sample type 1
B21G032-BS1	P	Ammonia_P		2.46495	mg/l	8/2/2021 15:40		MA			0		0.1225	-0.00012	0.12239	-0.00012	Sample type 1
2107010-01	P	Ammonia_P		0.00981	mg/l	8/2/2021 15:41		MA			0		0.02061	-0.00021	0.0204	-0.00021	Sample type 1
2107010-02	P	Ammonia_P		3.38255	mg/l	8/2/2021 15:42		MA			0		0.16315	-0.00023	0.16292	-0.00023	Sample type 1
B21G032-DUP1	P	Ammonia_P		3.3243	mg/l	8/2/2021 15:43		MA			0		0.16089	-0.00018	0.16071	-0.00018	Sample type 1
B21G032-MS1	P	Ammonia_P		3.00433	mg/l	8/2/2021 15:43		MA			0		0.14622	-0.00019	0.14604	-0.00019	Sample type 1
2107010-03	P	Ammonia_P		2.57967	mg/l	8/2/2021 15:45		MA			0		0.12751	-0.00023	0.12728	-0.00023	Sample type 1
2107010-04	P	Ammonia_P		0.27556	mg/l	8/2/2021 15:46		MA			0		0.03116	-0.00016	0.031	-0.00016	Sample type 1
2107010-05	P	Ammonia_P		0.36236	mg/l	8/2/2021 15:47		MA			0		0.03463	-0.00026	0.03437	-0.00026	Sample type 1
ICB	C	Ammonia_P		-0.02134	mg/l	8/2/2021 15:47		MA	30,		0		0.01938	0.00012	0.0195	0.00012	
ICV	C	Ammonia_P		3.13346	mg/l	8/2/2021 15:49		MA			0		0.15197	-0.00002	0.15196	-0.00002	
ICB	C	Ammonia_P		0.50978	mg/l	8/2/2021 16:20		MA	27,		0		0.04056	0.01756	0.05811	0.01756	
ICV	C	Ammonia_P		3.28183	mg/l	8/2/2021 16:21		MA			0		0.15862	-0.00025	0.15837	-0.00025	
B21G032-BS1	P	Ammonia_P		2.80542	mg/l	8/2/2021 16:22		MA			0		0.13742	-0.00023	0.13719	-0.00023	Sample type 1
2107010-02	P	Ammonia_P		3.57724	mg/l	8/2/2021 16:23		MA			0		0.17195	-0.00017	0.17178	-0.00017	Sample type 1
B21G032-DUP1	P	Ammonia_P		3.52619	mg/l	8/2/2021 16:23		MA			0		0.16963	-0.00006	0.16957	-0.00006	Sample type 1
B21G032-MS1	P	Ammonia_P		6.72044	mg/l	8/2/2021 16:25		AR	19,30,	R	0		0.31652	-0.00032	0.31619	-0.00032	Sample type 1
ICB	C	Ammonia_P		-0.00094	mg/l	8/2/2021 16:26		MA	30,		0		0.02019	-0.00019	0.02	-0.00019	
ICV	C	Ammonia_P		3.24578	mg/l	8/2/2021 16:26		MA			0		0.157	-0.00025	0.15675	-0.00025	
B21G032-MS1	P	Ammonia_P		5.73281	mg/l	8/2/2021 16:38		MA		R	9		0.04312	-0.00039	0.04273	-0.00039	Sample type 1
ICB	C	Ammonia_P		0.01713	mg/l	8/2/2021 16:39		MA			0		0.0209	-0.00024	0.02067	-0.00024	
ICV	C	Ammonia_P		3.16804	mg/l	8/2/2021 16:40		MA			0		0.15352	-0.00022	0.1533	-0.00022	
ICV	C	Ammonia_P		mg/l		8/2/2021 16:49		AR	1,		0						
ICB	C	Ammonia_P		0.00281	mg/l	8/2/2021 16:59		MA			0		0.02034	0.00001	0.02034	0.00001	
ICV	C	Ammonia_P		3.19741	mg/l	8/2/2021 17:00		MA			0		0.15483	0.00008	0.15491	0.00008	
B21G032-BS1	P	Ammonia_P		3.68579	mg/l	8/2/2021 17:01		MA			0		0.17688	0.04087	0.21775	0.04087	Sample type 1
ICB	C	Ammonia_P		0.00112	mg/l	8/2/2021 17:02		MA			0		0.02027	-0.00009	0.02019	-0.00009	

SEQUENCE

21H0402

Sequence Date: 08/03/2021

Instrument: DA-4

Sequence Analyses:

Ammonia N DA, Distilled

21H0402

Instrument:	DA-4	Analysis Date: Aug-03-21		Calibration ID:	UNASSIGNED	Matrix: Water	
Order	Container	Lab Number	Sample name or QC sample designation		Analysis	STD ID	Comments
1		21H0402-CAL1	NH3-0		QC	21G2806	
2		21H0402-CAL2	NH3-4		QC	21H0406	
3		21H0402-CAL3	NH3-4		QC	21H0402	
4		21H0402-CAL4	NH3-4		QC	21H0403	
5		21H0402-CAL5	NH3-4		QC	21H0404	
6		21H0402-CAL6	NH3-4		QC	21H0405	
7		21H0402-CAL7	NH3-4		QC	21G2804	
8		21H0402-ICB1	ICB		QC		
9		21H0402-ICV1	ICV		QC	21G2805	
10		21H0402-CCB1	ICB		QC		
11		21H0402-CCV1	ICV		QC	21G2805	
12		B21G032-BS1	LCS		QC		
13	A	2107010-02	SO1		Ammonia N DA, Distilled		pH = 1
14		B21G032-DUP1	Duplicate		QC		
15		21H0402-CCB2	ICB		QC		
16		21H0402-CCV2	ICV		QC	21G2805	
17		B21G032-MS1	Matrix Spike		QC		
18		21H0402-CCB3	ICB		QC		
19		21H0402-CCV3	ICV		QC	21G2805	

Order	Container	Lab Number	Sample name or QC sample designation	Analysis	STD ID	Comments
<u>PREPARATION REAGENTS/STANDARDS/PIPETTES:</u>						
<u>21E0614:</u>	NH3N-StockControlStandard		Prepared: May-06-21	Expires: Nov-03-22		
<u>21G2804:</u>	NH3N-WCS (4.00 mg/L)		Prepared: Jul-28-21	Expires: Aug-28-21		
<u>21G2805:</u>	NH3N-WCS (3 mg/L)		Prepared: Jul-28-21	Expires: Aug-28-21		
<u>21G2806:</u>	NH3N-WCS (0.00 mg/L)		Prepared: Jul-28-21	Expires: Aug-28-21		
<u>21H0402:</u>	NH3N - WCS (0.2 mg/L)		Prepared: Aug-03-21	Expires: Aug-04-21		
<u>21H0403:</u>	NH3N - WCS (0.4 mg/L)		Prepared: Aug-03-21	Expires: Aug-04-21		
<u>21H0404:</u>	NH3N - WCS (0.8 mg/L)		Prepared: Aug-03-21	Expires: Aug-04-21		
<u>21H0405:</u>	NH3N - WCS (2.0 mg/L)		Prepared: Aug-03-21	Expires: Aug-04-21		
<u>21H0406:</u>	NH3N - WCS (0.10 mg/L)		Prepared: Aug-03-21	Expires: Aug-04-21		
<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>21G2803:</u>	NH3NDistilled-ReceivingSol/BLK		Prepared: Jul-28-21	Expires: Aug-28-21		
<u>21H0401:</u>	NH3N-Sodium Hypochlorite Solution		Prepared: Aug-04-21	Expires: Aug-05-21		

Calibration results

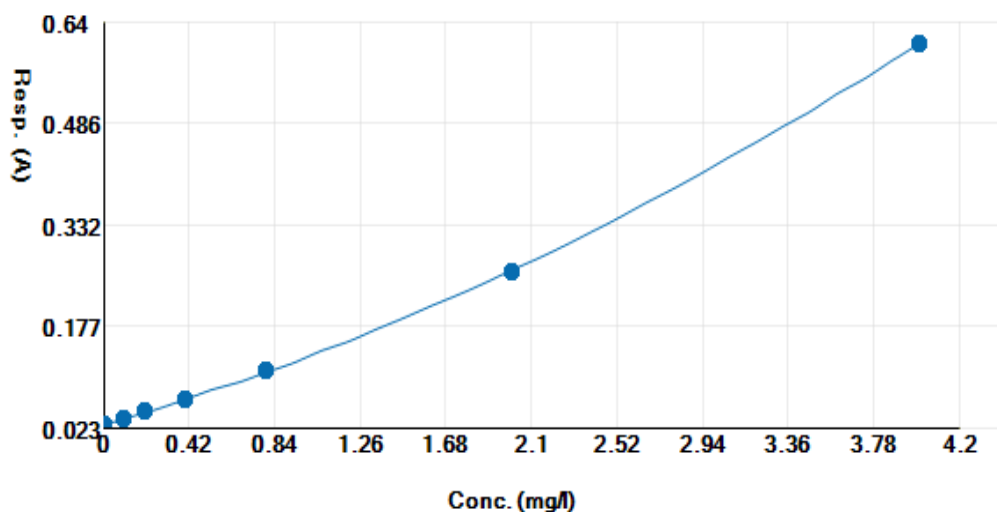
Page 1 / 1

Ammonia_2 Version number 1.3

Date 8/3/2021 **User** NF
Time 4:07:34PM **Software version: 7.0**
Analyzer name DA-4

Test	Ammonia_2	Coeff. of deter.	0.999959
Status	Accepted	Total factor	6.903
Accepted	8/3/2021 4:07 PM		
Checked	8/3/2021 4:07 PM		
User name	NF	Zero-order factor	0.027
Comment		1st order factor	0.089
Errors		2nd order factor	0.014

Cal/Ctrl	Response	Calc. conc.	Given conc.	Lot	Errors
NH3-0	0.026	-0.01655	0.00000	Default	
NH3-4	0.036	0.09183	0.10000	Default	
NH3-4	0.047	0.20690	0.20000	Default	
NH3-4	0.066	0.40915	0.40000	Default	
NH3-4	0.110	0.81789	0.80000	Default	
NH3-4	0.260	1.98851	2.00000	Default	
NH3-4	0.607	4.00163	4.00000	Default	
ICB	0.026	-0.0206	0.0000	Default	Outside calibration *
ICV	0.416	2.9737	3.0000	Default	



Results by Test

Page 1 / 1

Date 8/4/2021 **User** NF
Time 8:34:13AM **Software version: 7.0**

Test name Ammonia_2

Sample/ctrl ID	Test version	Result	Unit	Note	Dil. 1 +	Status	Errors
ICB	1.3	-0.0110	mg/l		0.0	man acc	Outside calibration *
ICV	1.3	3.0936	mg/l		0.0	man acc	
B21G032 21B0320-BS1	1.3	2.0316	mg/l		0.0	man acc	
10 2107005-02	1.3	2.9478	mg/l		0.0	man acc	
B21G032 21B0320-DUP1	1.3	2.8261	mg/l		0.0	man acc	
B21G032 21B0320-MS1	1.3	- D	mg/l		0.0	aut rej	Dil. limit High, Outside calibration
ICB	1.3	-0.0098	mg/l		0.0	man acc	Outside calibration *
ICV	1.3	3.0173	mg/l		0.0	man acc	
B21G032 21B0320-MS1	1.3	5.2622	mg/l		9.0	man acc	
ICB	1.3	-0.0181	mg/l		0.0	man acc	Outside calibration *
ICV	1.3	3.1510	mg/l		0.0	man acc	

* within calibration

D - diluted by instrument

Date 8/4/2021 User NF
Time 8:35:10 AM 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		-0.01655 mg/l		8/3/2021 15:52		MA			0	0.02595	0.00007	0.02603	0.00007	
NH3-4	A	Ammonia_P		0.09183 mg/l		8/3/2021 15:54		MA			39	0.03576	-0.00024	0.03551	-0.00024	
NH3-4	A	Ammonia_P		0.2069 mg/l		8/3/2021 15:56		MA			19	0.04651	-0.00007	0.04643	-0.00007	
NH3-4	A	Ammonia_P		0.40915 mg/l		8/3/2021 15:58		MA			9	0.0663	-0.00006	0.06624	-0.00006	
NH3-4	A	Ammonia_P		0.81789 mg/l		8/3/2021 16:00		MA			4	0.10977	0.00005	0.10981	0.00005	
NH3-4	A	Ammonia_P		1.98851 mg/l		8/3/2021 16:02		MA			1	0.25994	-0.00018	0.25976	-0.00018	
NH3-4	A	Ammonia_P		4.00163 mg/l		8/3/2021 16:02		MA			0	0.60726	-0.00011	0.60716	-0.00011	
ICB	C	Ammonia_P		-0.02064 mg/l		8/3/2021 16:04		MA	30,		0	0.02558	-0.00003	0.02555	-0.00003	
ICB	C	Ammonia_P		2.97369 mg/l		8/3/2021 16:05		MA			0	0.41584	-0.00004	0.4158	-0.00004	
ICB	C	Ammonia_P		-0.011 mg/l		8/3/2021 16:25		MA	30,		0	0.02645	0.00002	0.02647	0.00002	
ICB	C	Ammonia_P		3.09356 mg/l		8/3/2021 16:26		MA			0	0.43665	-0.00005	0.4366	-0.00005	
21B0320-BS1	P	Ammonia_P		2.03161 mg/l		8/3/2021 16:27		MA			0	0.2662	-0.00006	0.26614	-0.00006	Sample type 1
2107005-02	P	Ammonia_P		2.94784 mg/l		8/3/2021 16:28		MA			0	0.41141	-0.00005	0.41136	-0.00005	Sample type 1
21B0320-DUP1	P	Ammonia_P		2.82613 mg/l		8/3/2021 16:28		MA			0	0.39077	-0.00004	0.39074	-0.00004	Sample type 1
21B0320-MS1	P	Ammonia_P		5.02626 mg/l		8/3/2021 16:30		AR	19,30,	R	0	0.81209	0	0.81209	0	Sample type 1
ICB	C	Ammonia_P		-0.00982 mg/l		8/3/2021 16:31		MA	30,		0	0.02656	0.00003	0.02658	0.00003	
ICV	C	Ammonia_P		3.01734 mg/l		8/3/2021 16:31		MA			0	0.42337	0.00032	0.42369	0.00032	
21B0320-MS1	P	Ammonia_P		5.26219 mg/l		8/3/2021 16:43		MA		R	9	0.07827	0.00004	0.07831	0.00004	Sample type 1
ICB	C	Ammonia_P		-0.0181 mg/l		8/3/2021 16:44		MA	30,		0	0.02581	-0.00006	0.02575	-0.00006	
ICV	C	Ammonia_P		3.151 mg/l		8/3/2021 16:45		MA			0	0.44676	-0.00014	0.44662	-0.00014	

DA-4

Gallery Analyzer
RECORD

S/N: 861000110255

Install Date: 9-17-2013

7530-00-222-352F
FEDERAL SUPPLY S
(GPO)

i 32

- 4 CB Analyzed B21F071 for $\text{NO}_3\text{-NO}_2\text{-N}$.
6/24/21 One CCB randomly high at 20.3 mg/L, re-ran affected samples. Otherwise system ran well.
- 4 CB Analyzed B21F087 for $\text{NO}_3\text{-NO}_2\text{-N}$.
6/30/21 System ran well.
- CB Analyzed B21G019 for $\text{NO}_3\text{-NO}_2\text{-N}$.
7/15/21 Initial CCB low, and random high BS failures. Otherwise system ran well.
- 2 CB Analyzed B21G025 for $\text{NO}_3\text{-NO}_2\text{-N}$.
7/22/21 BS randomly failing high. Otherwise system ran well.
- 3 CB Analyzed B21G034 and re-analyzed B21G025
7/29/21 CAFO samples. QC performance for BS and CCV was poor. CCV came back within limits but BS did not.
- 3 CB ADOC - 2107013
8/2/21 Analyzed B21G033 for Ammonia (distilled).
System ran well.
- 8/2/21 Ammonia calibration passed
MT BS failed, system ran out of CCV during the night (after work). BS failed.

8/31/21 Calibration passed. B5 passed.

MT MS was also reanalyzed. Samples
ID was wrong in the instrument sequence
Correct batch ID is B216032 and sample
ID 2107010-02.



Certified Reference Material

▪ Certificate of Analysis ▪

A Waters Company

Product: 1000 mg/L Ammonia as N
Catalog Number: 045-125mL, 985-500mL
Lot No. 091120m
Starting Material: Ammonium Chloride (NH₄Cl)
Matrix: 18 megohm deionized water
Density: 0.9997 ± 0.0016 g/ml at 19.2 °C and 756 mm Hg
Verification Method: Ion Selective Electrode (ISE)
Certificate Issue Date: November 5, 2020
Expiration Date: November 3, 2022
Revision Number: Original

REVIEWED*By Anna Knoebel at 7:19 am, Aug 25, 2021*

CERTIFICATION

Parameter	Certified Value ¹	Uncertainty ²	NIST Traceability	
	mg/L	%	SRM Number ³	Recovery %
Ammonia as N (NH ₃ -N)	1000	1.43	194a	99.5

Certified Reference Material

▪ Certificate of Analysis ▪

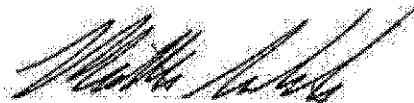
1. The **Certified Value** is the actual gravimetric/volumetric "made-to" concentration confirmed by ERA analytical verification. The certified value is monitored and the purchasers will be notified of any significant changes resulting in recertification or withdrawal of this certified reference material during the period of validity of this certificate.
2. The **Uncertainty** represents an expanded uncertainty and approximates a 95% confidence interval. The uncertainty is based on the characterization, homogeneity and stability characteristics of the product, multiplied by a coverage factor ($k=2$). The uncertainty applies to the product as supplied and does not take into account any required or optional dilution and/or preparations the laboratory may perform while using this product. The formula used to calculate the expanded uncertainty is:

$$U_{\text{expanded}} = k \cdot \text{SQRT}((U_{\text{char}})^2 + (U_{\text{homogen}})^2 + (U_{\text{LTS}})^2 + (U_{\text{STS}})^2 + (U_{\text{RSS}})^2)$$
- Where:
- U_{expanded} = Expanded uncertainty.
 k = Coverage factor.
 U_{char} = Combined standard uncertainty of the manufacturing and/or analytical verification assessment.
 U_{homogen} = Standard uncertainty of the homogeneity assessment.
 U_{LTS} = Standard uncertainty associated with long-term stability.
 U_{STS} = Standard uncertainty associated with short-term (transport) stability.
 U_{RSS} = Standard uncertainty associated with repeated sampling of the product (where permitted by product use instructions).
3. Where NIST Standard Reference Materials (SRMs) are available, each analyte has been analytically traced to the NIST SRM listed. **Analytical Traceability Recovery (%)** = $[(\% \text{ recovery ERA certified reference material})/(\% \text{ recovery NIST SRM})] \times 100$
 The traceability data shown were compiled by analyzing this ERA certified reference material and/or its associated stock solution(s) against the applicable NIST SRMs.
4. **Metrological Traceability.** This certified reference material is metrologically traceable to NIST mass reference materials through an unbroken chain of comparisons.
5. **Storage:** 20-25°C
6. **Intended Use:** This standard is intended to be used to calibrate your analytical process and/or as a quality control check of the entire process for the analytes/matrix included in the standard.
7. **Minimum Sample Size:** ERA suggests that when subsampling this product prior to analysis, you use a minimum sample size of at least 1 mL. Using a smaller sample size may invalidate the assigned value and/or uncertainty shown.
8. **Repeat Sampling:** Repeated Sampling of this product is permitted, provided minimum sample sizes and storage instructions are adhered to.
9. **Safety:** ERA products may be hazardous and are intended for use by professional laboratory personnel trained in the competent handling of such materials. Responsibility for the safe use of these products rests entirely with the buyer and/or user. Safety Data Sheets (SDS) for all ERA products are available through our website: www.eraqc.com

If you have any questions or need technical assistance, please call ERA technical assistance at 1-800-372-0122 or send an email to info@eraqc.com.

Certifying Officer
 Brian Miller

Quality Officer
 Matthew Seebeck




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

21G2804

Description:	<u>NH3N-WCS (4.00 mg/L)</u>	Expires:	Aug-28-21
Standard Type:	Other Solution	Prepared:	Jul-28-21
Solvent:	reagent water	Prepared By:	Nidia Fuentes
Final Volume (mls):	50	Department:	A&I
Vials:	1	Last Edit:	Jul-28-21 11:53 by NF
Vendor:	Absolute Grade		
Lot Number:	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	NH3N/TKN-SCS (1000 mg/L)	Nov-19-19	** Vendor **	Oct-28-21	Jun-03-21 12:36 by NF	0.2
21B2408	Pipette (Electronic) -- 50 -1,000 uL	Feb-15-21	Colin Breslin	Aug-31-21	Feb-24-21 12:57 by NF	0.2
21G0902	Sulfuric Acid 9673-00	Jul-09-21	** Vendor **	May-11-25	Jul-28-21 10:03 by NF	0.05

REVIEWED

By Anna Knoebel at 7:26 am, Aug 25, 2021



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Analytical Standard Record
US EPA Region 5 LSASD Analytical Services Branch
21G2805

Description:	<u>NH₃N-WcS (3 mg/L)</u>	Expires:	Aug-28-21
Standard Type:	Other Solution	Prepared:	Jul-28-21
Solvent:	reagent water	Prepared By:	Nidia Fuentes
Final Volume (mls):	50	Department:	A&I
Vials:	1	Last Edit:	Aug-25-21 15:19 by NF
Vendor:	ERA		
Lot Number:	091120m		

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)
21E0614	NH ₃ N-StockControlStandard	May-06-21	** Vendor **	Nov-03-22	Aug-25-21 15:16 by NF	0.15
21B2408	Pipette (Electronic) -- 50 -1,000 uL	Feb-15-21	Colin Breslin	Aug-31-21	Feb-24-21 12:57 by NF	0.15
21G0902	Sulfuric Acid 9673-00	Jul-09-21	** Vendor **	May-11-25	Jul-28-21 10:03 by NF	0.05

REVIEWED

By Anna Knoebel at 6:37 am, Aug 26, 2021



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Analytical Standard Record

US EPA Region 5 LSASD Analytical Services Branch

21G2806

Description:	<u>NH₃N-WCS (0.00 mg/L)</u>	Expires:	Aug-28-21
Standard Type:	Other Solution	Prepared:	Jul-28-21
Solvent:	reagent water	Prepared By:	Nidia Fuentes
Final Volume (mls):	1000	Department:	A&I
Vials:	1	Last Edit:	Jul-28-21 10:04 by NF
Vendor:	see standards list		
Lot Number:	see standards list		

Same as 21G2803

REVIEWED

By Anna Knoebel at 8:34 am, Aug 25, 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 ₃ N/TKN-SCS (1000 mg/L)	Nov-19-19	** Vendor **	Oct-28-21	Jun-03-21 12:36 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
21G0902	Sulfuric Acid 9673-00	Jul-09-21	** Vendor **	May-11-25	Jul-28-21 10:03 by NF	1



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Analytical Standard Record US EPA Region 5 LSASD Analytical Services Branch 21G2807

Description:	<u>NH₃N-MRL Spike</u>	Expires:	Aug-28-21
Standard Type:	Analyte Spike	Prepared:	Jul-28-21
Solvent:	reagent water	Prepared By:	Nidia Fuentes
Final Volume (mls):	50	Department:	A&I
Vials:	1	Last Edit:	Aug-04-21 15:43 by NF
Vendor:	Absolute Grade		
Lot Number:	102819		

Same as WCS - 21G2804

REVIEWED

By Anna Knoebel at 7:26 am, Aug 25, 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	NH ₃ N/TKN-SCS (1000 mg/L)	Nov-19-19	** Vendor **	Oct-28-21	Jun-03-21 12:36 by NF	0.2
21B2408	Pipette (Electronic) -- 50 -1,000 uL	Feb-15-21	Colin Breslin	Aug-31-21	Feb-24-21 12:57 by NF	0.2
21G0902	Sulfuric Acid 9673-00	Jul-09-21	** Vendor **	May-11-25	Jul-28-21 10:03 by NF	0.05



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Analytical Standard Record

US EPA Region 5 LSASD Analytical Services Branch

21H0222

Description: NH3N - WCS (0.2 mg/L)
Standard Type: Other Solution
Solvent: BLANK: 21G2806
Final Volume (mls): 2
Vials: 1
Vendor: Absolute Grade
Lot Number: 102819

Expires: Aug-03-21
Prepared: Aug-02-21
Prepared By: Nidia Fuentes
Department: A&I
Last Edit: Aug-04-21 14:51 by NF

Prepared by instrument DA-4

REVIEWED

By Anna Knoebel at 8:40 am, Aug 25, 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)
21G2804	NH3N-WCS (4.00 mg/L)	Jul-28-21	Nidia Fuentes	Aug-28-21	Jul-28-21 11:53 by NF	0.1



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Analytical Standard Record

US EPA Region 5 LSASD Analytical Services Branch

21H0223

Description:	<u>NH3N - WCS (0.4 mg/L)</u>	Expires:	Aug-03-21
Standard Type:	Other Solution	Prepared:	Aug-02-21
Solvent:	BLANK: 21G2806	Prepared By:	Nidia Fuentes
Final Volume (mls):	2	Department:	A&I
Vials:	1	Last Edit:	Aug-06-21 12:28 by NF
Vendor:	Absolute Grade		
Lot Number:	102819		

Prepared by instrument DA-4

REVIEWED

By Anna Knoebel at 8:47 am, Aug 25, 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)
21G2804	NH3N-WCS (4.00 mg/L)	Jul-28-21	Nidia Fuentes	Aug-28-21	Jul-28-21 11:53 by NF	0.2



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Analytical Standard Record

US EPA Region 5 LSASD Analytical Services Branch

21H0224

Description:	<u>NH3N - WCS (0.8 mg/L)</u>		
Standard Type:	Other Solution	Expires:	Aug-03-21
Solvent:	BLANK: 21G2806	Prepared:	Aug-02-21
Final Volume (mls):	2	Prepared By:	Nidia Fuentes
Vials:	1	Department:	A&I
Vendor:	Absolute Grade	Last Edit:	Aug-04-21 14:53 by NF
Lot Number:	102819		

Prepared by instrument DA-4

REVIEWED

By Anna Knoebel at 8:47 am, Aug 25, 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)
21G2804	NH3N-WCS (4.00 mg/L)	Jul-28-21	Nidia Fuentes	Aug-28-21	Jul-28-21 11:53 by NF	0.4



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Analytical Standard Record
US EPA Region 5 LSASD Analytical Services Branch

21H0225

Description: NH3N - WCS (2.0 mg/L)
Standard Type: Other Solution
Solvent: BLANK: 21G2806
Final Volume (mls): 2
Vials: 1
Vendor: Absolute Grade
Lot Number: 102819

Expires: Aug-03-21
Prepared: Aug-02-21
Prepared By: Nidia Fuentes
Department: A&I
Last Edit: Aug-04-21 14:54 by NF

Prepared by instrument DA-4

REVIEWED

By Anna Knoebel at 8:48 am, Aug 25, 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)
21G2804	NH3N-WCS (4.00 mg/L)	Jul-28-21	Nidia Fuentes	Aug-28-21	Jul-28-21 11:53 by NF	1



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Analytical Standard Record

US EPA Region 5 LSASD Analytical Services Branch

21H0226

Description: NH₃N - WCS (0.10 mg/L)
Standard Type: Other Solution
Solvent: Blank LIMS#: 21G2806
Final Volume (mls): 2
Vials: 1
Vendor: Absolute Grade
Lot Number: 102819

Expires: Aug-03-21
Prepared: Aug-02-21
Prepared By: Nidia Fuentes
Department: A&I
Last Edit: Aug-04-21 14:55 by NF

Prepared by instrument DA-4

REVIEWED

By Anna Knoebel at 8:50 am, Aug 25, 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)
21G2804	NH ₃ N-WCS (4.00 mg/L)	Jul-28-21	Nidia Fuentes	Aug-28-21	Jul-28-21 11:53 by NF	0.05



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Analytical Standard Record

US EPA Region 5 LSASD Analytical Services Branch

21H0402

Description:	<u>NH3N - WCS (0.2 mg/L)</u>	Expires:	Aug-04-21
Standard Type:	Other Solution	Prepared:	Aug-03-21
Solvent:	BLANK: 21G2806	Prepared By:	Nidia Fuentes
Final Volume (mls):	2	Department:	A&I
Vials:	1	Last Edit:	Aug-25-21 15:25 by NF
Vendor:	Absolute Grade		
Lot Number:	102819		

Prepared by instrument DA-4

REVIEWED

By Anna Knoebel at 6:39 am, Aug 26, 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)
21G2804	NH3N-WCS (4.00 mg/L)	Jul-28-21	Nidia Fuentes	Aug-28-21	Jul-28-21 11:53 by NF	0.1



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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

21H0403

Description:	<u>NH3N - WCS (0.4 mg/L)</u>	Expires:	Aug-04-21
Standard Type:	Other Solution	Prepared:	Aug-03-21
Solvent:	BLANK: 21G2806	Prepared By:	Nidia Fuentes
Final Volume (mls):	2	Department:	A&I
Vials:	1	Last Edit:	Aug-05-21 08:40 by NF
Vendor:	Absolute Grade		
Lot Number:	102819		

Prepared by instrument DA-4

REVIEWED

By Anna Knoebel at 9:17 am, Aug 25, 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)
21G2804	NH3N-WCS (4.00 mg/L)	Jul-28-21	Nidia Fuentes	Aug-28-21	Jul-28-21 11:53 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

21H0404

Description: NH₃N - WCS (0.8 mg/L)
Standard Type: Other Solution
Solvent: BLANK: 21G2806
Final Volume (mls): 2
Vials: 1
Vendor: Absolute Grade
Lot Number: 102819

Expires: Aug-04-21
Prepared: Aug-03-21
Prepared By: Nidia Fuentes
Department: A&I
Last Edit: Aug-06-21 12:44 by NF

Prepared by instrument DA-4

REVIEWED

By Anna Knoebel at 9:16 am, Aug 25, 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)
21G2804	NH ₃ N-WCS (4.00 mg/L)	Jul-28-21	Nidia Fuentes	Aug-28-21	Jul-28-21 11:53 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

21H0405

Description: NH3N - WCS (2.0 mg/L)
Standard Type: Other Solution
Solvent: BLANK: 21G2806
Final Volume (mls): 2
Vials: 1
Vendor: Absolute Grade
Lot Number: 102819

Expires: Aug-04-21
Prepared: Aug-03-21
Prepared By: Nidia Fuentes
Department: A&I
Last Edit: Aug-05-21 08:46 by NF

Prepared by instrument DA-4

REVIEWED

By Anna Knoebel at 9:15 am, Aug 25, 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)
21G2804	NH3N-WCS (4.00 mg/L)	Jul-28-21	Nidia Fuentes	Aug-28-21	Jul-28-21 11:53 by NF	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

21H0406

Description: NH₃N - WCS (0.10 mg/L)
Standard Type: Other Solution
Solvent: Blank LIMS#: 21G2806
Final Volume (mls): 2
Vials: 1
Vendor: Absolute Grade
Lot Number: 102819

Expires: Aug-04-21
Prepared: Aug-03-21
Prepared By: Nidia Fuentes
Department: A&I
Last Edit: Aug-05-21 08:47 by NF

Prepared by instrument DA-4

REVIEWED

By Anna Knoebel at 9:14 am, Aug 25, 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)
21G2804	NH ₃ N-WCS (4.00 mg/L)	Jul-28-21	Nidia Fuentes	Aug-28-21	Jul-28-21 11:53 by NF	0.05

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 (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:

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: 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

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 SheetParameter / 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 (Na ₂ EDTA.2H ₂ O)	19J0107	5.5033 g
Sodium hydroxide (NaOH)	17K0806 20C1103	0.5535 g
	REVIEWED 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: 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 *21 2/11/21*TROEMNER S/N: 4000020557: 16 weights *22 2/4/21*

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

Table of Contents

Print Date: 2/4/2021

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 (specify units)
Sodium Nitroprusside (Na ₂ Fe(CN) ₅ NO.2H ₂ O	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: 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

21G2803



Environmental Protection Agency Region 5
Chicago Regional Laboratory

Print Date: 8/6/2021

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

Copy was inadvertently not print

REVIEWED
 By NFUENTES at 9:39 am, Aug 09, 2021

Reagent Preparation Bench Sheet

Parameter / SOP #: NH3N Distilled/AIG029B v7.9

Prepared by: Nidia Fuentes

Reagent: NH3N Distilled-ReceivingSol/BLK

REVIEWED
 By NFUENTES at 2:10 pm, Aug 25, 2021

Preparation Date: Jul-28-21

LIMS ID: 21G2803

Expiration Date: Aug-28-21

Chemical Name (Formula)	LIMS ID	Mass or Volume (specify units)
Sulfuric Acid (H ₂ SO ₄)	21G0902	1 mL

Total Volume : 1000 mL

Comments :

See user defined fields for details

REVIEWED

By Anna Knoebel at 6:21 am, Aug 26, 2021

Analyst Signature:

Nidia Fuentes

ANALYSIS REAGENTS/STANDARDS

21H0221



Environmental Protection Agency Region 5

Print Date:

8/26/2021

Chicago Regional Laboratory

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

This prep sheet was inadvertently not printed on the
 day of prep

REVIEWED
 By HPL/ENT/2021 at 9:52 am, Aug 26, 2021

Reagent Preparation Bench Sheet

Parameter / SOP #: NH3/AIG029B v9Prepared by: Nidia FuentesReagent: NH3N-Sodium Hypochlorite SolutionPreparation Date: Aug-02-21LIMS ID: 21H0221Expiration Date: Aug-03-21

Chemical Name (Formula)	LIMS ID	Mass or Volume (specify units)
Sodium hypochlorite 5% (NaOCl)	21H0201	5 mL

Total Volume : 10 mL

Comments :

REVIEWED

By Anna Knoebel at 10:23 am, Aug 26, 2021

Analyst Signature:

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 (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:

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: 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

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 8

Prepared by: Nidia Fuentes

Reagent: NH3N-5% EDTA Buffer Sol.

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

Preparation Date: Feb-04-21

LIMS ID: 21B0404

Expiration 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)	17K0806 20C1103	0.5535 g
	REVIEWED 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:

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: 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

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 (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

21G2803



Environmental Protection Agency Region 5
Chicago Regional Laboratory

Print Date: 8/6/2021

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

Copy was inadvertently not print

REVIEWED
 By NFUENTES at 9:39 am, Aug 09, 2021

Reagent Preparation Bench Sheet

Parameter / SOP #: NH3N Distilled/AIG029B v7.9

Prepared by: Nidia Fuentes

Reagent: NH3NDistilled-ReceivingSol/BLK

REVIEWED
 By NFUENTES at 2:10 pm, Aug 25, 2021

Preparation Date: Jul-28-21

LIMS ID: 21G2803

Expiration Date: Aug-28-21

Chemical Name (Formula)	LIMS ID	Mass or Volume (specify units)
Sulfuric Acid (H2SO4)	21G0902	1 mL

Total Volume : 1000 mL

Comments :

See user defined fields for details

REVIEWED

By Anna Knoebel at 6:21 am, Aug 26, 2021

Analyst Signature:

Nidia Fuentes

ANALYSIS REAGENTS/STANDARDS

21H0401



Environmental Protection Agency Region 5
Chicago Regional Laboratory

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

Benchsheet was inadvertently not created on the day it was prepared.

Reagent Preparation Bench Sheet

REVIEWED
By NFUENTES at 4:25 pm, Aug 25, 2021

REVIEWED
By NFUENTES at 2:30 pm, Aug 04, 2021

Parameter / SOP #: NH3/AIG029B v8 9

Prepared by: Nidia Fuentes

Reagent: NH3N-Sodium Hypochlorite Solution

Preparation Date: Aug-03-21

LIMS ID: 21H0401

Expiration Date: Aug-04-21

Chemical Name (Formula)	LIMS ID	Mass or Volume (specify units)
Sodium hypochlorite 5% (NaOCl)	21H0201	5 mL

Total Volume : 10 mL

Comments :

The reagent was prepared on 8/3/2021, but not entered into LIMS until 8/4. This was done inadvertently.

REVIEWED

By Anna Knoebel at 7:01 am, Aug 26, 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):	2107010
Primary Analyst:	Nidia Fuentes
Analysis:	TKN DA
Date:	August 26, 2021
Data Reporting Qualtrax Workflow ID:	26392

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: 2107010

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Work Order Number: 2107010

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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: 8/26/2021

Title: ASB Data Report for Ranovael

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.

A handwritten signature in purple ink that reads "Nidia Fuentes".

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: Ranovael

Analyses included in this report:

TKN DA

Report Name: 2107010 TKN DA FINAL Aug 26 21 1149



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: Ranovael
 Project Number: 02BA2021
 Project Manager: Ben Atkinson

Reported:
 Aug-26-21 11:49

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

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: Ranovael
 Project Number: 02BA2021
 Project Manager: Ben Atkinson

Reported:
 Aug-26-21 11:49

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>
2107010-01	TKN DA
2107010-02	TKN DA
2107010-03	TKN DA
2107010-04	TKN DA
2107010-05	TKN DA

Holding times:

All holding times were met.

Sample Analysis and Results

The samples were analyzed using ASB SOP AIG035B, Version #8. 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 351.2

Quality Control

All quality control audits were within ASB limits or did not result in qualification of the data except for matrix spike recovery.

B21G029-MS1 Source: 2107010-02

Recovery for Total Kjeldahl Nitrogen (112%) was outside acceptance limits (90-110%) for TKN DA. Affected sample results were qualified accordingly.



Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
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WORK ORDER

Printed: 7/20/2021 12:27:42PM

2107010

US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5
Project: Ranovael

Project Manager: Angela Ockrassa Davis
Project Number: 02BA2021

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: Aug-30-21 15:00 (45 day TAT)

Received By: Colin Breslin

Logged In By: Kelsey O'Malley

Date Received: Jul-16-21 08:46

Date Logged In: Jul-16-21 09:39

Sample tags/labels	Yes	Work Order Comments:
Seals Intact	Yes	
Received on ice	Yes	
Paperwork Included	Yes	

Cooler(s) information:

Default Cooler - 3.70 C

Sample ID: [2107010-01](#)

Sampled: [Jul-15-21 11:23](#)

Matrix: [Water](#)

Sample Name: [BO1](#)

Sample Location/Comments: [Ranovael](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:23	pH = 1
BOD	2	Jul-17-21 11:23	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:23	pH = 1
Solids, TDS	7	Jul-22-21 11:23	pH = 7
Solids, TSS	7	Jul-22-21 11:23	pH = 7
TKN DA	28	Aug-12-21 11:23	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:23	pH = 1

Sample ID: [2107010-02](#)

Sampled: [Jul-15-21 11:49](#)

Matrix: [Water](#)

Sample Name: [SO1](#)

Sample Location/Comments: [Overflow from VTA](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:49	pH = 1
BOD	2	Jul-17-21 11:49	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:49	pH = 1

WORK ORDER

Printed: 7/20/2021 12:27:42PM

2107010

US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5

Project Manager: Angela Ockrassa Davis

Project: Ranovael

Project Number: 02BA2021

Sample ID: [2107010-02](#) Sampled: [Jul-15-21 11:49](#) Matrix: [Water](#)Sample Name: [SO1](#) Sample Location/Comments: [Overflow from VTA](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Solids, TDS	7	Jul-22-21 11:49	pH = 7
Solids, TSS	7	Jul-22-21 11:49	pH = 7
TKN DA	28	Aug-12-21 11:49	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:49	pH = 1

Sample ID: [2107010-03](#) Sampled: [Jul-15-21 11:52](#) Matrix: [Water](#)Sample Name: [SO2](#) Sample Location/Comments: [VTA](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:52	pH = 1
BOD	2	Jul-17-21 11:52	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:52	pH = 1
Solids, TDS	7	Jul-22-21 11:52	pH = 7
Solids, TSS	7	Jul-22-21 11:52	pH = 7
TKN DA	28	Aug-12-21 11:52	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:52	pH = 1

Sample ID: [2107010-04](#) Sampled: [Jul-15-21 12:00](#) Matrix: [Water](#)Sample Name: [SO3](#) Sample Location/Comments: [Downstream DC](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 12:00	pH = 1
BOD	2	Jul-17-21 12:00	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 12:00	pH = 1
Solids, TDS	7	Jul-22-21 12:00	pH = 7
Solids, TSS	7	Jul-22-21 12:00	pH = 7
TKN DA	28	Aug-12-21 12:00	pH = 1
Total Phosphorus DA	28	Aug-12-21 12:00	pH = 1

WORK ORDER

Printed: 7/20/2021 12:27:42PM

2107010

US EPA Region 5 LSASD Analytical Services Branch

Client: **Water Division, US EPA Region 5**Project Manager: **Angela Ockrassa Davis**Project: **Ranovael**Project Number: **02BA2021**Sample ID: 2107010-05 Sampled: Jul-15-21 12:07 Matrix: WaterSample Name: SO4 Sample Location/Comments: Upstream DC

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 12:07	pH = 1
BOD	2	Jul-17-21 12:07	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 12:07	pH = 1
Solids, TDS	7	Jul-22-21 12:07	pH = 7
Solids, TSS	7	Jul-22-21 12:07	pH = 7
TKN DA	28	Aug-12-21 12:07	pH = 1
Total Phosphorus DA	28	Aug-12-21 12:07	pH = 1

WORK ORDER MEMO: CC 26042

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: Ranovael
 Project Number: 02BA2021
 Project Manager: Ben Atkinson

Reported:
 Aug-26-21 11:49

Total Kjeldahl Nitrogen, EPA 351.2 (modified)
US EPA Region 5 LSASD Analytical Services Branch

BO1 (2107010-01) Matrix: Water Sampled: Jul-15-21 11:23 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Total Kjeldahl Nitrogen	U		0.30	0.50	mg/L	1	B21G029	Jul-26-21	Jul-27-21

SO1 (2107010-02) Matrix: Water Sampled: Jul-15-21 11:49 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Total Kjeldahl Nitrogen	15.2	(MS), K	3.00	5.00	mg/L	10	B21G029	Jul-26-21	Jul-27-21

SO2 (2107010-03) Matrix: Water Sampled: Jul-15-21 11:52 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Total Kjeldahl Nitrogen	11.1		3.00	5.00	mg/L	10	B21G029	Jul-26-21	Jul-27-21

SO3 (2107010-04) Matrix: Water Sampled: Jul-15-21 12:00 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Total Kjeldahl Nitrogen	2.59		0.30	0.50	mg/L	1	B21G029	Jul-26-21	Jul-27-21

SO4 (2107010-05) Matrix: Water Sampled: Jul-15-21 12:07 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Total Kjeldahl Nitrogen	2.36		0.30	0.50	mg/L	1	B21G029	Jul-26-21	Jul-27-21



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: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-26-21 11:49

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



**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: 8/26/2021

Analyst: Nidia Fuentes

Project: Ranovael

Analyte: Total Kjeldahl Nitrogen

Analysis: TKN DA

QC Sample Name	Result	Units	Flags / Qualifiers	MDL	Reporting Limit	Spike Level	Source Result	% REC or abs diff (pH)	% REC or abs diff (pH) Limits	% RPD or abs diff (pH)	%RPD or abs diff (pH) Limits
21F1003-CAL1	0.09	mg/L		0.30	0.50	0.000		%			
21F1003-CAL2	0.33	mg/L		0.30	0.50	0.2500		131%			
21F1003-CAL3	0.49	mg/L		0.30	0.50	0.5000		97%			
21F1003-CAL4	0.94	mg/L		0.30	0.50	1.000		94%			
21F1003-CAL5	1.94	mg/L		0.30	0.50	2.000		97%			
21F1003-CAL6	2.37	mg/L		0.30	0.50	2.500		95%			
21F1003-CAL7	5.11	mg/L		0.30	0.50	5.000		102%			
21F1003-CAL8	9.99	mg/L		0.30	0.50	10.00		100%			
21F1003-CCB1	0.09	mg/L		0.30	0.50						
21F1003-CCB2	0.11	mg/L		0.30	0.50						
21F1003-CCB3	0.02	mg/L		0.30	0.50						
21F1003-CCB4	0.07	mg/L		0.30	0.50						
21F1003-CCB5	0.10	mg/L		0.30	0.50						
21F1003-CCB6	0.01	mg/L		0.30	0.50						
21F1003-CCB7	0.03	mg/L		0.30	0.50						
21F1003-CCB8	0.07	mg/L		0.30	0.50						
21F1003-CCB9	0.01	mg/L		0.30	0.50						
21F1003-CCBA	0.02	mg/L		0.30	0.50						
21F1003-CCBB	0.04	mg/L		0.30	0.50						



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: 8/26/2021

Analyst: Nidia Fuentes

Project: Ranovael

Analyte: Total Kjeldahl Nitrogen

Analysis: TKN DA

QC Sample Name	Result	Units	Flags / Qualifiers	MDL	Reporting Limit	Spike Level	Source Result	% REC or abs diff (pH)	% REC or abs diff (pH) Limits	% RPD or abs diff (pH)	%RPD or abs diff (pH) Limits
21F1003-CCV1	5.24	mg/L		0.30	0.50	5.000		105%	90-110		
21F1003-CCV2	5.31	mg/L		0.30	0.50	5.000		106%	90-110		
21F1003-CCV3	4.99	mg/L		0.30	0.50	5.000		100%	90-110		
21F1003-CCV4	5.36	mg/L		0.30	0.50	5.000		107%	90-110		
21F1003-CCV5	5.39	mg/L		0.30	0.50	5.000		108%	90-110		
21F1003-CCV6	4.82	mg/L		0.30	0.50	5.000		96%	90-110		
21F1003-CCV7	5.30	mg/L		0.30	0.50	5.000		106%	90-110		
21F1003-CCV8	5.37	mg/L		0.30	0.50	5.000		107%	90-110		
21F1003-CCV9	5.06	mg/L		0.30	0.50	5.000		101%	90-110		
21F1003-CCVA	5.30	mg/L		0.30	0.50	5.000		106%	90-110		
21F1003-CCVB	5.33	mg/L		0.30	0.50	5.000		107%	90-110		
21F1003-ICB1	0.05	mg/L		0.30	0.50						
21F1003-ICV1	4.98	mg/L		0.30	0.50	5.000		100%	90-110		
21G2902-CAL1	0.13	mg/L		0.30	0.50	0.000		%			
21G2902-CAL2	0.33	mg/L		0.30	0.50	0.2500		130%			
21G2902-CAL3	0.51	mg/L		0.30	0.50	0.5000		103%			
21G2902-CAL4	0.93	mg/L		0.30	0.50	1.000		93%			
21G2902-CAL5	1.88	mg/L		0.30	0.50	2.000		94%			
21G2902-CAL6	2.38	mg/L		0.30	0.50	0.2500		954%			

Report Name: 2107010 TKN DA FINAL Aug 26 21 1149



**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: 8/26/2021

Analyst: Nidia Fuentes

Project: Ranovael

Analyte: Total Kjeldahl Nitrogen

Analysis: TKN DA

QC Sample Name	Result	Units	Flags / Qualifiers	MDL	Reporting Limit	Spike Level	Source Result	% REC or abs diff (pH)	% REC or abs diff (pH) Limits	% RPD or abs diff (pH)	%RPD or abs diff (pH) Limits
21G2902-CAL7	5.12	mg/L		0.30	0.50	5.000		102%			
21G2902-CAL8	9.99	mg/L		0.30	0.50	10.00		100%			
21G2902-CCB1	0.13	mg/L		0.30	0.50						
21G2902-CCB2	0.15	mg/L		0.30	0.50						
21G2902-CCB3	0.05	mg/L		0.30	0.50						
21G2902-CCV1	5.41	mg/L		0.30	0.50	5.000		108%	90-110		
21G2902-CCV2	5.43	mg/L		0.30	0.50	5.000		109%	90-110		
21G2902-CCV3	5.13	mg/L		0.30	0.50	5.000		103%	90-110		
21G2902-ICB1	0.13	mg/L		0.30	0.50						
21G2902-ICV1	5.38	mg/L		0.30	0.50	5.000		108%	90-110		
B21G029-BLK1	U	mg/L		0.30	0.50						
B21G029-BS1	2.15	mg/L		0.30	0.50	2.000		107%	90-110		
B21G029-DUP1 Source: 2107010-02	15.4	mg/L		3.00	5.00		15.2			1	24
B21G029-MRL1	0.53	mg/L				0.5000		107%	74-153		
B21G029-MS1 Source: 2107010-02	17.5	mg/L	Q	3.00	5.00	2.000	15.2	112%	90-110		



**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: 8/26/2021

Analyst: Nidia Fuentes

Project: Ranovael

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

B21G029-MS1

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**Work:** 2107010**Project:** Ranovael**Analysis:** TKN DA**CRL SOP Used:** AIG035B Version #8**Batch ID:** B21G029**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

Question #	Question	Analyst Response (YES/ NO/ NA)
------------	----------	--------------------------------

Work: 2107010

Project: Ranovael

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?	NA
21	Were LCSs/SRMs analyzed at the required frequency?	YES
22	Were LCS/SRM %Rs within the laboratory QC limits or other acceptance criteria?	NA
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? Notes/Comments: Matrix Spike Recovery for Total Kjeldahl Nitrogen (112%) was outside acceptance limits (90-110) in B21G029-MS1 for TKN DA	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: 2107010

Project: Ranovael

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?	

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? Refer to #25	NO
42	Were QC charts checked if a QC audit, excluding matrix QC (MS or DUP), was out of limit?	YES

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? Notes/Comments: ID: 24456 24463	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)? Notes/Comments: I:\Projects (New File Structure)\Ranovael\1. A&I\Fuentes\DA3\07272021-TPTKN\ARC_70.bak	YES

Accreditation

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

Analyst's Signature and Date*:

Fuentes, Nidia

Digitally signed by Fuentes, Nidia
Date: 2021.08.24 11:56:55 -05'00'

Reviewer's Signature and Date*:

ANNA KNOEBEL

Digitally signed by ANNA
KNOEBEL
Date: 2021.08.25 14:11:29
-05'00'

*Reviewer Concurs with Analyst Responses

Additional Notes/Comments (if applicable):

TKN DA

BATCH

B21G029



US EPA Region 5 LSASD Analytical Services Branch

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

Date: 7/26/2021

TP/TKN DIGESTION LOG

Batch Number: B21G029

Analyses Included On This Benchsheet

TKN DA

Prepared Date: Jul-26-21

Analyst (initials): NF

Digestion #	Block #	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
1	8	2107010-01					10	pH = 1
1	8	2107010-02					10	pH = 1
1	8	2107010-03					10	pH = 1
1	8	2107010-04					10	pH = 1
1	8	2107010-05					10	pH = 1
1	8	B21G029-BLK1					10	
1	8	B21G029-BS1		19K1902	20	10	10	
1	8	B21G029-DUP1	2107010-02				10	
1	8	B21G029-MRL1		21G2608			10	
1	8	B21G029-MS1	2107010-02	19K1902	20	10	10	

Batch Comments:



US EPA Region 5 LSASD Analytical Services Branch

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

Date: 7/26/2021

TP/TKN DIGESTION LOG

Batch Number: B21G029

Analyses Included On This Benchsheet

TKN DA

Prepared Date: Jul-26-21

Analyst (initials): NF

PREPARATION REAGENTS/STANDARDS/PIPETTES:

19K1902:	TKN-Spike Mix (1000 mg/L)	Prepared: Nov-19-19	Expires: Oct-28-21
21G2608:	TKN - MRL (0.50 mg N/L)	Prepared: Jul-26-21	Expires: Aug-26-21
21B2306:	Pipette (Electronic) – 50 -1,000 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
21F2904:	TP/TKN Digestion Solution	Prepared: Jun-29-21	Expires: Jun-29-22



US EPA Region 5 LSASD Analytical Services Branch

Only standards were used from this block

REVIEWED
By NFUENTES at 1:08 am, Aug 24, 2021

Date: 7/26/2021

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

TP/TKN DIGESTION LOG

Batch Number: B21G029

Analyses Included On This Benchsheet

TKN DA

Prepared Date: Jul-26-21

Analyst (initials): NF

Hot Block ID: #9

Block Digital Temp 1 Reading (°C) - Start - Stop Time/

Block Digital Temp 2 Reading (°C) - Start - Stop Time:

200C-1:22 PM -2:22 PM/

380C-2:22 PM - 3:55 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



US EPA Region 5 LSASD Analytical Services Branch

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

Date: 7/26/2021

TP/TKN DIGESTION LOG

Batch Number: B21G029

Prepared Date: Jul-26-21

Analyses Included On This Benchsheet

Analyst (initials): NF

TKN DA

2nd Hot Block ID: #8

Block Digital Temp 1 Reading (°C) - Start - Stop Time/

200C-1:30 PM -2:30 PM/

Block Digital Temp 2 Reading (°C) - Start - Stop Time:

380C-2:30 PM - 4:00 PM

33	TKN CCB	34	TKN CCV	35	36	37	38	39	40
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

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 ³ /g)	1.00308
Relative Humidity (%)	41.00	Air Density (g/cm ³)	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

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											
Volume (uL)	Ch	Mean	SD	Unc. +/- (k=2)	Accuracy %		Precision %		Status	Sample	Sample Weight (mg)
1000.00	1	1003.73	1.57929	5.87	0.37259	3.00000	0.15734	0.60000	Passed		
										1	999.26000
										2	1002.74000
										3	999.63000
										4	1000.96000
10000.00	1	9986.19	8.90664	56.99	0.13805	0.60000	0.08919	0.15000	Passed		
										1	9965.93000
										2	9946.61000
										3	9949.97000
										4	9959.76000

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



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 ³ /g)	1.00308
Relative Humidity (%)	41.00	Air Density (g/cm ³)	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

21F2904



Environmental Protection Agency Region 5

Chicago Regional Laboratory

Print Date:

6/29/2021

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

Reagent Preparation Bench Sheet

Parameter / SOP #: TP/TKN SOP AIG34B ver#7, AIG35B ver#8Prepared by: Nidia FuentesReagent: TP/TKN Digestion SolutionPreparation Date: Jun-29-21LIMS ID: 21F2904Expiration Date: Jun-29-22

Chemical Name (Formula)	LIMS ID	Mass or Volume (specify units)
Sulfuric Acid (H ₂ SO ₄)	20B0607	200 mL
Mercuric Sulfate solution	21F2903	25 mL
Potassium Sulfate (K ₂ SO ₄)	20J2902	133.3216 g

Total Volume : 1000 mL

Comments :

Balance #17

REVIEWED*By Anna Knoebel at 7:04 am, Aug 24, 2021*

Analyst Signature:

Balance Check

BALANCE ID: #17**DATE:** 6/29/2021**ANALYST:** Christina Rice**WEIGHT SET ID:** TROEMNER S/N: 4000026116**WGT SET # CONFIRMED:** YES**WEIGHT SET 2 ID:** _____**WGT SET # CONFIRMED:** _____

***NOTE:** Save as excel file and print to pdf. Store both files in balance check folders on the computer.

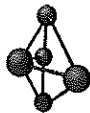
***NOTE:** Confirm # of weights in weight set before and after use above. # of weights in weight sets are listed at bottom of page. Create IR if find that weights are missing . Note any weights that are missing in the comments field below and contact QAO to remove weight(s) from Qualtrax records.

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	0.0500	0.0499	0.0501
0.1000	0.1001	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		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	100.0003	99.9997	100.0003
200.0000	199.9999	199.9995	200.0005

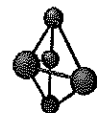
Top-Loading Balance Tolerance Limits			
Standard Weight (g)	Actual Weight (g)	LCL (g)	UCL (g)
0.01		0.00	0.02
0.02		0.01	0.03
0.02*		0.01	0.03
0.05		0.04	0.06
0.10		0.09	0.11
0.20		0.19	0.21
0.20*		0.19	0.21
0.50		0.49	0.51
1.00		0.99	1.01
2.00		1.99	2.01
2.00*		1.99	2.01
5.00		4.99	5.01
10.00		9.99	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: 4000026116:** 22 weights**COMMENTS:**

Standard Weight 0.001g Actual Weight 0.0009g



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:

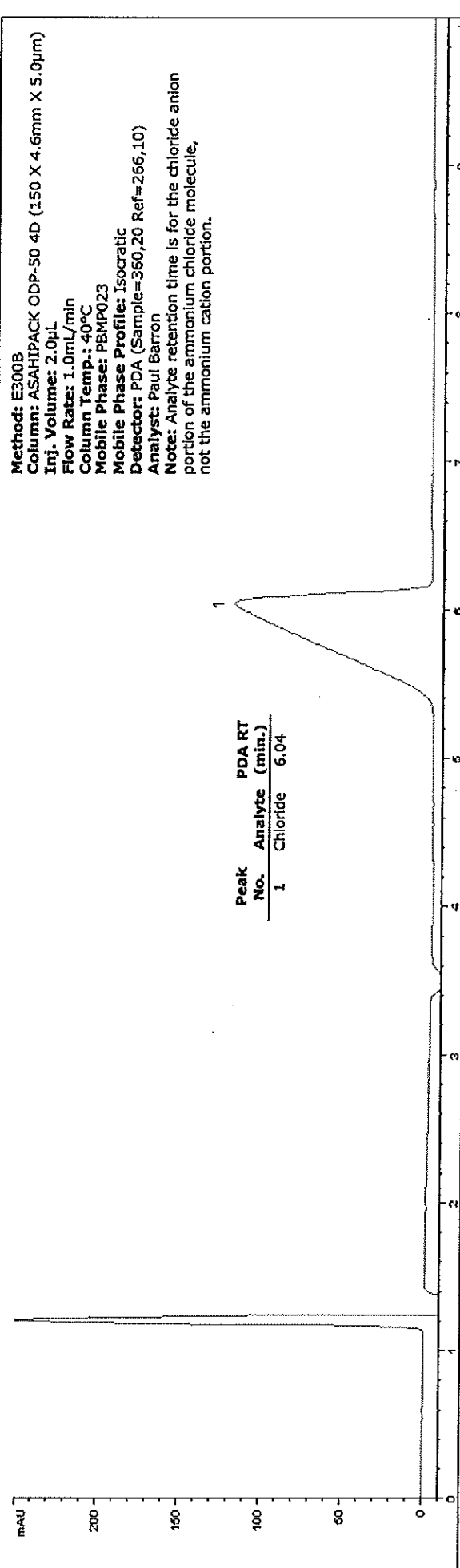
102821
Refrigerate (4 °C)
1000
6UTB
5E-05 Balance Uncertainty
0.100 Flask Uncertainty

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/m³ orl-rat 1650mg/kg 3182



* 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 21G2605

Description:	<u>TKN - WCS (0.00 mg N/L)</u>	Expires:	Aug-26-21
Standard Type:	Other Solution	Prepared:	Jul-26-21
Solvent:	Reagent water	Prepared By:	Nidia Fuentes
Final Volume (mls):	200	Department:	A&I
Vials:	1	Last Edit:	Aug-24-21 12:01 by NF
Vendor:	Absolute Grade		
Lot Number:	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	Jun-03-21 12:36 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	0.2
21G0902	Sulfuric Acid 9673-00	Jul-09-21	** Vendor **	May-11-25	Jul-28-21 10:03 by NF	0.2

REVIEWED

By Anna Knoebel at 5:10 pm, Aug 24, 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 21G2606

Description:	<u>TKN - WCS (10.00 mg N/L)</u>	Expires:	Aug-26-21
Standard Type:	Other Solution	Prepared:	Jul-26-21
Solvent:	Reagent water	Prepared By:	Nidia Fuentes
Final Volume (mls):	100	Department:	A&I
Vials:	1	Last Edit:	Aug-10-21 12:55 by NF
Vendor:	Absolute Standards Inc.		
Lot Number:	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	Jun-03-21 12:36 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
21G0902	Sulfuric Acid 9673-00	Jul-09-21	** Vendor **	May-11-25	Jul-28-21 10:03 by NF	0.1

REVIEWED

By Anna Knoebel at 9:57 am, Aug 24, 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 21G2607

Description:	<u>TKN - WeS (5.00 mg N/L)</u>	Expires:	Aug-26-21
Standard Type:	Other Solution	Prepared:	Jul-26-21
Solvent:	Reagent water	Prepared By:	Nidia Fuentes
Final Volume (mls):	100	Department:	A&I
Vials:	1	Last Edit:	Aug-10-21 12:56 by NF
Vendor:	Absolute Standards Inc.		
Lot Number:	040521		

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
21G0902	Sulfuric Acid 9673-00	Jul-09-21	** Vendor **	May-11-25	Jul-28-21 10:03 by NF	0.1
21F0222	TP&TKN Stock Control Std.	Jun-02-21	** Vendor **	Apr-05-23	Aug-03-21 14:46 by NF	0.5

REVIEWED

By Anna Knoebel at 10:11 am, Aug 24, 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

21G2608

Description:	<u>TKN - MRL (0.50 mg N/L)</u>	Expires:	Aug-26-21
Standard Type:	Reference Material	Prepared:	Jul-26-21
Solvent:	Reagent water	Prepared By:	Nidia Fuentes
Final Volume (mls):	100	Department:	A&I
Vials:	1	Last Edit:	Aug-10-21 12:56 by NF
Vendor:	Absolute Grade		
Lot Number:	102819		

Analyte	CAS Number	Concentration (ppm)	SRM Control Limits
Ammonia as N	NA	0.5	0-200
Total Kjeldahl Nitrogen	NA	0.5	74-153

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	Jun-03-21 12:36 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
21G0902	Sulfuric Acid 9673-00	Jul-09-21	** Vendor **	May-11-25	Jul-28-21 10:03 by NF	0.1

REVIEWED

By Anna Knoebel at 9:51 am, Aug 24, 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 21G2909

Description:	<u>TKN - WCS (0.25 mg N/L)</u>	Expires:	Jul-28-21
Standard Type:	Other Solution	Prepared:	Jul-27-21
Solvent:	Blank: 21G2605	Prepared By:	Nidia Fuentes
Final Volume (mls):	2	Department:	A&I
Vials:	1	Last Edit:	Jul-30-21 10:18 by NF
Vendor:	Absolute Grade		
Lot Number:	102819		

Prepared by Instrument (DA-3)

REVIEWED

By Anna Knoebel at 10:11 am, Aug 24, 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)
21G2606	TKN - WCS (10.00 mg N/L)	Jul-26-21	Nidia Fuentes	Aug-26-21	Jul-26-21 11:58 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

21G2910

Description:	<u>TKN - WCS (0.5 mg N/L)</u>		
Standard Type:	Other Solution	Expires:	Jul-28-21
Solvent:	Blank: 21G2605	Prepared:	Jul-27-21
Final Volume (mls):	2	Prepared By:	Nidia Fuentes
Vials:	1	Department:	A&I
Vendor:	Absolute Grade	Last Edit:	Jul-30-21 10:16 by NF
Lot Number:	102819		

Prepared by Instrument (DA-3)

REVIEWED

By Anna Knoebel at 10:12 am, Aug 24, 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)
21G2606	TKN - WCS (10.00 mg N/L)	Jul-26-21	Nidia Fuentes	Aug-26-21	Jul-26-21 11:58 by NF	0.1



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

21G2911

Description: TKN - WCS (1.0 mg N/L)
Standard Type: Other Solution
Solvent: Blank: 21G2605
Final Volume (mls): 2
Vials: 1
Vendor: Absolute Grade
Lot Number: 102819

Expires: Jul-28-21
Prepared: Jul-27-21
Prepared By: Nidia Fuentes
Department: A&I
Last Edit: Jul-30-21 10:14 by NF

Prepared by Instrument (DA-3)

REVIEWED

By Anna Knoebel at 10:12 am, Aug 24, 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)
21G2606	TKN - WCS (10.00 mg N/L)	Jul-26-21	Nidia Fuentes	Aug-26-21	Jul-26-21 11:58 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

21G2912

Description:	<u>TKN - WCS (2.0 mg N/L)</u>		
Standard Type:	Other Solution	Expires:	Jul-28-21
Solvent:	Blank: 21G2605	Prepared:	Jul-27-21
Final Volume (mls):	2	Prepared By:	Nidia Fuentes
Vials:	1	Department:	A&I
Vendor:	Absolute Grade	Last Edit:	Jul-30-21 10:11 by NF
Lot Number:	102819		

Prepared by Instrument (DA-3)

REVIEWED

By Anna Knoebel at 10:13 am, Aug 24, 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)
21G2606	TKN - WCS (10.00 mg N/L)	Jul-26-21	Nidia Fuentes	Aug-26-21	Jul-26-21 11:58 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

21G2913

Description: TKN - WCS 2.5mg N/L)
Standard Type: Other Solution
Solvent: Blank: 21G2605
Final Volume (mls): 2
Vials: 1
Vendor: Absolute Grade
Lot Number: 102819

Expires: Jul-28-21
Prepared: Jul-27-21
Prepared By: Nidia Fuentes
Department: A&I
Last Edit: Jul-30-21 10:08 by NF

Prepared by Instrument (DA-3)

REVIEWED

By Anna Knoebel at 10:13 am, Aug 24, 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)
21G2606	TKN - WCS (10.00 mg N/L)	Jul-26-21	Nidia Fuentes	Aug-26-21	Jul-26-21 11:58 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

21G2914

Description:	<u>TKN - WCS (5.0 mg N/L)</u>		
Standard Type:	Other Solution	Expires:	Jul-28-21
Solvent:	Blank: 21G2605	Prepared:	Jul-27-21
Final Volume (mls):	2	Prepared By:	Nidia Fuentes
Vials:	1	Department:	A&I
Vendor:	Absolute Grade	Last Edit:	Jul-30-21 10:06 by NF
Lot Number:	102819		

Prepared by Instrument (DA-3)

REVIEWED

By Anna Knoebel at 10:14 am, Aug 24, 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)
21G2606	TKN - WCS (10.00 mg N/L)	Jul-26-21	Nidia Fuentes	Aug-26-21	Jul-26-21 11:58 by NF	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 21G2927

Description:	<u>TKN - WCS (1.0 mg N/L)</u>	Expires:	Jul-30-21
Standard Type:	Other Solution	Prepared:	Jul-29-21
Solvent:	Blank: 21G2605	Prepared By:	Nidia Fuentes
Final Volume (mls):	2	Department:	A&I
Vials:	1	Last Edit:	Aug-09-21 12:13 by NF
Vendor:	Absolute Grade		
Lot Number:	102819		

Prepared by Instrument (DA-3)

REVIEWED

By Anna Knoebel at 11:18 am, Aug 24, 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)
21G2606	TKN - WCS (10.00 mg N/L)	Jul-26-21	Nidia Fuentes	Aug-26-21	Jul-26-21 11:58 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

21G2926

Description:	<u>TKN - WCS (0.5 mg N/L)</u>		
Standard Type:	Other Solution	Expires:	Jul-30-21
Solvent:	Blank: 21G2605	Prepared:	Jul-29-21
Final Volume (mls):	2	Prepared By:	Nidia Fuentes
Vials:	1	Department:	A&I
Vendor:	Absolute Grade	Last Edit:	Aug-09-21 12:13 by NF
Lot Number:	102819		

Prepared by Instrument (DA-3)

REVIEWED

By Anna Knoebel at 11:18 am, Aug 24, 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)
21G2606	TKN - WCS (10.00 mg N/L)	Jul-26-21	Nidia Fuentes	Aug-26-21	Jul-26-21 11:58 by NF	0.1



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 21G2927

Description:	<u>TKN - WCS (1.0 mg N/L)</u>	Expires:	Jul-30-21
Standard Type:	Other Solution	Prepared:	Jul-29-21
Solvent:	Blank: 21G2605	Prepared By:	Nidia Fuentes
Final Volume (mls):	2	Department:	A&I
Vials:	1	Last Edit:	Aug-09-21 12:13 by NF
Vendor:	Absolute Grade		
Lot Number:	102819		

Prepared by Instrument (DA-3)

REVIEWED

By Anna Knoebel at 11:18 am, Aug 24, 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)
21G2606	TKN - WCS (10.00 mg N/L)	Jul-26-21	Nidia Fuentes	Aug-26-21	Jul-26-21 11:58 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 21G2928

Description:	<u>TKN - WCS (2.0 mg N/L)</u>	Expires:	Jul-30-21
Standard Type:	Other Solution	Prepared:	Jul-29-21
Solvent:	Blank: 21G2605	Prepared By:	Nidia Fuentes
Final Volume (mls):	2	Department:	A&I
Vials:	1	Last Edit:	Aug-09-21 12:14 by NF
Vendor:	Absolute Grade		
Lot Number:	102819		

Prepared by Instrument (DA-3)

REVIEWED

By Anna Knoebel at 11:19 am, Aug 24, 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)
21G2606	TKN - WCS (10.00 mg N/L)	Jul-26-21	Nidia Fuentes	Aug-26-21	Jul-26-21 11:58 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

21G2929

Description:	<u>TKN - WCS 2.5mg N/L)</u>		
Standard Type:	Other Solution	Expires:	Jul-30-21
Solvent:	Blank: 21G2605	Prepared:	Jul-29-21
Final Volume (mls):	2	Prepared By:	Nidia Fuentes
Vials:	1	Department:	A&I
Vendor:	Absolute Grade	Last Edit:	Aug-09-21 12:15 by NF
Lot Number:	102819		

Prepared by Instrument (DA-3)

REVIEWED

By Anna Knoebel at 11:20 am, Aug 24, 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)
21G2606	TKN - WCS (10.00 mg N/L)	Jul-26-21	Nidia Fuentes	Aug-26-21	Jul-26-21 11:58 by NF	0.5



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
21G2930

Description:	<u>TKN - WCS (5.0 mg N/L)</u>		
Standard Type:	Other Solution	Expires:	Jul-30-21
Solvent:	Blank: 21G2605	Prepared:	Jul-29-21
Final Volume (mls):	2	Prepared By:	Nidia Fuentes
Vials:	1	Department:	A&I
Vendor:	Absolute Grade	Last Edit:	Aug-09-21 12:15 by NF
Lot Number:	102819		

Prepared by Instrument (DA-3)

REVIEWED

By Anna Knoebel at 11:20 am, Aug 24, 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)
21G2606	TKN - WCS (10.00 mg N/L)	Jul-26-21	Nidia Fuentes	Aug-26-21	Jul-26-21 11:58 by NF	1

SEQUENCE

21F1003

Sequence Date:

Instrument:

Sequence Analyses:

ANALYSIS SEQUENCE

21F1003

Instrument:	DA-3	Analysis Date:	Jul-29-21	Calibration ID:	UNASSIGNED	Matrix:	Water	
Order	Container	Lab Number	Sample name or QC sample designation		Analysis	STD ID	Comments	
1		21F1003-CAL1	Cal Standard	QC		21G2605		
2		21F1003-CAL2	Cal Standard	QC		21G2925		
3		21F1003-CAL3	Cal Standard	QC		21G2926		
4		21F1003-CAL4	Cal Standard	QC		21G2927		
5		21F1003-CAL5	Cal Standard	QC		21G2928		
6		21F1003-CAL6	Cal Standard	QC		21G2929		
7		21F1003-CAL7	Cal Standard	QC		21G2930		
8		21F1003-CAL8	Cal Standard	QC		21G2606		
9		21F1003-ICB1	ICB	QC				
10		21F1003-ICV1	ICV	QC		21G2607		
11		B21F016-MRL1	MRL Check	QC				
12		B21F016-BLK1	Blank	QC				
13		B21F016-BS1	LCS	QC				
14	A	2105027-01	21GS02S90	TKN DA			pH = 1, yellow label	
15		B21F016-DUP1	Duplicate	QC				
16		B21F016-MS1	Matrix Spike	QC				
17	A	2105027-02	21GS02S91	TKN DA			pH = 1, yellow label	
18	A	2105027-03	21GS02I92	TKN DA			pH = 1, yellow label	
19	A	2105027-04	21GS03S41	TKN DA			pH = 1, yellow label	
20	A	2105027-05	21GS03S43	TKN DA			pH = 1, yellow label	
21		21F1003-CCB1	ICB	QC				
22		21F1003-CCV1	ICV	QC		21G2607		
23	A	2105027-06	21GS03S50	TKN DA			pH = 1, yellow label	

Order	Container	Lab Number	Sample name <u>or</u> QC sample designation	Analysis	STD ID	Comments
24	A	2105027-07	21GS03S51	TKN DA		pH = 1, yellow label
25	A	2105027-08	21GS03I52	TKN DA		pH = 1, yellow label
26	A	2105027-09	21GS03S61	TKN DA		pH = 1, yellow label
27	A	2105027-10	21GS03S63	TKN DA		pH = 1, yellow label
28	A	2105027-11	21GS03S70	TKN DA		pH = 1, yellow label
29		B21F016-DUP2	Duplicate	QC		
30		B21F016-MS2	Matrix Spike	QC		
31		21F1003-CCB2	ICB	QC		
32		21F1003-CCV2	ICV	QC	21G2607	
33		21F1003-CCB3	ICB	QC		
34		21F1003-CCV3	ICV	QC	21G2607	
35	A	2105027-12	21GS03S71	TKN DA		pH = 1, yellow label
36	A	2105027-13	21GS03I72	TKN DA		pH = 1, yellow label
37	A	2105027-14	21GS03S21	TKN DA		pH = 1, yellow label
38	A	2105027-15	21GS03S22	TKN DA		pH = 1, yellow label
39	A	2105027-16	21GS03S23	TKN DA		pH = 1, yellow label
40	A	2105027-17	21GS03S24	TKN DA		pH = 1, yellow label
41	A	2105027-18	21GS03S25	TKN DA		pH = 1, yellow label
42	A	2105027-19	21GS03S26	TKN DA		pH = 1, yellow label
43	A	2105027-20	21GS03D26	TKN DA		pH = 1, yellow label
44	A	2105027-21	21GS03S27	TKN DA		pH = 1, yellow label
45		21F1003-CCB4	ICB	QC		
46		21F1003-CCV4	ICV	QC	21G2607	
47		B21F016-DUP3	Duplicate	QC		
48		B21F016-MS3	Matrix Spike	QC		
49	A	2105027-22	21GS03S28	TKN DA		pH = 1, yellow label
50	A	2105027-23	21GS03S30	TKN DA		pH = 1, yellow label

Order	Container	Lab Number	Sample name <u>or</u> QC sample designation	Analysis	STD ID	Comments
51	A	2105027-24	21GS03S31	TKN DA		pH = 1, yellow label
52	A	2105027-25	21GS03I32	TKN DA		pH = 1, yellow label
53	A	2105027-26	21GS03S01	TKN DA		pH = 1, yellow label
54	A	2105027-27	21GS03S03	TKN DA		pH = 1, yellow label
55		21F1003-CCB5	ICB	QC		
56		21F1003-CCV5	ICV	QC	21G2607	
57		21F1003-CCB6	ICB	QC		
58		21F1003-CCV6	ICV	QC	21G2607	
59	A	2105027-29	21GS03S11	TKN DA		pH = 1, yellow label
60	A	2105027-30	21GS03C11	TKN DA		pH = 1, yellow label
61	A	2105027-31	21GS03I12	TKN DA		pH = 1, yellow label
62		B21F016-DUP4	Duplicate	QC		
63		B21F016-MS4	Matrix Spike	QC		
64	A	2105027-32	21GS02S61	TKN DA		pH = 1, yellow label
65	A	2105027-33	21GS02S63	TKN DA		pH = 1, yellow label
66	A	2105027-34	21GS02S70	TKN DA		pH = 1, yellow label
67	A	2105027-35	21GS02S71	TKN DA		pH = 1, yellow label
68		21F1003-CCB7	ICB	QC		
69		21F1003-CCV7	ICV	QC	21G2607	
70	A	2105027-36	21GS02I72	TKN DA		pH = 1, yellow label
71	A	2105027-37	21GS02S21	TKN DA		pH = 1, yellow label
72	A	2105027-38	21GS02S23	TKN DA		pH = 1, yellow label
73	A	2105027-39	21GS02S30	TKN DA		pH = 1, yellow label
74	A	2105027-40	21GS02D30	TKN DA		pH = 1, yellow label
75		21F1003-CCB8	ICB	QC		
76		21F1003-CCV8	ICV	QC	21G2607	
77		21F1003-CCB9	ICB	QC		

Order	Container	Lab Number	Sample name or QC sample designation	Analysis	STD ID	Comments
78		21F1003-CCV9	ICV	QC	21G2607	
79	A	2105027-28	21GS03S10	TKN DA		pH = 1, yellow label
80		B21G029-BS1	LCS	QC		
81		21F1003-CCBA	CCB Second rack	QC		
82		21F1003-CCVA	CCV Second rack	QC	21G2607	
83		21F1003-CCBB	ICB	QC		
84		21F1003-CCVB	ICV	QC	21G2607	

PREPARATION REAGENTS/STANDARDS/PIPETTES:

<u>19K1902:</u>	TKN-Spike Mix (1000 mg/L)	Prepared: Nov-19-19	Expires: Oct-28-21
<u>21G2608:</u>	TKN - MRL (0.50 mg N/L)	Prepared: Jul-26-21	Expires: Aug-26-21
<u>21G2605:</u>	TKN - WCS (0.00 mg N/L)	Prepared: Jul-26-21	Expires: Aug-26-21
<u>21G2606:</u>	TKN - WCS (10.00 mg N/L)	Prepared: Jul-26-21	Expires: Aug-26-21
<u>21G2607:</u>	TKN - WCS (5.00 mg N/L)	Prepared: Jul-26-21	Expires: Aug-26-21
<u>21G2925:</u>	TKN - WCS (0.25 mg N/L)	Prepared: Jul-29-21	Expires: Jul-30-21
<u>21G2926:</u>	TKN - WCS (0.5 mg N/L)	Prepared: Jul-29-21	Expires: Jul-30-21
<u>21G2927:</u>	TKN - WCS (1.0 mg N/L)	Prepared: Jul-29-21	Expires: Jul-30-21
<u>21G2928:</u>	TKN - WCS (2.0 mg N/L)	Prepared: Jul-29-21	Expires: Jul-30-21
<u>21G2929:</u>	TKN - WCS 2.5mg N/L)	Prepared: Jul-29-21	Expires: Jul-30-21
<u>21G2930:</u>	TKN - WCS (5.0 mg N/L)	Prepared: Jul-29-21	Expires: Jul-30-21
<u>21G0808:</u>	TKN - Sodium salicylate/sodium nitroprusside sol.	Prepared: Jul-08-21	Expires: Jul-08-22
<u>21G1204:</u>	TKN-Working Buffer Solution	Prepared: Jul-12-21	Expires: Jul-12-22
<u>21G2923:</u>	TKN-Sodium Hypochlorite	Prepared: Jul-29-21	Expires: Jul-30-21

Order	Container	Lab Number	Sample name <u>or</u> QC sample designation	Analysis	STD ID	Comments
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Calibration results

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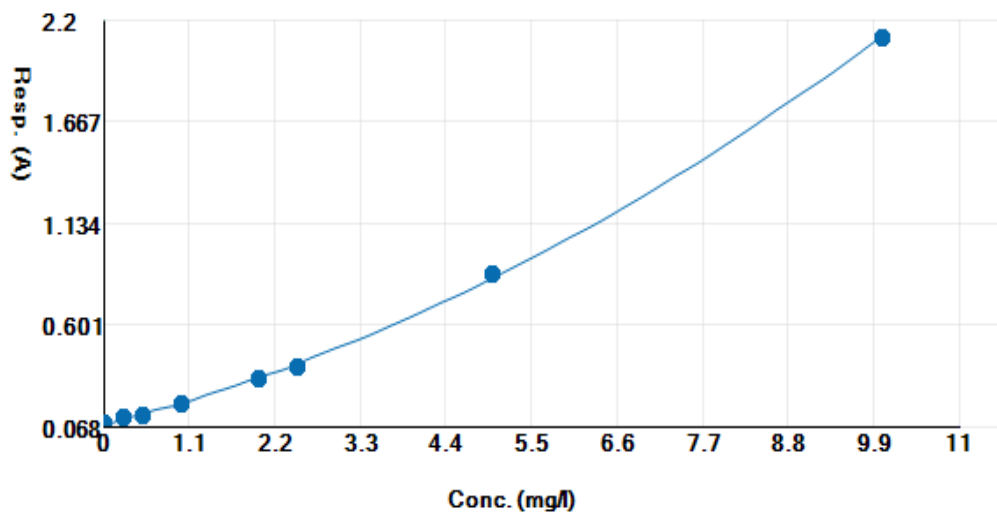
TKN_351.2

Version number 1.6 DA-3

Date 7/29/2021 **User** NF
Time 10:21:34AM **Software version: 7.0**
Analyzer name Analyzer 1

Test	TKN_351.2	Coeff. of deter.	0.999655
Status	Accepted	Total factor	4.913
Accepted	7/29/2021 10:21 AM		
Checked	7/29/2021 10:21 AM		
User name	NF	Zero-order factor	0.076
Comment		1st order factor	0.104
Errors		2nd order factor	0.010

Cal/Ctrl	Response	Calc. conc.	Given conc.	Lot	Errors
TKN-0	0.085	0.09417	0.00000	Default	
TKN-10	0.111	0.32748	0.25000	Default	
TKN-10	0.128	0.48564	0.50000	Default	
TKN-10	0.182	0.94069	1.00000	Default	
TKN-10	0.315	1.94340	2.00000	Default	
TKN-10	0.378	2.37408	2.50000	Default	
TKN-10	0.866	5.10609	5.00000	Default	
TKN-10	2.107	9.98736	10.00000	Default	



Results by Test

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DA-3

Date 7/29/2021

User NF

Time 2:06:09PM

Software version: 7.0

Test name TKN_351.2

Sample/ctrl ID	Test version	Result	Unit	Note	Dil. 1 +	Status	Errors
ICB	1.6	0.0474	mg/l		0.0	man acc	
ICV	1.6	4.9785	mg/l		0.0	man acc	
B21F016-MRL1	1.6	0.4773	mg/l		0.0	man acc	
B21F016-BLK1	1.6	0.0936	mg/l		0.0	man acc	
B21F016-BS1	1.6	2.1111	mg/l		0.0	man acc	
2105027-01	1.6	0.1631	mg/l		0.0	man acc	
B21F016-DUP1	1.6	0.1863	mg/l		0.0	man acc	
B21F016-MS1	1.6	2.1608	mg/l		0.0	man acc	
2105027-02	1.6	0.1015	mg/l		0.0	man acc	
2105027-03	1.6	0.1376	mg/l		0.0	man acc	
2105027-04	1.6	0.1323	mg/l		0.0	man acc	
2105027-05	1.6	0.1269	mg/l		0.0	man acc	
ICB	1.6	0.0930	mg/l		0.0	man acc	
ICV	1.6	5.2379	mg/l		0.0	man acc	
2105027-06	1.6	0.1558	mg/l		0.0	man acc	
2105027-07	1.6	0.1178	mg/l		0.0	man acc	
2105027-08	1.6	0.2144	mg/l		0.0	man acc	
2105027-09	1.6	0.1340	mg/l		0.0	man acc	
2105027-10	1.6	0.1538	mg/l		0.0	man acc	
2105027-11	1.6	0.1513	mg/l		0.0	man acc	
B21F016-DUP2	1.6	0.2056	mg/l		0.0	man acc	
B21F016-MS2	1.6	2.4474	mg/l		0.0	man acc	
ICB	1.6	0.1069	mg/l		0.0	man acc	
ICV	1.6	5.3080	mg/l		0.0	man acc	
ICB	1.6	0.0185	mg/l		0.0	man acc	
ICV	1.6	4.9945	mg/l		0.0	man acc	
2105027-12	1.6	0.0828	mg/l		0.0	man acc	
2105027-13	1.6	0.0344	mg/l		0.0	man acc	
2105027-14	1.6	0.0548	mg/l		0.0	man acc	
2105027-15	1.6	0.0926	mg/l		0.0	man acc	
2105027-16	1.6	0.2328	mg/l		0.0	man acc	
2105027-17	1.6	0.1229	mg/l		0.0	man acc	

Sample/ctrl ID	Test version	Result	Unit	Note	Dil. 1 +	Status	Errors
2105027-18	1.6	0.1700	mg/l		0.0	man acc	
2105027-19	1.6	0.1136	mg/l		0.0	man acc	
2105027-20	1.6	0.1863	mg/l		0.0	man acc	
2105027-21	1.6	0.1050	mg/l		0.0	man acc	
ICB	1.6	0.0740	mg/l		0.0	man acc	
ICV	1.6	5.3551	mg/l		0.0	man acc	
B21F016-DUP3	1.6	0.1121	mg/l		0.0	man acc	
B21F016-MS3	1.6	2.2150	mg/l		0.0	man acc	
2105027-22	1.6	0.1574	mg/l		0.0	man acc	
2105027-23	1.6	0.3347	mg/l		0.0	man acc	
2105027-24	1.6	0.1295	mg/l		0.0	man acc	
2105027-25	1.6	0.2038	mg/l		0.0	man acc	
2105027-26	1.6	0.1374	mg/l		0.0	man acc	
2105027-27	1.6	0.1834	mg/l		0.0	man acc	
ICB	1.6	0.1001	mg/l		0.0	man acc	
ICV	1.6	5.3907	mg/l		0.0	man acc	
ICB	1.6	0.0136	mg/l		0.0	man acc	
ICV	1.6	4.8172	mg/l		0.0	man acc	REVIEWED By NFUENTES at 2:51 pm, Aug 09, 2021
2105027-28	1.6	0.1609	mg/l		0.0	man acc	Outside calibration reanalyzed
2105027-29	1.6	0.0506	mg/l		0.0	man acc	
2105027-30	1.6	0.0944	mg/l		0.0	man acc	
2105027-31	1.6	0.1385	mg/l		0.0	man acc	
B21F016-DUP4	1.6	0.1502	mg/l		0.0	man acc	
B21F016-MS4	1.6	1.9769	mg/l		0.0	man acc	
2105027-32	1.6	0.1656	mg/l		0.0	man acc	
2105027-33	1.6	0.1333	mg/l		0.0	man acc	
2105027 ⁻³⁴ 210502734	1.6	0.2591	mg/l		0.0	man acc	REVIEWED By NFUENTES at 2:50 pm, Aug 09, 2021
2105027-35	1.6	0.1484	mg/l		0.0	man acc	
ICB	1.6	0.0311	mg/l		0.0	man acc	
ICV	1.6	5.2983	mg/l		0.0	man acc	
2105027-36	1.6	0.2260	mg/l		0.0	man acc	
2105027-37	1.6	0.1817	mg/l		0.0	man acc	
2105027-38	1.6	0.1698	mg/l		0.0	man acc	
2105027-39	1.6	0.1088	mg/l		0.0	man acc	
2105027-40	1.6	0.1581	mg/l		0.0	man acc	
ICB	1.6	0.0674	mg/l		0.0	man acc	
ICV	1.6	5.3730	mg/l		0.0	man acc	
ICB	1.6	0.0128	mg/l		0.0	man acc	
ICV	1.6	5.0595	mg/l		0.0	man acc	

Sample/ctrl ID	Test version	Result	Unit	Note	Dil. 1 +	Status	Errors
2105027-11	1.6	0.0541	mg/l		0.0	man acc	Not needed, used results from first run
B21F016-DUP2	1.6	0.1020	mg/l		0.0	man acc	
B21F016-MS2	1.6	2.3855	mg/l		0.0	man acc	
2105027-28	1.6	0.0643	mg/l		0.0	man acc	REVIEWED By NF0001709 at 2:54 pm, Aug 09, 2021 same cup
B21G028-BS1	1.6	2.1490	mg/l		0.0	man acc	BS from different work order
CCB Second Rack	1.6	0.0162	mg/l		0.0	man acc	
CCV Second rack	1.6	5.2972	mg/l		0.0	man acc	
ICB	1.6	0.0435	mg/l		0.0	man acc	
ICV	1.6	5.3321	mg/l		0.0	man acc	

Date 7/29/2021 User NF
Time 2:06:59 PM Software version: 7.0

DA-3

Sample/ctrl ID	Pat/Ctr/cal	Test name	Test type	Result	Result unit	Result time	STAT	Status	Dilution	1 - Manual dil	Response	Blank resp	Main abs.	Blank abs.	Sample type
TKN-0	A	TKN_351.2 P		0.09417 mg/l		7/29/2021 10:09		MA	0	0	0.08538	-0.00008	0.0853	-0.00008	
TKN-10	A	TKN_351.2 P		0.32748 mg/l		7/29/2021 10:10		MA	39	0	0.11062	-0.00041	0.11022	-0.00041	
TKN-10	A	TKN_351.2 P		0.48564 mg/l		7/29/2021 10:12		MA	19	0	0.12835	-0.00053	0.12782	-0.00053	
TKN-10	A	TKN_351.2 P		0.94069 mg/l		7/29/2021 10:14		MA	9	0	0.18213	-0.00022	0.18191	-0.00022	
TKN-10	A	TKN_351.2 P		1.9434 mg/l		7/29/2021 10:15		MA	4	0	0.31519	-0.0004	0.31479	-0.0004	
TKN-10	A	TKN_351.2 P		2.37408 mg/l		7/29/2021 10:17		MA	3	0	0.37848	-0.00047	0.37801	-0.00047	
TKN-10	A	TKN_351.2 P		5.10609 mg/l		7/29/2021 10:19		MA	1	0	0.866	-0.00063	0.86537	-0.00063	
TKN-10	A	TKN_351.2 P		9.98736 mg/l		7/29/2021 10:20		MA	0	0	2.10699	-0.00027	2.10672	-0.00027	
ICB	C	TKN_351.2 P		0.04742 mg/l		7/29/2021 11:00		MA	0	0	0.08046	-0.00015	0.08031	-0.00015	
ICV	C	TKN_351.2 P		4.9785 mg/l		7/29/2021 11:01		MA	0	0	0.83993	-0.0006	0.83933	-0.0006	
B21F016-MRL1	P	TKN_351.2 P		0.47727 mg/l		7/29/2021 11:01		MA	0	0	0.1274	-0.00062	0.12678	-0.00062	Sample type 1
B21F016-BLK1	P	TKN_351.2 P		0.09365 mg/l		7/29/2021 11:03		MA	0	0	0.08533	-0.00046	0.08487	-0.00046	Sample type 1
B21F016-BS1	P	TKN_351.2 P		2.11106 mg/l		7/29/2021 11:04		MA	0	0	0.33939	-0.00027	0.33912	-0.00027	Sample type 1
2105027-01	P	TKN_351.2 P		0.1631 mg/l		7/29/2021 11:05		MA	0	0	0.09273	-0.0005	0.09223	-0.0005	Sample type 1
B21F016-DUP1	P	TKN_351.2 P		0.18625 mg/l		7/29/2021 11:06		MA	0	0	0.09522	-0.00055	0.09466	-0.00055	Sample type 1
B21F016-MS1	P	TKN_351.2 P		2.16081 mg/l		7/29/2021 11:07		MA	0	0	0.34667	-0.00065	0.34602	-0.00065	Sample type 1
2105027-02	P	TKN_351.2 P		0.10152 mg/l		7/29/2021 11:08		MA	0	0	0.08616	-0.00063	0.08553	-0.00063	Sample type 1
2105027-03	P	TKN_351.2 P		0.13756 mg/l		7/29/2021 11:09		MA	0	0	0.08999	-0.00003	0.08997	-0.00003	Sample type 1
2105027-04	P	TKN_351.2 P		0.13229 mg/l		7/29/2021 11:10		MA	0	0	0.08943	-0.00024	0.08919	-0.00024	Sample type 1
2105027-05	P	TKN_351.2 P		0.12687 mg/l		7/29/2021 11:11		MA	0	0	0.08886	-0.00037	0.08849	-0.00037	Sample type 1
ICB	C	TKN_351.2 P		0.09301 mg/l		7/29/2021 11:12		MA	0	0	0.08526	-0.00049	0.08477	-0.00049	
ICV	C	TKN_351.2 P		5.23786 mg/l		7/29/2021 11:13		MA	0	0	0.89327	-0.00036	0.89291	-0.00036	
2105027-06	P	TKN_351.2 P		0.15584 mg/l		7/29/2021 11:14		MA	0	0	0.09195	-0.00025	0.0922	-0.00025	Sample type 1
2105027-07	P	TKN_351.2 P		0.11779 mg/l		7/29/2021 11:15		MA	0	0	0.08789	-0.00188	0.08977	-0.00188	Sample type 1
2105027-08	P	TKN_351.2 P		0.21442 mg/l		7/29/2021 11:16		MA	0	0	0.09826	-0.00034	0.09792	-0.00034	Sample type 1
2105027-09	P	TKN_351.2 P		0.13403 mg/l		7/29/2021 11:17		MA	0	0	0.08962	-0.00031	0.08931	-0.00031	Sample type 1
2105027-10	P	TKN_351.2 P		0.15383 mg/l		7/29/2021 11:19		MA	0	0	0.09173	-0.00032	0.09141	-0.00032	Sample type 1
2105027-11	P	TKN_351.2 P		0.15134 mg/l		7/29/2021 11:19		MA	0	0	0.09147	-0.00055	0.09092	-0.00055	Sample type 1
B21F016-DUP2	P	TKN_351.2 P		0.20557 mg/l		7/29/2021 11:20		MA	0	0	0.0973	-0.00016	0.09746	-0.00016	Sample type 1
B21F016-MS2	P	TKN_351.2 P		2.4474 mg/l		7/29/2021 11:22		MA	0	0	0.38962	-0.00046	0.38916	-0.00046	Sample type 1
ICB	C	TKN_351.2 P		0.10691 mg/l		7/29/2021 11:23		MA	0	0	0.08673	-0.00033	0.0864	-0.00033	
ICV	C	TKN_351.2 P		5.30801 mg/l		7/29/2021 11:23		MA	0	0	0.90793	-0.00036	0.90757	-0.00036	
ICB	C	TKN_351.2 P		0.01847 mg/l		7/29/2021 11:58		MA	0	0	0.07743	-0.00039	0.07703	-0.00039	
ICV	C	TKN_351.2 P		4.99448 mg/l		7/29/2021 11:59		MA	0	0	0.84317	-0.00027	0.8429	-0.00027	
2105027-12	P	TKN_351.2 P		0.08284 mg/l		7/29/2021 12:00		MA	0	0	0.08418	-0.00038	0.0838	-0.00038	Sample type 1
2105027-13	P	TKN_351.2 P		0.03444 mg/l		7/29/2021 12:01		MA	0	0	0.0791	-0.00036	0.07874	-0.00036	Sample type 1
2105027-14	P	TKN_351.2 P		0.05477 mg/l		7/29/2021 12:02		MA	0	0	0.08123	-0.01874	0.09997	-0.01874	Sample type 1
2105027-15	P	TKN_351.2 P		0.09264 mg/l		7/29/2021 12:03		MA	0	0	0.08522	-0.00064	0.08458	-0.00064	Sample type 1
2105027-16	P	TKN_351.2 P		0.23281 mg/l		7/29/2021 12:05		MA	0	0	0.10025	-0.00053	0.09972	-0.00053	Sample type 1
2105027-17	P	TKN_351.2 P		0.12294 mg/l		7/29/2021 12:05		MA	0	0	0.08844	-0.00062	0.08782	-0.00062	Sample type 1
2105027-18	P	TKN_351.2 P		0.17003 mg/l		7/29/2021 12:06		MA	0	0	0.09347	-0.00027	0.0932	-0.00027	Sample type 1
2105027-19	P	TKN_351.2 P		0.11357 mg/l		7/29/2021 12:08		MA	0	0	0.08744	-0.00064	0.0868	-0.00064	Sample type 1

2105027-20	P	TKN_351.2 P	0.18627 mg/l	7/29/2021 12:09	MA	0	0	0.09522	-0.00027	0.09495	-0.00027	Sample type 1
2105027-21	P	TKN_351.2 P	0.10499 mg/l	7/29/2021 12:10	MA	0	0	0.08653	0.00088	0.08741	0.00088	Sample type 1
ICB	C	TKN_351.2 P	0.07395 mg/l	7/29/2021 12:11	MA	0	0	0.08325	-0.00027	0.08298	-0.00027	
ICV	C	TKN_351.2 P	5.35513 mg/l	7/29/2021 12:12	MA	0	0	0.91783	-0.00051	0.91732	-0.00051	
B21F016-DUP3	P	TKN_351.2 P	0.1121 mg/l	7/29/2021 12:13	MA	0	0	0.08728	-0.00056	0.08673	-0.00056	Sample type 1
B21F016-MS3	P	TKN_351.2 P	2.21496 mg/l	7/29/2021 12:14	MA	0	0	0.35466	-0.00038	0.35428	-0.00038	Sample type 1
2105027-22	P	TKN_351.2 P	0.1574 mg/l	7/29/2021 12:15	MA	0	0	0.09212	-0.00051	0.0916	-0.00051	Sample type 1
2105027-23	P	TKN_351.2 P	0.33468 mg/l	7/29/2021 12:16	MA	0	0	0.11142	-0.0005	0.11092	-0.0005	Sample type 1
2105027-24	P	TKN_351.2 P	0.12947 mg/l	7/29/2021 12:17	MA	0	0	0.08913	-0.00059	0.08855	-0.00059	Sample type 1
2105027-25	P	TKN_351.2 P	0.20379 mg/l	7/29/2021 12:18	MA	0	0	0.09711	-0.00058	0.09653	-0.00058	Sample type 1
2105027-26	P	TKN_351.2 P	0.13742 mg/l	7/29/2021 12:19	MA	0	0	0.08998	-0.00035	0.08963	-0.00035	Sample type 1
2105027-27	P	TKN_351.2 P	0.18335 mg/l	7/29/2021 12:20	MA	0	0	0.0949	-0.00026	0.09464	-0.00026	Sample type 1
ICB	C	TKN_351.2 P	0.10012 mg/l	7/29/2021 12:21	MA	0	0	0.08601	-0.0003	0.08571	-0.0003	
ICV	C	TKN_351.2 P	5.39067 mg/l	7/29/2021 12:22	MA	0	0	0.92533	-0.00042	0.92491	-0.00042	
ICB	C	TKN_351.2 P	0.01363 mg/l	7/29/2021 12:20	MA	0	0	0.07692	-0.00007	0.07686	-0.00007	
ICV	C	TKN_351.2 P	4.81716 mg/l	7/29/2021 12:51	MA	0	0	0.80742	-0.00028	0.80714	-0.00028	
2105027-28	P	TKN_351.2 P	-0.16087 mg/l	7/29/2021 12:52	MA	0	0	0.05861	0.02357	0.08218	0.02357	Sample type 1
2105027-29	P	TKN_351.2 P	0.05061 mg/l	7/29/2021 12:53	MA	0	0	0.08079	-0.00036	0.08043	-0.00036	Sample type 1
2105027-30	P	TKN_351.2 P	0.09445 mg/l	7/29/2021 12:54	MA	0	0	0.08541	0.00155	0.08696	0.00155	Sample type 1
2105027-31	P	TKN_351.2 P	0.13847 mg/l	7/29/2021 12:55	MA	0	0	0.09009	-0.00049	0.0896	-0.00049	Sample type 1
B21F016-DUP4	P	TKN_351.2 P	0.15022 mg/l	7/29/2021 12:56	MA	0	0	0.09135	-0.0006	0.09074	-0.0006	Sample type 1
B21F016-MS4	P	TKN_351.2 P	1.97688 mg/l	7/29/2021 12:57	MA	0	0	0.31997	-0.00049	0.31948	-0.00049	Sample type 1
2105027-32	P	TKN_351.2 P	0.16562 mg/l	7/29/2021 12:58	MA	0	0	0.093	-0.00022	0.09278	-0.00022	Sample type 1
2105027-33	P	TKN_351.2 P	0.13329 mg/l	7/29/2021 12:59	MA	0	0	0.08954	-0.00053	0.08901	-0.00053	Sample type 1
210502734 P	P	TKN_351.2 P	0.25905 mg/l	7/29/2021 13:00	MA	0	0	0.10311	0.00302	0.10613	0.00302	Sample type 1
2105027-35	P	TKN_351.2 P	0.1484 mg/l	7/29/2021 13:01	MA	0	0	0.09115	-0.00047	0.09068	-0.00047	Sample type 1
ICB	C	TKN_351.2 P	0.03106 mg/l	7/29/2021 13:02	MA	0	0	0.07874	-0.00039	0.07835	-0.00039	
ICV	C	TKN_351.2 P	5.29828 mg/l	7/29/2021 13:03	MA	0	0	0.90589	-0.00052	0.90537	-0.00052	
2105027-36	P	TKN_351.2 P	0.22603 mg/l	7/29/2021 13:04	MA	0	0	0.09952	-0.00029	0.09923	-0.00029	Sample type 1
2105027-37	P	TKN_351.2 P	0.18174 mg/l	7/29/2021 13:06	MA	0	0	0.09473	-0.00037	0.09436	-0.00037	Sample type 1
2105027-38	P	TKN_351.2 P	0.16985 mg/l	7/29/2021 13:07	MA	0	0	0.09345	-0.00049	0.09296	-0.00049	Sample type 1
2105027-39	P	TKN_351.2 P	0.10875 mg/l	7/29/2021 13:07	MA	0	0	0.08693	-0.00061	0.08632	-0.00061	Sample type 1
2105027-40	P	TKN_351.2 P	0.15806 mg/l	7/29/2021 13:09	MA	0	0	0.09219	-0.00046	0.09173	-0.00046	Sample type 1
ICB	C	TKN_351.2 P	0.06736 mg/l	7/29/2021 13:10	MA	0	0	0.08255	-0.00044	0.08212	-0.00044	
ICV	C	TKN_351.2 P	5.37299 mg/l	7/29/2021 13:11	MA	0	0	0.9216	-0.00017	0.92142	-0.00017	
ICB	C	TKN_351.2 P	0.01275 mg/l	7/29/2021 13:53	MA	0	0	0.07683	-0.00014	0.07669	-0.00014	
ICV	C	TKN_351.2 P	5.05951 mg/l	7/29/2021 13:54	MA	0	0	0.85644	0.00003	0.85648	0.00003	
2105027-11	P	TKN_351.2 P	0.05405 mg/l	7/29/2021 13:55	MA	0	0	0.08115	-0.00012	0.08104	-0.00012	Sample type 1
B21F016-DUP2	P	TKN_351.2 P	0.102 mg/l	7/29/2021 13:56	MA	0	0	0.08621	-0.00017	0.08605	-0.00017	Sample type 1
B21F016-MS2	P	TKN_351.2 P	2.38551 mg/l	7/29/2021 13:57	MA	0	0	0.38021	-0.0003	0.37991	-0.0003	Sample type 1
2105027-28	P	TKN_351.2 P	0.06428 mg/l	7/29/2021 13:58	MA	0	0	0.08223	-0.00012	0.08211	-0.00012	Sample type 1
B21G028-BS1	P	TKN_351.2 P	2.14898 mg/l	7/29/2021 13:59	MA	0	0	0.34494	-0.00003	0.34491	-0.00003	Sample type 1
CCB Second Rack	P	TKN_351.2 P	0.01621 mg/l	7/29/2021 14:00	MA	0	0	0.07719	-0.00009	0.07711	-0.00009	Sample type 1
CCV Second rack	P	TKN_351.2 P	5.29724 mg/l	7/29/2021 14:01	MA	0	0	0.90567	-0.00034	0.90533	-0.00034	Sample type 1
ICB	C	TKN_351.2 P	0.04349 mg/l	7/29/2021 14:03	MA	0	0	0.08004	-0.00009	0.07995	-0.00009	
ICV	C	TKN_351.2 P	5.33205 mg/l	7/29/2021 14:04	MA	0	0	0.91298	0.00007	0.91305	0.00007	

DA-3

Gallery Analyzer
RECORD

S/N: 861000110232

Install Date: 9-17-2013

7530-00-222-3525
FEDERAL SUPPLY SERVICE
(GPO)

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5/25/21 TKN calibration good. Some DUP's
 not failed QC. at end of sequence CCB
 was 0.3496 and 0.3558. A new
 calibration was analyzed. CCB's still
 failed QC limits. Will keep data as
 it was and may need to flag.

6/7/21 TKN calibration good. Buffer reagent
 not froze-up during analysis of samples
 All QC failed. Re-place buffer bottle
 and re-calibrate. analyzed one rack
 and second rack overnight. Samples
 from first rack ran well, overnight
 failed QC (CCV).

REVIEWED

By NFUENTES at 10:35 am, Aug 10, 2021

workorder

2105027

6/8/21 Calibration passed, but CCV's failed.
 not Buffer was getting frozen. Hence
 mid of the morning decided to continue
 tomorrow with TKN. Will prepared new
 Started with CN. ^{buffer}
 CN run well, all QC's passed

6/9/21 TKN same workorder as 6/7 and 6/8/21
 not CCV's failed. Prepared new buffer
 reagent. Because of difficulties and
 running out of digested blanks. Decided
 to re digest.

REVIEWED

By NFUENTES at 10:36 am, Aug 10, 2021

7/19/21 CN 2107005. Calibration passed
UT CCV failed. Re-analysis.

7/20/21 CN Re-analysis for two samples because
UT of high absorbance/blanking. Results
today were the same as yesterday. Very
high absorbance/blanking. Samples were
diluted 1/1, some negativity (smaller numbers)

7/27/21 TP Calibration passed. TKN Calibration
UT issues as before, very negative responses
for 'zero'. Analyzed one blank
undigested (2 ml of digestion solution
+ 8 ml of acidic blank). Background
results similar to the 'zero'. It was
analyzed to compare background and
absorbances. Prepared a new
Sodium hypochloride = 0.60 mL and
diluted to 10 mL.

Analyzed TKN calibration - zero
responses not negative. Calibration
passed. Analyzed samples. All QC
passed except BS. The buffer did
not freeze as it was happening
before.

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REVIEWED
By NFUENTES at 10:37 am, Aug 10, 2021

workorder 2105027

7/29/21 [✓] THN calibration passed. All QC
MT passed. No issues with negative
values, buffer didn't freeze.
Sodium hypochlorite as describe
in SOP.

8/02/21 THN calibration passed, All QC
MT passed. Work order 2106006 and
2106007. In instrument sequence
(daily files) numbers are wrong.
2107001 instead of 2106007 and
2106001 instead of 2106006. Daily
files will be corrected in data package.

SEQUENCE

21G2902

Sequence Date: 07/27/2021

Instrument: DA-3

Sequence Analyses:

TKN DA

ANALYSIS SEQUENCE

21G2902

Instrument:	DA-3	Analysis Date:	Jul-27-21	Calibration ID:	UNASSIGNED	Matrix:	Water	Comments
Order	Container	Lab Number	Sample name or QC sample designation	Analysis	STD ID			
1		21G2902-CAL1	Cal Standard	QC	21G2605			
2		21G2902-CAL2	Cal Standard	QC	21G2909			
3		21G2902-CAL3	Cal Standard	QC	21G2910			
4		21G2902-CAL4	Cal Standard	QC	21G2911			
5		21G2902-CAL5	Cal Standard	QC	21G2912			
6		21G2902-CAL6	Cal Standard	QC	21G2913			
7		21G2902-CAL7	Cal Standard	QC	21G2914			
8		21G2902-CAL8	Cal Standard	QC	21G2606			
9		21G2902-ICB1	ICB	QC				
10		21G2902-ICV1	ICV	QC	21G2607			
11		B21G029-MRL1	MRL Check	QC				
12		B21G029-BLK1	Blank	QC				
13	B	2107010-01	BO1	TKN DA				pH = 1
14	A	2107010-04	SO3	TKN DA				pH = 1
15	A	2107010-05	SO4	TKN DA				pH = 1
16		21G2902-CCB1	ICB	QC				
17		21G2902-CCV1	ICV	QC	21G2607			
18	B	2107010-02	SO1	TKN DA				pH = 1
19		21G2902-CCB2	ICB	QC				
20		21G2902-CCV2	ICV	QC	21G2607			
21		B21G029-DUP1	Duplicate	QC				
22		B21G029-MS1	Matrix Spike	QC				
23	A	2107010-03	SO2	TKN DA				pH = 1

Order	Container	Lab Number	Sample name or QC sample designation	Analysis	STD ID	Comments
24		21G2902-CCB3	ICB	QC		
25		21G2902-CCV3	ICV	QC	21G2607	

PREPARATION REAGENTS/STANDARDS/PIPETTES:

<u>19K1902:</u>	TKN-Spike Mix (1000 mg/L)	Prepared: Nov-19-19	Expires: Oct-28-21
<u>21G2608:</u>	TKN - MRL (0.50 mg N/L)	Prepared: Jul-26-21	Expires: Aug-26-21
<u>21G2605:</u>	TKN - WCS (0.00 mg N/L)	Prepared: Jul-26-21	Expires: Aug-26-21
<u>21G2606:</u>	TKN - WCS (10.00 mg N/L)	Prepared: Jul-26-21	Expires: Aug-26-21
<u>21G2607:</u>	TKN - WCS (5.00 mg N/L)	Prepared: Jul-26-21	Expires: Aug-26-21
<u>21G2909:</u>	TKN - WCS (0.25 mg N/L)	Prepared: Jul-27-21	Expires: Jul-28-21
<u>21G2910:</u>	TKN - WCS (0.5 mg N/L)	Prepared: Jul-27-21	Expires: Jul-28-21
<u>21G2911:</u>	TKN - WCS (1.0 mg N/L)	Prepared: Jul-27-21	Expires: Jul-28-21
<u>21G2912:</u>	TKN - WCS (2.0 mg N/L)	Prepared: Jul-27-21	Expires: Jul-28-21
<u>21G2913:</u>	TKN - WCS 2.5mg N/L)	Prepared: Jul-27-21	Expires: Jul-28-21
<u>21G2914:</u>	TKN - WCS (5.0 mg N/L)	Prepared: Jul-27-21	Expires: Jul-28-21
<u>21G0808:</u>	TKN - Sodium salicylate/sodium nitroprusside sol.	Prepared: Jul-08-21	Expires: Jul-08-22
<u>21G1204:</u>	TKN-Working Buffer Solution	Prepared: Jul-12-21	Expires: Jul-12-22
<u>21G2702:</u>	TKN-Sodium Hypochlorite	Prepared: Jul-27-21	Expires: Jul-28-21

Calibration results

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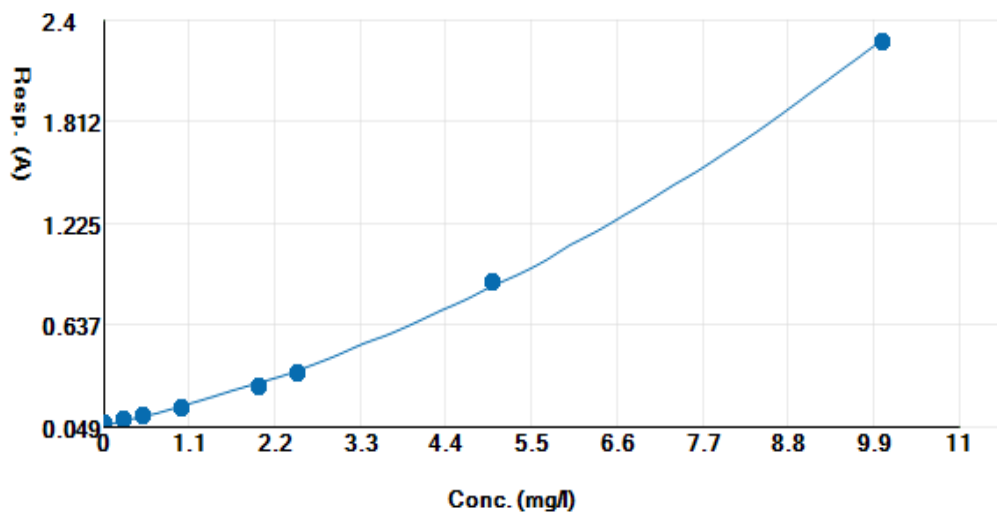
TKN_351.2

Version number 1.6 DA-3

Date 7/27/2021 **User** NF
Time 3:58:08PM **Software version: 7.0**
Analyzer name Analyzer 1

Test	TKN_351.2	Coeff. of deter.	0.999577
Status	Accepted	Total factor	4.495
Accepted	7/27/2021 3:58 PM		
Checked	7/27/2021 3:58 PM		
User name	NF	Zero-order factor	0.055
Comment		1st order factor	0.098
Errors		2nd order factor	0.012

Cal/Ctrl	Response	Calc. conc.	Given conc.	Lot	Errors
TKN-0	0.068	0.12692	0.00000	Default	
TKN-10	0.088	0.32509	0.25000	Default	
TKN-10	0.108	0.51256	0.50000	Default	
TKN-10	0.157	0.93495	1.00000	Default	
TKN-10	0.283	1.87844	2.00000	Default	
TKN-10	0.359	2.38460	2.50000	Default	
TKN-10	0.883	5.12026	5.00000	Default	
TKN-10	2.275	9.98614	10.00000	Default	



Results by Test

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DA-3

Date 7/28/2021
Time 8:53:16AM

User NF
Software version: 7.0

Test name TKN_351.2

Sample/ctrl ID	Test version	Result	Unit	Note	Dil. 1 +	Status	Errors
ICB	1.6	-0.7437	mg/l		0.0	man acc	QC, Outside calibration, Rule 1 violated
ICV	1.6	5.1959	mg/l		0.0	man acc	
2	1.6	-1.4342	mg/l		0.0	man acc	Outside calibration
ICB	1.6	-0.7751	mg/l		0.0	man acc	QC, Outside calibration, Rule 1 violated
ICV	1.6	5.2128	mg/l		0.0	man acc	Calibration was not accepted at this point trouble-shooting run.
ICB	1.6	0.1334	mg/l		0.0	man acc	REVIEWED By NFUENTES at 3:13 pm, Aug 09, 2021
ICV	1.6	5.3838	mg/l		0.0	man acc	
B21G029-MRL1	1.6	0.5348	mg/l		0.0	man acc	
B21G029-BLK1	1.6	0.0822	mg/l		0.0	man acc	
B21G029-BS1	1.6	2.3242	mg/l		0.0	man acc	Failed QC REVIEWED By NFUENTES at 12:24 pm, Aug 24, 2021
2107010-01	1.6	0.1938	mg/l		0.0	man acc	
2107010-02	1.6	- D	mg/l		0.0	aut rej	Abs. high, Dil. limit High, Outside calibration
B21G029-DUP1	1.6	- D	mg/l		0.0	aut rej	Abs. high, Dil. limit High, Outside calibration
B21G029-MS1	1.6	- D	mg/l		0.0	aut rej	Abs. high, Dil. limit High, Outside calibration
2107010-03	1.6	- D	mg/l		0.0	aut rej	Dil. limit High, Outside calibration
2107010-04	1.6	2.5854	mg/l		0.0	man acc	
2107010-05	1.6	2.3608	mg/l		0.0	man acc	
ICB	1.6	0.1301	mg/l		0.0	man acc	
ICV	1.6	5.4088	mg/l		0.0	man acc	
ICV	1.6		mg/l		0.0	aut rej	Aut. rejected Ran out of standard
ICB	1.6		mg/l		0.0	aut rej	Aut. rejected REVIEWED By NFUENTES at 3:17 pm, Aug 09, 2021
2107010-02	1.6	15.2271	mg/l		9.0	man acc	
ICB	1.6	0.1470	mg/l		0.0	man acc	
ICV	1.6	5.4333	mg/l		0.0	man acc	
B21G029-DUP1	1.6	15.4118	mg/l		9.0	man acc	
B21G029-MS1	1.6	17.4618	mg/l		9.0	man acc	
2107010-03	1.6	11.0507	mg/l		9.0	man acc	
ICB	1.6	0.0507	mg/l		0.0	man acc	
ICV	1.6	5.1342	mg/l		0.0	man acc	
B21G029-BS1	1.6	2.2771	mg/l		0.0	man acc	Failed QC, analyzed again on 07/29/2021 in sequence 21F1003
ICB	1.6	0.2504	mg/l		0.0	man acc	REVIEWED By NFUENTES at 3:17 pm, Aug 09, 2021
ICV	1.6	5.0356	mg/l		0.0	man acc	Not used REVIEWED By NFUENTES

TP/TKN

Date 7/29/2021 User NF
Time 9:39:22 AM 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 respo	Main abs.	Blank abs.	Sample type
TP-0	A	Total Phos P		0.02248 mg/l		7/27/2021 10:48		MA			0	0.00728	-0.00015	0.00713	-0.00015		
TP-3.0	A	Total Phos P		0.15208 mg/l		7/27/2021 10:50		MA			19	0.02703	-0.00016	0.02687	-0.00016		
TP-3.0	A	Total Phos P		0.29665 mg/l		7/27/2021 10:51		MA			9	0.04905	0.00018	0.04923	0.00018		
TP-3.0	A	Total Phos P		0.74217 mg/l		7/27/2021 10:52		MA			3	0.11694	0.00035	0.11728	0.00035		
TP-3.0	A	Total Phos P		0.99413 mg/l		7/27/2021 10:54		MA			2	0.15532	0.00055	0.15588	0.00055		
TP-3.0	A	Total Phos P		1.47669 mg/l		7/27/2021 10:55		MA			1	0.22885	0.00092	0.22977	0.00092		
TP-3.0	A	Total Phos P		3.0158 mg/l		7/27/2021 10:56		MA			0	0.46336	0.0026	0.46596	0.0026		
CCB	C	Total Phos P		0.01415 mg/l		7/27/2021 11:25		MA			0	0.00601	-0.00004	0.00597	-0.00004		
CCV	C	Total Phos P		2.006 mg/l		7/27/2021 11:25		MA			0	0.3095	0.00121	0.31071	0.00121		
B21G028-MRL1	P	Total Phos P		0.13959 mg/l		7/27/2021 11:26		MA			0	0.02512	0.00042	0.02554	0.00042	Sample type 1	
B21G028-BLK1	P	Total Phos P		0.01167 mg/l		7/27/2021 11:27		MA			0	0.00563	0.00018	0.00582	0.00018	Sample type 1	
B21G028-BS1	P	Total Phos P		1.01386 mg/l		7/27/2021 11:28		MA			0	0.15833	0.00132	0.15966	0.00132	Sample type 1	
2107010-01	P	Total Phos P		0.00983 mg/l		7/27/2021 11:29		MA			0	0.00535	0.00042	0.00578	0.00042	Sample type 1	
2107010-02	P	Total Phos P		9.0961 mg/l		7/27/2021 11:30		AR	19,	R	0	1.3898	0.01195	1.40175	0.01195	Sample type 1	
B21G028-DUP1	P	Total Phos P		9.12321 mg/l		7/27/2021 11:31		AR	19,	R	0	1.39393	0.01206	1.40599	0.01206	Sample type 1	
B21G028-MS1	P	Total Phos P		9.73685 mg/l		7/27/2021 11:32		AR	19,	R	0	1.48743	0.06211	1.54954	0.06211	Sample type 1	
2107010-03	P	Total Phos P		9.05994 mg/l		7/27/2021 11:33		AR	19,	R	0	1.38429	0.06838	1.45267	0.06838	Sample type 1	
2107010-04	P	Total Phos P		1.29788 mg/l		7/27/2021 11:34		MA			0	0.20161	0.0028	0.20441	0.0028	Sample type 1	
2107010-05	P	Total Phos P		1.33234 mg/l		7/27/2021 11:34		MA			0	0.20686	0.00459	0.21145	0.00459	Sample type 1	
CCB	C	Total Phos P		0.01514 mg/l		7/27/2021 11:35		MA			0	0.00616	0	0.00617	0		
CCV	C	Total Phos P		1.98734 mg/l		7/27/2021 11:36		MA			0	0.30666	0.00125	0.30791	0.00125		
2107010-02	P	Total Phos P		9.35786 mg/l		7/27/2021 11:41		MA		R	9	0.14644	0.00275	0.14919	0.00275	Sample type 1	
CCB	C	Total Phos P		0.01326 mg/l		7/27/2021 11:41		MA			0	0.00587	-0.00013	0.00574	-0.00013		
CCV	C	Total Phos P		2.0101 mg/l		7/27/2021 11:42		MA			0	0.31013	0.00114	0.31127	0.00114		
B21G028-DUP1	P	Total Phos P		9.4878 mg/l		7/27/2021 11:44		MA		R	9	0.14842	0.00099	0.14941	0.00099	Sample type 1	
B21G028-MS1	P	Total Phos P		10.69863 mg/l		7/27/2021 11:46		MA		R	9	0.16686	0.00096	0.16782	0.00096	Sample type 1	
2107010-03	P	Total Phos P		9.50995 mg/l		7/27/2021 11:48		MA		R	9	0.14875	0.0009	0.14966	0.0009	Sample type 1	
CCB	C	Total Phos P		0.01458 mg/l		7/27/2021 11:49		MA			0	0.00607	-0.00002	0.00605	-0.00002		
CCV	C	Total Phos P		1.9969 mg/l		7/27/2021 11:50		MA			0	0.30811	0.00137	0.30948	0.00137		
CCB	C	Total Phos P		0.01396 mg/l		7/27/2021 12:05		MA			0	0.00598	0.00017	0.00615	0.00017		
CCV	C	Total Phos P		2.00128 mg/l		7/27/2021 12:05		MA			0	0.30878	0.00134	0.31012	0.00134		
2107010-02	P	Total Phos P		9.47931 mg/l		7/27/2021 12:07		MA			9	0.14829	0.00123	0.14952	0.00123	Sample type 1	
B21G028-DUP1	P	Total Phos P		9.5848 mg/l		7/27/2021 12:09		MA			9	0.14989	0.00091	0.1508	0.00091	Sample type 1	
B21G028-MS1	P	Total Phos P		10.73251 mg/l		7/27/2021 12:10		MA			9	0.16738	0.00071	0.16809	0.00071	Sample type 1	
CCB	C	Total Phos P		0.01468 mg/l		7/27/2021 12:11		MA			0	0.00609	0.00026	0.00635	0.00026		
CCV	C	Total Phos P		2.00464 mg/l		7/27/2021 12:12		MA			0	0.30929	0.00109	0.31038	0.00109		
CCB	C	Total Phos P		0.01412 mg/l		7/27/2021 12:43		MA			0	0.006	-0.00028	0.00573	-0.00028		
CCV	C	Total Phos P		2.00326 mg/l		7/27/2021 12:44		MA			0	0.30908	0.00087	0.30996	0.00087		
2107010-02	P	Total Phos P		9.56274 mg/l		7/27/2021 12:46		MA			4	0.29526	0.0046	0.29986	0.0046	Sample type 1	
B21G028-DUP1	P	Total Phos P		9.53297 mg/l		7/27/2021 12:47		MA			4	0.29435	0.00271	0.29706	0.00271	Sample type 1	
B21G028-MS1	P	Total Phos P		10.76756 mg/l		7/27/2021 12:49		MA			4	0.33198	0.00203	0.334	0.00203	Sample type 1	
2107010-03	P	Total Phos P		9.6625 mg/l		7/27/2021 12:50		MA			5	0.24923	0.00376	0.25299	0.00376	Sample type 1	

CCB	C	Total Phos P	0.01552 mg/l	7/27/2021 12:51	MA		0	0.00622	-0.0004	0.00582	-0.0004	Sample type 1
CCV	C	Total Phos P	2.01696 mg/l	7/27/2021 12:52	MA		0	0.31117	0.00114	0.31231	0.00114	
ICB	C	TKN_351.2 P	-0.7437 mg/l	7/27/2021 14:34	MA	27,30,	0	0.053	-0.00007	0.05293	-0.00007	
ICV	C	TKN_351.2 P	5.19585 mg/l	7/27/2021 14:35	MA		0	0.52039	0.00002	0.5204	0.00002	
	2 P	TKN_351.2 P	-1.43424 mg/l	7/27/2021 14:36	MA	30,	0	0.0403	0.00014	0.04044	0.00014	Sample type 1
ICB	C	TKN_351.2 P	-0.77506 mg/l	7/27/2021 14:37	MA	27,30,	0	0.05242	0.00042	0.05284	0.00042	
ICV	C	TKN_351.2 P	5.21282 mg/l	7/27/2021 14:38	MA		0	0.52306	0.00012	0.52318	0.00012	
TKN-0	A	TKN_351.2 P	0.12692 mg/l	7/27/2021 15:44	MA		0	0.06761	-0.00004	0.06756	-0.00004	
TKN-10	A	TKN_351.2 P	0.32509 mg/l	7/27/2021 15:45	MA		39	0.08811	0.00003	0.08814	0.00003	
TKN-10	A	TKN_351.2 P	0.51256 mg/l	7/27/2021 15:47	MA		19	0.10842	-0.00035	0.10807	-0.00035	
TKN-10	A	TKN_351.2 P	0.93495 mg/l	7/27/2021 15:49	MA		9	0.15737	-0.00021	0.15716	-0.00021	
TKN-10	A	TKN_351.2 P	1.87844 mg/l	7/27/2021 15:50	MA		4	0.28278	-0.00014	0.28264	-0.00014	
TKN-10	A	TKN_351.2 P	2.3846 mg/l	7/27/2021 15:52	MA		3	0.3592	-0.00022	0.35899	-0.00022	
TKN-10	A	TKN_351.2 P	5.12026 mg/l	7/27/2021 15:54	MA		1	0.88279	-0.00001	0.88278	-0.00001	
TKN-10	A	TKN_351.2 P	9.98614 mg/l	7/27/2021 15:55	MA		0	2.2751	0.00001	2.27511	0.00001	
ICB	C	TKN_351.2 P	0.1334 mg/l	7/27/2021 16:20	MA		0	0.06826	0.00001	0.06827	0.00001	
ICV	C	TKN_351.2 P	5.38377 mg/l	7/27/2021 16:21	MA		0	0.94308	-0.00025	0.94283	-0.00025	
B21G029-MRL1	P	TKN_351.2 P	0.53481 mg/l	7/27/2021 16:22	MA		0	0.11088	0.00001	0.1109	0.00001	Sample type 1
B21G029-BLK1	P	TKN_351.2 P	0.08217 mg/l	7/27/2021 16:24	MA		0	0.06311	-0.00019	0.06292	-0.00019	Sample type 1
B21G029-BS1	P	TKN_351.2 P	2.3242 mg/l	7/27/2021 16:25	MA		0	0.34975	-0.00012	0.34963	-0.00012	Sample type 1
2107010-01	P	TKN_351.2 P	0.19384 mg/l	7/27/2021 16:25	MA		0	0.07442	-0.00013	0.07429	-0.00013	Sample type 1
2107010-02	P	TKN_351.2 P	14.43118 mg/l	7/27/2021 16:27	AR	3,19,30, R	0	3.81258	0.00368	3.81626	0.00368	Sample type 1
B21G029-DUP1	P	TKN_351.2 P	14.83068 mg/l	7/27/2021 16:28	AR	3,19,30, R	0	3.95076	0.00416	3.95493	0.00416	Sample type 1
B21G029-MS1	P	TKN_351.2 P	30.63917 mg/l	7/27/2021 16:29	AR	3,19,30, R	0	9.41866	0.00365	9.42231	0.00365	Sample type 1
2107010-03	P	TKN_351.2 P	11.66146 mg/l	7/27/2021 16:30	AR	19,30, R	0	2.85458	0.00133	2.85591	0.00133	Sample type 1
2107010-04	P	TKN_351.2 P	2.58539 mg/l	7/27/2021 16:31	MA		0	0.39129	0.00103	0.39232	0.00103	Sample type 1
2107010-05	P	TKN_351.2 P	2.36081 mg/l	7/27/2021 16:32	MA		0	0.35547	0.00082	0.35629	0.00082	Sample type 1
ICB	C	TKN_351.2 P	0.13011 mg/l	7/27/2021 16:33	MA		0	0.06793	-0.00011	0.06782	-0.00011	
ICV	C	TKN_351.2 P	5.40877 mg/l	7/27/2021 16:34	MA		0	0.94889	-0.0003	0.94859	-0.0003	
ICV	C	TKN_351.2 P	mg/l	7/27/2021 16:37	AR	1,	0					
ICB	C	TKN_351.2 P	mg/l	7/27/2021 16:38	AR	1,	0					
2107010-02	P	TKN_351.2 P	15.22712 mg/l	7/27/2021 16:40	MA	R	9	0.23289	0.00041	0.2333	0.00041	Sample type 1
ICB	C	TKN_351.2 P	0.14699 mg/l	7/27/2021 16:41	MA		0	0.06964	-0.0001	0.06954	-0.0001	
ICV	C	TKN_351.2 P	5.43335 mg/l	7/27/2021 16:42	MA		0	0.95461	-0.00017	0.95445	-0.00017	
B21G029-DUP1	P	TKN_351.2 P	15.41182 mg/l	7/27/2021 16:44	MA	R	9	0.2354	0.00091	0.23631	0.00091	Sample type 1
B21G029-MS1	P	TKN_351.2 P	17.46176 mg/l	7/27/2021 16:46	MA	R	9	0.26386	0.00095	0.26481	0.00095	Sample type 1
2107010-03	P	TKN_351.2 P	11.05071 mg/l	7/27/2021 16:53	MA	R	9	0.17834	0.00733	0.18568	0.00733	Sample type 1
ICB	C	TKN_351.2 P	0.05066 mg/l	7/27/2021 16:54	MA		0	0.05997	0.02088	0.08086	0.02088	
ICV	C	TKN_351.2 P	5.13417 mg/l	7/27/2021 16:55	MA		0	0.88593	-0.00039	0.88554	-0.00039	
B21G029-BS1	P	TKN_351.2 P	2.27707 mg/l	7/27/2021 16:56	MA		0	0.34243	-0.00057	0.34187	-0.00057	Sample type 1
ICB	C	TKN_351.2 P	0.25089 mg/l	7/27/2021 16:57	MA		0	0.08027	-0.0005	0.07977	-0.0005	
ICV	C	TKN_351.2 P	5.03558 mg/l	7/27/2021 16:58	MA		0	0.86379	0.0002	0.86399	0.0002	

ANALYSIS REAGENTS/STANDARDS

21G0808



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 #: TKN/ SOP AIG035B VER #8

Prepared by: Nidia Fuentes

Reagent: TKN - Sodium salicylate/sodium nitroprusside sol.

Preparation Date: Jul-08-21

LIMS ID: 21G0808

Expiration Date: Jul-08-22

Chemical Name (Formula)	LIMS ID	Mass or Volume (specify units)
Sodium Nitroprusside ($\text{Na}_2\text{Fe}(\text{CN})_5\text{NO}\cdot 2\text{H}_2\text{O}$)	19F1901	0.0308 g
Sodium Salicylate ($\text{NaC}_7\text{H}_5\text{O}_3$)	19L1207	15.0161 g

Total Volume : 100 mL

Comments :

Balance #17.

REVIEWED

By Anna Knoebel at 10:40 am, Aug 24, 2021

Analyst Signature:

Nidia Fuentes

Balance Check

BALANCE ID: #17**DATE:** 7/8/2021**ANALYST:** Nidia Fuentes**WEIGHT SET ID:** TROEMNER S/N: 4000026116**WGT SET # CONFIRMED:** YES**WEIGHT SET 2 ID:** _____**WGT SET # CONFIRMED:** _____

***NOTE:** Save as excel file and print to pdf. Store both files in balance check folders on the computer.

***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	0.0200	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	0.9999	0.9999	1.0001
2.0000		1.9999	2.0001
2.0000*		1.9999	2.0001
5.0000	4.9999	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	99.9999	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:** 21 weights**Denver Inst Co S/N: 01-25360-3A:** 1 weight**TROEMNER S/N: 06679:** 5 weights**TROEMNER S/N: 4000026116:** 22 weights

COMMENTS:

ANALYSIS REAGENTS/STANDARDS

21G1204



Environmental Protection Agency Region 5

Print Date:

7/12/2021

Chicago Regional Laboratory

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

Reagent Preparation Bench Sheet

Parameter / SOP #: SOP AIG 035B VER #8Prepared by: Nidia FuentesReagent: TKN-Working Buffer SolutionPreparation Date: Jul-12-21LIMS ID: 21G1204Expiration Date: Jul-12-22

Chemical Name (Formula)	LIMS ID	Mass or Volume (specify units)
Stock Sodium Potassium Tartrate	21G1201	50 mL
Stock Buffer Solution	21G1202	40 mL
Stock Sodium Hydroxide	21G1203	50 mL

Total Volume : 200 mL

Comments :

REVIEWED*By Anna Knoebel at 10:56 am, Aug 24, 2021*

Analyst Signature:

A handwritten signature in blue ink that reads "Nidia Fuentes".

ANALYSIS REAGENTS/STANDARDS

21G2923



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: 8/4/2021

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REVIEWED
By NFUENTES at 11:15 am, Aug 10, 2021

Parameter / SOP #: TKN /AIG035B VERSION 8

Prepared by: Nidia Fuentes

Reagent: TKN-Sodium Hypochlorite

Preparation Date: Jul-29-21

LIMS ID: 21G2923

Expiration Date: Jul-30-21

Chemical Name (Formula)	LIMS ID	Mass or Volume (specify units)
Sodium Hypochlorite (NaOCl)	21C0923	1.2 mL

Total Volume : 20 mL

Comments :

REVIEWED

By Anna Knoebel at 11:12 am, Aug 24, 2021

Analyst Signature:

Nidia Fuentes

ANALYSIS REAGENTS/STANDARDS

21G0808



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 #: TKN/ SOP AIG035B VER #8

Prepared by: Nidia Fuentes

Reagent: TKN - Sodium salicylate/sodium nitroprusside sol.

Preparation Date: Jul-08-21

LIMS ID: 21G0808

Expiration Date: Jul-08-22

Chemical Name (Formula)	LIMS ID	Mass or Volume (specify units)
Sodium Nitroprusside ($\text{Na}_2\text{Fe}(\text{CN})_5\text{NO}\cdot 2\text{H}_2\text{O}$)	19F1901	0.0308 g
Sodium Salicylate ($\text{NaC}_7\text{H}_5\text{O}_3$)	19L1207	15.0161 g

Total Volume : 100 mL

Comments :

Balance #17.

REVIEWED

By Anna Knoebel at 10:40 am, Aug 24, 2021

Analyst Signature:

Nidia Fuentes

Balance Check

BALANCE ID: #17

DATE: 7/8/2021

ANALYST: Nidia Fuentes

WEIGHT SET ID: TROEMNER S/N: 4000026116

WGT SET # CONFIRMED: YES

WEIGHT SET 2 ID: _____

WGT SET # CONFIRMED: _____

*NOTE: Save as excel file and print to pdf. Store both files in balance check folders on the computer.

*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	0.0200	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	0.9999	0.9999	1.0001
2.0000		1.9999	2.0001
2.0000*		1.9999	2.0001
5.0000	4.9999	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	99.9999	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: 21 weights

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

TROEMNER S/N: 06679: 5 weights

TROEMNER S/N: 4000026116: 22 weights

COMMENTS:

ANALYSIS REAGENTS/STANDARDS

21G1204



Environmental Protection Agency Region 5
Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
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Reagent Preparation Bench Sheet

Table of Contents

Print Date: 7/12/2021

Parameter / SOP #: SOP AIG 035B VER #8

Prepared by: Nidia Fuentes

Reagent: TKN-Working Buffer Solution

Preparation Date: Jul-12-21

LIMS ID: 21G1204

Expiration Date: Jul-12-22

Chemical Name (Formula)	LIMS ID	Mass or Volume (specify units)
Stock Sodium Potassium Tartrate	21G1201	50 mL
Stock Buffer Solution	21G1202	40 mL
Stock Sodium Hydroxide	21G1203	50 mL

Total Volume : 200 mL

Comments :

REVIEWED

By Anna Knoebel at 10:56 am, Aug 24, 2021

Analyst Signature:

Nidia Fuentes

ANALYSIS REAGENTS/STANDARDS

21G2702



Environmental Protection Agency Region 5
Chicago Regional Laboratory

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

Table of Contents

Print Date: 8/9/2021

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REVIEWED
By NFUENTES at 12:52 pm, Aug 24, 2021

Reagent Preparation Bench Sheet

Parameter / SOP #: TKN /AIG035B VERSION 8

Prepared by: Nidia Fuentes

Reagent: TKN-Sodium Hypochlorite

Preparation Date: Jul-27-21

LIMS ID: 21G2702

Expiration Date: Jul-28-21

Chemical Name (Formula)	LIMS ID	Mass or Volume (specify units)
Sodium Hypochlorite (NaOCl)	21C0923	1.2 mL

Total Volume : 20 mL

Comments :

REVIEWED

By Anna Knoebel at 5:19 pm, Aug 24, 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):	2107010
Primary Analyst:	Nidia Fuentes
Analysis:	Total Phosphorus DA
Date:	August 26, 2021
Data Reporting Qualtrax Workflow ID:	26390

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: 2107010

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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: 8/26/2021

Title: ASB Data Report for Ranovael

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: Ranovael

Analyses included in this report:

Total Phosphorus DA

Report Name: 2107010 Total Phosphorus DA FINAL Aug 26 21 1143



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: Ranovael
 Project Number: 02BA2021
 Project Manager: Ben Atkinson

Reported:
 Aug-26-21 11:43

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

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 Chicago IL, 60604

Project: Ranovael
 Project Number: 02BA2021
 Project Manager: Ben Atkinson

Reported:
 Aug-26-21 11:43

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>
2107010-01	Total Phosphorus DA
2107010-02	Total Phosphorus DA
2107010-03	Total Phosphorus DA
2107010-04	Total Phosphorus DA
2107010-05	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 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.



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: 7/20/2021 12:27:42PM

2107010

US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5
Project: Ranovael

Project Manager: Angela Ockrassa Davis
Project Number: 02BA2021

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: Aug-30-21 15:00 (45 day TAT)

Received By: Colin Breslin

Logged In By: Kelsey O'Malley

Date Received: Jul-16-21 08:46

Date Logged In: Jul-16-21 09:39

Sample tags/labels **Yes** **Work Order Comments:**
 Seals Intact **Yes**
 Received on ice **Yes**
 Paperwork Included **Yes**

Cooler(s) information:

Default Cooler - 3.70 C

Sample ID: [2107010-01](#)

Sampled: [Jul-15-21 11:23](#)

Matrix: [Water](#)

Sample Name: [BO1](#)

Sample Location/Comments: [Ranovael](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:23	pH = 1
BOD	2	Jul-17-21 11:23	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:23	pH = 1
Solids, TDS	7	Jul-22-21 11:23	pH = 7
Solids, TSS	7	Jul-22-21 11:23	pH = 7
TKN DA	28	Aug-12-21 11:23	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:23	pH = 1

Sample ID: [2107010-02](#)

Sampled: [Jul-15-21 11:49](#)

Matrix: [Water](#)

Sample Name: [SO1](#)

Sample Location/Comments: [Overflow from VTA](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:49	pH = 1
BOD	2	Jul-17-21 11:49	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:49	pH = 1

WORK ORDER

Printed: 7/20/2021 12:27:42PM

2107010

US EPA Region 5 LSASD Analytical Services Branch

Client: Water Division, US EPA Region 5

Project Manager: Angela Ockrassa Davis

Project: Ranovael

Project Number: 02BA2021

Sample ID: [2107010-02](#) Sampled: [Jul-15-21 11:49](#) Matrix: [Water](#)Sample Name: [SO1](#) Sample Location/Comments: [Overflow from VTA](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Solids, TDS	7	Jul-22-21 11:49	pH = 7
Solids, TSS	7	Jul-22-21 11:49	pH = 7
TKN DA	28	Aug-12-21 11:49	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:49	pH = 1

Sample ID: [2107010-03](#) Sampled: [Jul-15-21 11:52](#) Matrix: [Water](#)Sample Name: [SO2](#) Sample Location/Comments: [VTA](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 11:52	pH = 1
BOD	2	Jul-17-21 11:52	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 11:52	pH = 1
Solids, TDS	7	Jul-22-21 11:52	pH = 7
Solids, TSS	7	Jul-22-21 11:52	pH = 7
TKN DA	28	Aug-12-21 11:52	pH = 1
Total Phosphorus DA	28	Aug-12-21 11:52	pH = 1

Sample ID: [2107010-04](#) Sampled: [Jul-15-21 12:00](#) Matrix: [Water](#)Sample Name: [SO3](#) Sample Location/Comments: [Downstream DC](#)

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 12:00	pH = 1
BOD	2	Jul-17-21 12:00	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 12:00	pH = 1
Solids, TDS	7	Jul-22-21 12:00	pH = 7
Solids, TSS	7	Jul-22-21 12:00	pH = 7
TKN DA	28	Aug-12-21 12:00	pH = 1
Total Phosphorus DA	28	Aug-12-21 12:00	pH = 1

WORK ORDER

Printed: 7/20/2021 12:27:42PM

2107010**US EPA Region 5 LSASD Analytical Services Branch****Client:** Water Division, US EPA Region 5**Project Manager:** Angela Ockrassa Davis**Project:** Ranovael**Project Number:** 02BA2021**Sample ID:** [2107010-05](#) **Sampled:** [Jul-15-21 12:07](#) **Matrix:** [Water](#)**Sample Name:** [SO4](#) **Sample Location/Comments:** [Upstream DC](#)**Sample Comments:**

Analysis	Hold time (days)	Expires	Comments
Ammonia N DA, Distilled	28	Aug-12-21 12:07	pH = 1
BOD	2	Jul-17-21 12:07	pH = 7
Nitrate-Nitrite N DA, Enzymatic reduction	28	Aug-12-21 12:07	pH = 1
Solids, TDS	7	Jul-22-21 12:07	pH = 7
Solids, TSS	7	Jul-22-21 12:07	pH = 7
TKN DA	28	Aug-12-21 12:07	pH = 1
Total Phosphorus DA	28	Aug-12-21 12:07	pH = 1

WORK ORDER MEMO: CC 26042

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: Ranovael
 Project Number: 02BA2021
 Project Manager: Ben Atkinson

Reported:
 Aug-26-21 11:43

Phosphorus, Colorimetric, EPA 365.4 (modified) US EPA Region 5 LSASD Analytical Services Branch

BO1 (2107010-01) Matrix: Water Sampled: Jul-15-21 11:23 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Total Phosphorus	U		0.06	0.15	mg/L	1	B21G028	Jul-26-21	Jul-27-21

SO1 (2107010-02) Matrix: Water Sampled: Jul-15-21 11:49 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Total Phosphorus	9.56		0.30	0.75	mg/L	5	B21G028	Jul-26-21	Jul-27-21

SO2 (2107010-03) Matrix: Water Sampled: Jul-15-21 11:52 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Total Phosphorus	9.66		0.36	0.90	mg/L	6	B21G028	Jul-26-21	Jul-27-21

SO3 (2107010-04) Matrix: Water Sampled: Jul-15-21 12:00 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Total Phosphorus	1.30		0.06	0.15	mg/L	1	B21G028	Jul-26-21	Jul-27-21

SO4 (2107010-05) Matrix: Water Sampled: Jul-15-21 12:07 Received: Jul-16-21 08:46

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Total Phosphorus	1.33		0.06	0.15	mg/L	1	B21G028	Jul-26-21	Jul-27-21



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

Project: Ranovael
Project Number: 02BA2021
Project Manager: Ben Atkinson

Reported:
Aug-26-21 11:43

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: 8/26/2021

Analyst: Nidia Fuentes

Project: Ranovael

Analyte: Total Phosphorus

Analysis: Total Phosphorus DA

QC Sample Name	Result	Units	Flags / Qualifiers	MDL	Reporting Limit	Spike Level	Source Result	% REC or abs diff (pH)	% REC or abs diff (pH) Limits	% RPD or abs diff (pH)	%RPD or abs diff (pH) Limits
21G2701-CAL1	0.02	mg/L		0.06	0.15	0.000		%			
21G2701-CAL2	0.15	mg/L		0.06	0.15	0.1500		101%			
21G2701-CAL3	0.30	mg/L		0.06	0.15	0.3000		99%			
21G2701-CAL4	0.74	mg/L		0.06	0.15	0.7500		99%			
21G2701-CAL5	0.99	mg/L		0.06	0.15	1.000		99%			
21G2701-CAL6	1.48	mg/L		0.06	0.15	1.500		98%			
21G2701-CAL7	3.02	mg/L		0.06	0.15	3.000		101%			
21G2701-CCB1	0.02	mg/L		0.06	0.15						
21G2701-CCB2	0.01	mg/L		0.06	0.15						
21G2701-CCB3	0.02	mg/L		0.06	0.15						
21G2701-CCV1	1.99	mg/L		0.06	0.15	2.000		99%	92-112		
21G2701-CCV2	2.00	mg/L		0.06	0.15	2.000		100%	92-112		
21G2701-CCV3	2.02	mg/L		0.06	0.15	2.000		101%	92-112		
21G2701-ICB1	0.01	mg/L		0.06	0.15						
21G2701-ICV1	2.01	mg/L		0.06	0.15	2.000		100%	92-112		
B21G028-BLK1	U	mg/L		0.06	0.15						
B21G028-BS1	1.01	mg/L		0.06	0.15	1.000		101%	89-111		
B21G028-DUP1 Source: 2107010-02	9.53	mg/L		0.30	0.75		9.56			0.3	10
B21G028-MRL1	0.14	mg/L				0.1500		93%	68-132		



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US EPA Region 5 LSASD Analytical Services Branch**

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Quality Control Summary

Date: 8/26/2021

Analyst: Nidia Fuentes

Project: Ranovael

Analyte: Total Phosphorus

Analysis: Total Phosphorus DA

QC Sample Name	Result	Units	Flags / Qualifiers	MDL	Reporting Limit	Spike Level	Source Result	% REC or abs diff (pH)	% REC or abs diff (pH) Limits	% RPD or abs diff (pH)	%RPD or abs diff (pH) Limits
B21G028-MS1 Source: 2107010-02	10.8	mg/L		0.30	0.75	1.000	9.56	120%	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

Work:	2107010	Project:	Ranovael
Analysis:	Total Phosphorus DA		
CRL SOP Used:	AIG034B v7	Batch ID:	B21G028

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: 2107010

Project: Ranovael

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: 2107010

Project: Ranovael

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? Notes/Comments: ID 24465	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)? Notes/Comments: I:\Projects (New File Structure)\Ranovael\1. A&I\NFuentes\DA3\07272021-TPTKN\ARC_70.bak	YES

Accreditation

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

Analyst's Signature and Date*:

Fuentes, NidiaDigitally signed by Fuentes, Nidia
Date: 2021.08.09 15:51:59 -05'00'

Work: 2107010**Project:** Ranovael**ANNA KNOEBEL**Digitally signed by ANNA KNOEBEL
Date: 2021.08.25 14:19:21 -05'00'**Reviewer's Signature and Date*:*****Reviewer Concurs with Analyst Responses****Additional Notes/Comments (if applicable):**

Total Phosphorus DA

BATCH

B21G028



US EPA Region 5 LSASD Analytical Services Branch

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

Date: 7/26/2021

TP/TKN DIGESTION LOG

Batch Number: B21G028

Prepared Date: Jul-26-21

Analyses Included On This Benchsheet

Analyst (initials): NF

Total Phosphorus DA

Digestion #	Block #	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
1	8	2107010-01					10	pH = 1
1	8	2107010-02					10	pH = 1
1	8	2107010-03					10	pH = 1
1	8	2107010-04					10	pH = 1
1	8	2107010-05					10	pH = 1
1	8	B21G028-BLK1					10	
1	8	B21G028-BS1		21D0715	100	10	10	
1	8	B21G028-DUP1	2107010-02				10	
1	8	B21G028-MRL1		21G2604			10	
1	8	B21G028-MS1	2107010-02	21D0715	100	10	10	

Batch Comments:



US EPA Region 5 LSASD Analytical Services Branch

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

Date: 7/26/2021

TP/TKN DIGESTION LOG

Batch Number: B21G028

Analyses Included On This Benchsheet

Total Phosphorus DA

Prepared Date: Jul-26-21

Analyst (initials): NF

PREPARATION REAGENTS/STANDARDS/PIPETTES:		
21D0715:	TP-Stock Cal Standard (SCS)	Prepared: Apr-07-21 Expires: Apr-07-22
21G2604:	TP - MRL (0.15 mg P/L)	Prepared: Jul-26-21 Expires: Aug-26-21
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
21F2904:	TP/TKN Digestion Solution	Prepared: Jun-29-21 Expires: Jun-29-22



US EPA Region 5 LSASD Analytical Services Branch

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

REVIEWED
By NFUENTES at 11:05 am, Aug 24, 2021

Date: 7/26/2021

Prepared Date: Jul-26-21

Analyst (initials): NF

TP/TKN DIGESTION LOG

Batch Number: B21G028

Analyses Included On This Benchsheet

Total Phosphorus DA

Hot Block ID: #9

Block Digital Temp 1 Reading (°C) - Start - Stop Time/

200C-1:22 PM -2:22 PM/

Block Digital Temp 2 Reading (°C) - Start - Stop Time:

380C-2:22 PM - 3:55 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
1	2	3	4	5	6	7	8
TP	TP						
Calibration	ICV/CCV						

DB= Dilution Blank



US EPA Region 5 LSASD Analytical Services Branch

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

Date: 7/26/2021

TP/TKN DIGESTION LOG

Batch Number: B21G028

Analyses Included On This Benchsheet

Total Phosphorus DA

Prepared Date: Jul-26-21

Analyst (initials): NF

2nd Hot Block ID: #8

Block Digital Temp 1 Reading (°C) - Start - Stop Time/

Block Digital Temp 2 Reading (°C) - Start - Stop Time:

200C-1:30PM -2:30 PM/

380C-2:30PM - 4:00PM

33	34	35	TP CCB	36	TP CCV	37	38	39	DB	40	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	

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 ³ /g)	1.00308
Relative Humidity (%)	41.00	Air Density (g/cm ³)	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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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 ³ /g)	1.00308
Relative Humidity (%)	41.00	Air Density (g/cm ³)	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	Sample Volume
Volume (uL)	Ch	Mean	SD	(k=2)	Actual	Target	Actual	Target	Status	Sample	(mg)	(uL)
10.00	1	10.19	0.04910	0.05	1.94015	2.00000	0.48168	1.00000	Passed			
										1	10.13700	10.16819
										2	10.11300	10.14411
										3	10.22500	10.25646
										4	10.17600	10.20731
100.00	1	100.56	0.08892	0.15	0.56242	0.80000	0.08842	0.20000	Passed			
										1	100.35400	100.66273
										2	100.20100	100.50926
										3	100.30000	100.60856
										4	100.16100	100.46913

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)
10.00	1	10.14	0.03628	0.05	1.36588	2.00000	0.35793	1.00000	Passed			
										1	10.09700	10.12806
										2	10.09900	10.13007
										3	10.07000	10.10098
										4	10.15600	10.18724
100.00	1	100.14	0.05143	0.15	0.14414	0.80000	0.05135	0.20000	Passed			
										1	99.85200	100.15918
										2	99.90300	100.21034
										3	99.79300	100.10000
										4	99.80000	100.10702



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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Technician

Date

15-Feb-2021

QC Designee

Review Date

15-Feb-2021

REVIEWED

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

BATCH REAGENTS

21F2904



Environmental Protection Agency Region 5
Chicago Regional Laboratory

Print Date:

6/29/2021

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

Reagent Preparation Bench Sheet

Parameter / SOP #: TP/TKN SOP AIG34B ver#7, AIG35B ver#8

Prepared by: Nidia Fuentes

Reagent: TP/TKN Digestion Solution

Preparation Date: Jun-29-21

LIMS ID: 21F2904

Expiration Date: Jun-29-22

Chemical Name (Formula)	LIMS ID	Mass or Volume (specify units)
Sulfuric Acid (H ₂ SO ₄)	20B0607	200 mL
Mercuric Sulfate solution	21F2903	25 mL
Potassium Sulfate (K ₂ SO ₄)	20J2902	133.3216 g

Total Volume : 1000 mL

Comments :

Balance #17

REVIEWED

By Anna Knoebel at 7:04 am, Aug 24, 2021

Analyst Signature:

Nidia Fuentes

Balance Check

BALANCE ID: #17

DATE: 6/29/2021

ANALYST: Christina Rice

WEIGHT SET ID: TROEMNER S/N: 4000026116

WGT SET # CONFIRMED: YES

WEIGHT SET 2 ID: _____

WGT SET # CONFIRMED: _____

*NOTE: Save as excel file and print to pdf. Store both files in balance check folders on the computer.

*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	0.0500	0.0499	0.0501
0.1000	0.1001	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		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	100.0003	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: 4000026116: 22 weights

COMMENTS:

Standard Weight 0.001g Actual Weight 0.0009g

SEQUENCE

21G2701

Sequence Date: 07/27/2021

Instrument: DA-3

Sequence Analyses:

Total Phosphorus DA

ANALYSIS SEQUENCE

21G2701

Instrument:	DA-3	Analysis Date: Jul-27-21		Calibration ID:	UNASSIGNED	Matrix:	Water	
Order	Container	Lab Number	Sample name or QC sample designation		Analysis	STD ID		Comments
1		21G2701-CAL1	Cal Standard		QC	21G2601		
2		21G2701-CAL2	Cal Standard		QC	21G2703		
3		21G2701-CAL3	Cal Standard		QC	21G2704		
4		21G2701-CAL4	Cal Standard		QC	21G2705		
5		21G2701-CAL5	Cal Standard		QC	21G2706		
6		21G2701-CAL6	Cal Standard		QC	21G2707		
7		21G2701-CAL7	Cal Standard		QC	21G2602		
8		21G2701-ICB1	CCB		QC			
9		21G2701-ICV1	CCV		QC	21G2603		
10		B21G028-MRL1	MRL Check		QC			
11		B21G028-BLK1	Blank		QC			
12		B21G028-BS1	LCS		QC			
13	A	2107010-01	BO1		Total Phosphorus DA			pH = 1
14	A	2107010-04	SO3		Total Phosphorus DA			pH = 1
15	A	2107010-05	SO4		Total Phosphorus DA			pH = 1
16		21G2701-CCB1	CCB		QC			
17		21G2701-CCV1	CCV		QC	21G2603		
18		21G2701-CCB2	CCB		QC			
19		21G2701-CCV2	CCV		QC	21G2603		
20	A	2107010-02	SO1		Total Phosphorus DA			pH = 1
21		B21G028-DUP1	Duplicate		QC			
22		B21G028-MS1	Matrix Spike		QC			
23	A	2107010-03	SO2		Total Phosphorus DA			pH = 1

Order	Container	Lab Number	Sample name or QC sample designation	Analysis	STD ID	Comments
24		21G2701-CCB3	CCB	QC		
25		21G2701-CCV3	CCV	QC	21G2603	

PREPARATION REAGENTS/STANDARDS/PIPETTES:

<u>21D0715:</u>	TP-Stock Cal Standard (SCS)	Prepared: Apr-07-21	Expires: Apr-07-22
<u>21G2604:</u>	TP - MRL (0.15 mg P/L)	Prepared: Jul-26-21	Expires: Aug-26-21
<u>21G2601:</u>	TP - WCS (0.00 mg P/L)	Prepared: Jul-26-21	Expires: Aug-26-21
<u>21G2602:</u>	TP - WCS (3.00 mg P/L)	Prepared: Jul-26-21	Expires: Aug-26-21
<u>21G2603:</u>	TP - WcS (2.00 mg P/L)	Prepared: Jul-26-21	Expires: Aug-26-21
<u>21G2703:</u>	TP - WCS (0.15 mg P/L)	Prepared: Jul-27-21	Expires: Jul-28-21
<u>21G2704:</u>	TP - WCS (0.3 mg P/L)	Prepared: Jul-27-21	Expires: Jul-28-21
<u>21G2705:</u>	TP - WCS (0.75 mg P/L)	Prepared: Jul-27-21	Expires: Jul-28-21
<u>21G2706:</u>	TP - WCS (1.0 mg P/L)	Prepared: Jul-27-21	Expires: Jul-28-21
<u>21G2707:</u>	TP - WCS (1.5 mg P/L)	Prepared: Jul-27-21	Expires: Jul-28-21
<u>21G0808:</u>	TKN - Sodium salicylate/sodium nitroprusside sol.	Prepared: Jul-08-21	Expires: Jul-08-22
<u>21G2609:</u>	TP-NaCl Solution	Prepared: Jul-26-21	Expires: Jul-26-22
<u>21G2610:</u>	TP- Ascorbic Acid	Prepared: Jul-26-21	Expires: Aug-09-21

REVIEWED
By NFUENTES at 10:05 am, Aug 24, 2021

REVIEWED
By NFUENTES at 10:08 am, Aug 24, 2021

21B1701 TP-Molybdate Antimony Solution

Expires: Feb-17-22

Calibration results

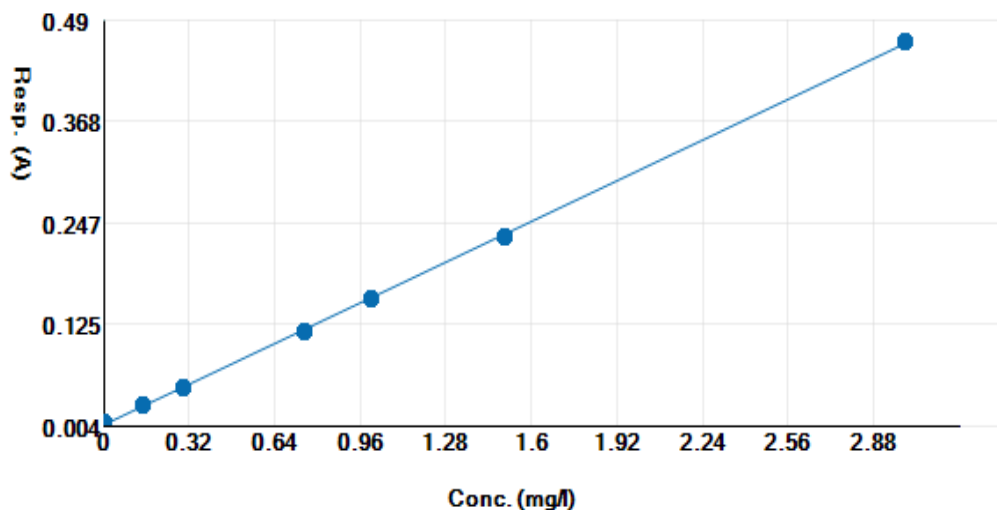
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Total Phos Version number 1.13 DA-3

Date 7/27/2021 **User** NF
Time 11:04:29AM **Software version: 7.0**
Analyzer name Analyzer 1

Test	Total Phos	Coeff. of deter.	0.999784
Status	Accepted	Total factor	6.563
Accepted	7/27/2021 10:57 AM		
Checked	7/27/2021 10:57 AM		
User name	NF		
Comment			
Errors			
Factor	6.563		
Bias	0.004		

Cal/Ctrl	Response	Calc. conc.	Given conc.	Lot	Errors
TP-0	0.007	0.02248	0.00000	Default	
TP-3.0	0.027	0.15208	0.15000	Default	
TP-3.0	0.049	0.29665	0.30000	Default	
TP-3.0	0.117	0.74217	0.75000	Default	
TP-3.0	0.155	0.99413	1.00000	Default	
TP-3.0	0.229	1.47669	1.50000	Default	
TP-3.0	0.463	3.01580	3.00000	Default	



Results by Test

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DA-3

Date 7/27/2021
Time 12:53:38PM

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	0.0142	mg/l		0.0	man acc	
CCV	1.13	2.0060	mg/l		0.0	man acc	
B21G028-MRL1	1.13	0.1396	mg/l		0.0	man acc	
B21G028-BLK1	1.13	0.0117	mg/l		0.0	man acc	
B21G028-BS1	1.13	1.0139	mg/l		0.0	man acc	
2107010-01	1.13	0.0098	mg/l		0.0	man acc	
2107010-02	1.13	- D	mg/l		0.0	aut rej	Dil. limit High
B21G028-DUP1	1.13	- D	mg/l		0.0	aut rej	Dil. limit High
B21G028-MS1	1.13	- D	mg/l		0.0	aut rej	Dil. limit High
2107010-03	1.13	- D	mg/l		0.0	aut rej	Dil. limit High
2107010-04	1.13	1.2979	mg/l		0.0	man acc	
2107010-05	1.13	1.3323	mg/l		0.0	man acc	
CCB	1.13	0.0151	mg/l		0.0	man acc	
CCV	1.13	1.9873	mg/l		0.0	man acc	Not used, reanalyzed because of failed matrix spike QC
2107010-02	1.13	9.3579	mg/l		9.0	man acc	REVIEWED By NFUENTES at 10:11 am, Aug 24, 2021
CCB	1.13	0.0133	mg/l		0.0	man acc	
CCV	1.13	2.0101	mg/l		0.0	man acc	
B21G028-DUP1	1.13	9.4878	mg/l		9.0	man acc	
B21G028-MS1	1.13	10.6986	mg/l		9.0	man acc	
2107010-03	1.13	9.5100	mg/l		9.0	man acc	
CCB	1.13	0.0146	mg/l		0.0	man acc	
CCV	1.13	1.9969	mg/l		0.0	man acc	
CCB	1.13	0.0140	mg/l		0.0	man acc	
CCV	1.13	2.0013	mg/l		0.0	man acc	
2107010-02	1.13	9.4793	mg/l		9.0	man acc	same cup
B21G028-DUP1	1.13	9.5848	mg/l		9.0	man acc	
B21G028-MS1	1.13	10.7325	mg/l		9.0	man acc	
CCB	1.13	0.0147	mg/l		0.0	man acc	REVIEWED By NFUENTES at 2:54 pm, Jul 27, 2021
CCV	1.13	2.0046	mg/l		0.0	man acc	
CCB	1.13	0.0141	mg/l		0.0	man acc	
CCV	1.13	2.0033	mg/l		0.0	man acc	
2107010-02	1.13	9.5627	mg/l		4.0	man acc	new cups REVIEWED By NFUENTES at 10:11 am, Aug 24, 2021

Sample/ctrl ID	Test version	Result	Unit	Note	Dil. 1 +	Status	Errors
B21G028-DUP1	1.13	9.5330	mg/l		4.0	man acc	new cups REVIEWED By: H21G028 at 10:11 am, Aug 24, 2021
B21G028-MS1	1.13	10.7676	mg/l		4.0	man acc	new cup REVIEWED By: H21G028 at 10:11 am, Aug 24, 2021
2107010-03	1.13	9.6625	mg/l		5.0	man acc	same cup REVIEWED By: H21G028 at 10:11 am, Aug 24, 2021
CCB	1.13	0.0155	mg/l		0.0	man acc	
CCV	1.13	2.0170	mg/l		0.0	man acc	

D - diluted by the instrument

Date 7/27/2021 User NF
Time 12:54:28 PM Software version: 7.0

DA-3

Sample/ctrl ID	Pat/Ctr/cAl	Test name	Test type	Result	Result unit	Result time	STAT	Status	Dilution 1 - Manual dil	Response	Blank resp	Main abs.	Blank abs.	Sample type
TP-0	A	Total Phos P		0.02248 mg/l		7/27/2021 10:48		MA	0	0.00728	-0.00015	0.00713	-0.00015	
TP-3.0	A	Total Phos P		0.15208 mg/l		7/27/2021 10:50		MA	19	0.02703	-0.00016	0.02687	-0.00016	
TP-3.0	A	Total Phos P		0.29665 mg/l		7/27/2021 10:51		MA	9	0.04905	0.00018	0.04923	0.00018	
TP-3.0	A	Total Phos P		0.74217 mg/l		7/27/2021 10:52		MA	3	0.11694	0.00035	0.11728	0.00035	
TP-3.0	A	Total Phos P		0.99413 mg/l		7/27/2021 10:54		MA	2	0.15532	0.00055	0.15588	0.00055	
TP-3.0	A	Total Phos P		1.47669 mg/l		7/27/2021 10:55		MA	1	0.22885	0.00092	0.22977	0.00092	
TP-3.0	A	Total Phos P		3.0158 mg/l		7/27/2021 10:56		MA	0	0.46336	0.0026	0.46596	0.0026	
CCB	C	Total Phos P		0.01415 mg/l		7/27/2021 11:25		MA	0	0.00601	-0.00004	0.00597	-0.00004	
CCV	C	Total Phos P		2.006 mg/l		7/27/2021 11:25		MA	0	0.3095	0.00121	0.31071	0.00121	
B21G028-MRL1 P	P	Total Phos P		0.13959 mg/l		7/27/2021 11:26		MA	0	0.02512	0.00042	0.02554	0.00042	Sample type 1
B21G028-BLK1 P	P	Total Phos P		0.01167 mg/l		7/27/2021 11:27		MA	0	0.00563	0.00018	0.00582	0.00018	Sample type 1
B21G028-BS1 P	P	Total Phos P		1.01386 mg/l		7/27/2021 11:28		MA	0	0.15833	0.00132	0.15966	0.00132	Sample type 1
2107010-01 P	P	Total Phos P		0.00983 mg/l		7/27/2021 11:29		MA	0	0.00535	0.00042	0.00578	0.00042	Sample type 1
2107010-02 P	P	Total Phos P		9.0961 mg/l		7/27/2021 11:30		AR	0	1.3898	0.01195	1.40175	0.01195	Sample type 1
B21G028-DUP1 P	P	Total Phos P		9.12321 mg/l		7/27/2021 11:31		AR	0	1.39393	0.01206	1.40599	0.01206	Sample type 1
B21G028-MS1 P	P	Total Phos P		9.73685 mg/l		7/27/2021 11:32		AR	0	1.48743	0.06211	1.54954	0.06211	Sample type 1
2107010-03 P	P	Total Phos P		9.05994 mg/l		7/27/2021 11:33		AR	0	1.38429	0.06838	1.45267	0.06838	Sample type 1
2107010-04 P	P	Total Phos P		1.29788 mg/l		7/27/2021 11:34		MA	0	0.20161	0.0028	0.20441	0.0028	Sample type 1
2107010-05 P	P	Total Phos P		1.33234 mg/l		7/27/2021 11:34		MA	0	0.20686	0.00459	0.21145	0.00459	Sample type 1
CCB	C	Total Phos P		0.01514 mg/l		7/27/2021 11:35		MA	0	0.00616	0	0.00617	0	
CCV	C	Total Phos P		1.98734 mg/l		7/27/2021 11:36		MA	0	0.30666	0.00125	0.30791	0.00125	
2107010-02 P	P	Total Phos P		9.35786 mg/l		7/27/2021 11:41		MA	9	0.14644	0.00275	0.14919	0.00275	Sample type 1
CCB	C	Total Phos P		0.01326 mg/l		7/27/2021 11:41		MA	0	0.00587	-0.00013	0.00574	-0.00013	
CCV	C	Total Phos P		2.0101 mg/l		7/27/2021 11:42		MA	0	0.31013	0.00114	0.31127	0.00114	
B21G028-DUP1 P	P	Total Phos P		9.4878 mg/l		7/27/2021 11:44		MA	9	0.14842	0.00099	0.14941	0.00099	Sample type 1
B21G028-MS1 P	P	Total Phos P		10.69863 mg/l		7/27/2021 11:46		MA	9	0.16686	0.00096	0.16782	0.00096	Sample type 1
2107010-03 P	P	Total Phos P		9.50995 mg/l		7/27/2021 11:48		MA	9	0.14875	0.0009	0.14966	0.0009	Sample type 1
CCB	C	Total Phos P		0.01458 mg/l		7/27/2021 11:49		MA	0	0.00607	-0.00002	0.00605	-0.00002	
CCV	C	Total Phos P		1.9969 mg/l		7/27/2021 11:50		MA	0	0.30811	0.00137	0.30948	0.00137	
CCB	C	Total Phos P		0.01396 mg/l		7/27/2021 12:05		MA	0	0.00598	0.00017	0.00615	0.00017	
CCV	C	Total Phos P		2.00128 mg/l		7/27/2021 12:05		MA	0	0.30878	0.00134	0.31012	0.00134	
2107010-02 P	P	Total Phos P		9.47931 mg/l		7/27/2021 12:07		MA	9	0.14829	0.00123	0.14952	0.00123	Sample type 1
B21G028-DUP1 P	P	Total Phos P		9.5848 mg/l		7/27/2021 12:09		MA	9	0.14989	0.00091	0.1508	0.00091	Sample type 1
B21G028-MS1 P	P	Total Phos P		10.73251 mg/l		7/27/2021 12:10		MA	9	0.16738	0.00071	0.16809	0.00071	Sample type 1
CCB	C	Total Phos P		0.01468 mg/l		7/27/2021 12:11		MA	0	0.00609	0.00026	0.00635	0.00026	
CCV	C	Total Phos P		2.00464 mg/l		7/27/2021 12:12		MA	0	0.30929	0.00109	0.31038	0.00109	
CCB	C	Total Phos P		0.01412 mg/l		7/27/2021 12:43		MA	0	0.006	-0.00028	0.00573	-0.00028	
CCV	C	Total Phos P		2.00326 mg/l		7/27/2021 12:44		MA	0	0.30908	0.00087	0.30996	0.00087	
2107010-02 P	P	Total Phos P		9.56274 mg/l		7/27/2021 12:46		MA	4	0.29526	0.0046	0.29986	0.0046	Sample type 1
B21G028-DUP1 P	P	Total Phos P		9.53297 mg/l		7/27/2021 12:47		MA	4	0.29435	0.00271	0.29706	0.00271	Sample type 1
B21G028-MS1 P	P	Total Phos P		10.76756 mg/l		7/27/2021 12:49		MA	4	0.33198	0.00203	0.334	0.00203	Sample type 1
2107010-03 P	P	Total Phos P		9.6625 mg/l		7/27/2021 12:50		MA	5	0.24923	0.00376	0.25299	0.00376	Sample type 1

CCB	C	Total Phos P	0.01552 mg/l	7/27/2021 12:51	MA	0	0.00622	-0.0004	0.00582	-0.0004
CCV	C	Total Phos P	2.01696 mg/l	7/27/2021 12:52	MA	0	0.31117	0.00114	0.31231	0.00114



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

21D0715

Description:	<u>TP-Stock Cal Standard (SCS)</u>		
Standard Type:	Analyte Spike	Expires:	Apr-07-22
Solvent:	NA	Prepared:	Apr-07-21
Final Volume (mls):	125	Prepared By:	Nidia Fuentes
Vials:	1	Department:	A&I
Vendor:	Inorganic Ventures	Last Edit:	Apr-13-21 14:43 by NF
Lot Number:	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: H₂O
 Value / Analyte(s): 100 µg/mL ea:
 Phosphorus
 Starting Material: H₃PO₄
 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

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, HNO₃, H₂SO₄ and HF aqueous matrices water and NH₄OH. 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% HNO₃ / LDPE container. 1-10,000 ppm solutions chemically stable for years in 0-1% HNO₃ / 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 - Na₂CO₃ fusion in Pt0); Organic Matrices (Dry ash mixed with Na₂CO₃ in Pt0 at 450EC then increase heat to 1000EC to fuse; or perform an H₂SO₄ / H₂O₂ 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, 14N17O, 13C18O, 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

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 21G2601

Description:	<u>TP - WCS (0.00 mg P/L)</u>	Expires:	Aug-26-21
Standard Type:	Other Solution	Prepared:	Jul-26-21
Solvent:	Reagent water	Prepared By:	Nidia Fuentes
Final Volume (mls):	200	Department:	A&I
Vials:	1	Last Edit:	Aug-10-21 12:57 by NF
Vendor:	Inorganic Ventures		
Lot Number:	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
21G0902	Sulfuric Acid 9673-00	Jul-09-21	** Vendor **	May-11-25	Jul-28-21 10:03 by NF	0.2
21C0910	TP-Stock Cal Standard (SCS)	Apr-07-21	Nidia Fuentes	Apr-07-22	Apr-14-21 09:24 by AK	0

REVIEWED

By Anna Knoebel at 7:33 am, Aug 24, 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

21G2602

Description:	<u>TP - WCS (3.00 mg P/L)</u>		
Standard Type:	Other Solution	Expires:	Aug-26-21
Solvent:	Reagent water	Prepared:	Jul-26-21
Final Volume (mls):	100	Prepared By:	Nidia Fuentes
Vials:	1	Department:	A&I
Vendor:	Inorganic Ventures	Last Edit:	Aug-10-21 12:58 by NF
Lot Number:	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
21G0902	Sulfuric Acid 9673-00	Jul-09-21	** Vendor **	May-11-25	Jul-28-21 10:03 by NF	0.1
21C0910	TP-Stock Cal Standard (SCS)	Apr-07-21	Nidia Fuentes	Apr-07-22	Apr-14-21 09:24 by AK	3

REVIEWED

By Anna Knoebel at 7:34 am, Aug 24, 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 21G2603

Description:	<u>TP - WcS (2.00 mg P/L)</u>	Expires:	Aug-26-21
Standard Type:	Other Solution	Prepared:	Jul-26-21
Solvent:	Reagent water	Prepared By:	Nidia Fuentes
Final Volume (mls):	100	Department:	A&I
Vials:	1	Last Edit:	Aug-10-21 12:58 by NF
Vendor:	Absolute Standards Inc.		
Lot Number:	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
21G0902	Sulfuric Acid 9673-00	Jul-09-21	** Vendor **	May-11-25	Jul-28-21 10:03 by NF	0.1
21C1801	TP&TKN Stock Control Std.	Mar-16-21	Nidia Fuentes	Jan-07-23	Jun-02-21 08:19 by NF	0.2

REVIEWED

By Anna Knoebel at 7:37 am, Aug 24, 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 21G2604

Description:	<u>TP - MRL (0.15 mg P/L)</u>	Expires:	Aug-26-21
Standard Type:	Reference Material	Prepared:	Jul-26-21
Solvent:	Reagent water	Prepared By:	Nidia Fuentes
Final Volume (mls):	100	Department:	A&I
Vials:	1	Last Edit:	Aug-10-21 12:59 by NF
Vendor:	Inorganic Ventures		
Lot Number:	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
21G0902	Sulfuric Acid 9673-00	Jul-09-21	** Vendor **	May-11-25	Jul-28-21 10:03 by NF	0.1
21C0910	TP-Stock Cal Standard (SCS)	Apr-07-21	Nidia Fuentes	Apr-07-22	Apr-14-21 09:24 by AK	0.15

REVIEWED

By Anna Knoebel at 6:54 am, Aug 24, 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 21G2703

Description:	<u>TP - WCS (0.15 mg P/L)</u>	Expires:	Jul-28-21
Standard Type:	Other Solution	Prepared:	Jul-27-21
Solvent:	Blank:21G2601	Prepared By:	Nidia Fuentes
Final Volume (mls):	2	Department:	A&I
Vials:	1	Last Edit:	Aug-10-21 12:58 by NF
Vendor:	Inorganic Ventures		
Lot Number:	P2-P688018		

REVIEWED

By Anna Knoebel at 7:42 am, Aug 24, 2021

Prepared by instrument (DA-3)

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)
21G2602	TP - WCS (3.00 mg P/L)	Jul-26-21	Nidia Fuentes	Aug-26-21	Aug-10-21 12:58 by NF	0.1



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
21G2704

Description:	<u>TP - WCS (0.3 mg P/L)</u>		
Standard Type:	Other Solution	Expires:	Jul-28-21
Solvent:	Blank:21G2601	Prepared:	Jul-27-21
Final Volume (mls):	2	Prepared By:	Nidia Fuentes
Vials:	1	Department:	A&I
Vendor:	Inorganic Ventures	Last Edit:	Aug-16-21 10:29 by NF
Lot Number:	P2-P688018		

Prepared by instrument (DA-3)

REVIEWED

By Anna Knoebel at 7:43 am, Aug 24, 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)
21G2602	TP - WCS (3.00 mg P/L)	Jul-26-21	Nidia Fuentes	Aug-26-21	Aug-10-21 12:58 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 21G2705

Description:	<u>TP - WCS (0.75 mg P/L)</u>	Expires:	Jul-28-21
Standard Type:	Other Solution	Prepared:	Jul-27-21
Solvent:	Blank:21G2601	Prepared By:	Nidia Fuentes
Final Volume (mls):	2	Department:	A&I
Vials:	1	Last Edit:	Aug-10-21 12:58 by NF
Vendor:	Inorganic Ventures		
Lot Number:	P2-P688018		

Prepared by instrument (DA-3)

REVIEWED
By Anna Knoebel at 7:43 am, Aug 24, 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)
21G2602	TP - WCS (3.00 mg P/L)	Jul-26-21	Nidia Fuentes	Aug-26-21	Aug-10-21 12:58 by NF	0.5



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 21G2706

Description:	<u>TP - WCS (1.0 mg P/L)</u>	Expires:	Jul-28-21
Standard Type:	Other Solution	Prepared:	Jul-27-21
Solvent:	Blank: 21G2601	Prepared By:	Nidia Fuentes
Final Volume (mls):	2	Department:	A&I
Vials:	1	Last Edit:	Aug-10-21 12:58 by NF
Vendor:	Inorganic Ventures		
Lot Number:	P2-P688018		

Prepared by instrument (DA-3)

REVIEWED

By Anna Knoebel at 7:44 am, Aug 24, 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)
21G2602	TP - WCS (3.00 mg P/L)	Jul-26-21	Nidia Fuentes	Aug-26-21	Aug-10-21 12:58 by NF	0.6666666



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 21G2707

Description:	<u>TP - WCS (1.5 mg P/L)</u>	Expires:	Jul-28-21
Standard Type:	Other Solution	Prepared:	Jul-27-21
Solvent:	Blank: 21G2601	Prepared By:	Nidia Fuentes
Final Volume (mls):	2	Department:	A&I
Vials:	1	Last Edit:	Aug-10-21 12:58 by NF
Vendor:	Inorganic Ventures		
Lot Number:	P2-P688018		

Prepared by instrument (DA-3)

REVIEWED

By Anna Knoebel at 7:45 am, Aug 24, 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)
21G2602	TP - WCS (3.00 mg P/L)	Jul-26-21	Nidia Fuentes	Aug-26-21	Aug-10-21 12:58 by NF	1

ANALYSIS REAGENTS/STANDARDS

21B1701



Environmental Protection Agency Region 5
Chicago Regional Laboratory

Print Date: 2/17/2021

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-17-21

LIMS ID: 21B1701

Expiration Date: Feb-17-22

Chemical Name (Formula)	LIMS ID	Mass or Volume (specify units)
Ammonium Molybdate tetrahydrate *	19K1225	0.8024g
Potassium antimonyl tartrate trihydrate **	19K0602	0.0223g
* [(NH ₄) ₆ Mo ₇ O ₂₄ *4H ₂ O]	** [K ₂ (C ₄ H ₂ O ₆ Sb) ₂ *3H ₂ O]	

Total Volume : 100 mL

Comments :

Balance ID: 17

REVIEWED

By AK at 12:15 pm, May 07, 2021

Analyst Signature:

Nidia Fuentes

Balance Check

BALANCE ID: #17

DATE: 2/17/2021

ANALYST: Nidia Fuentes

WEIGHT SET ID: TROEMNER S/N: 4000020557

WGT SET # CONFIRMED: YES

WEIGHT SET 2 ID: _____

WGT SET # CONFIRMED: _____

INITIAL & DATE: MF 2/17/2021

*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	0.0200	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		0.4999	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	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	50.0000	49.9999	50.0001
100.0000	99.9999	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

21G2609



Environmental Protection Agency Region 5

Print Date:

7/26/2021

Chicago Regional Laboratory

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

Reagent Preparation Bench SheetParameter / SOP #: TP / AIG034B VER#7Prepared by: Nidia FuentesReagent: TP-NaCl SolutionPreparation Date: Jul-26-21LIMS ID: 21G2609Expiration Date: Jul-26-22

Chemical Name (Formula)	LIMS ID	Mass or Volume (specify units)
Sodium Chloride (NaCl)	19C1203	4.0044g

Total Volume : 100 mL**Comments :**

See user defined fields for details

Balance#17

REVIEWED*By Anna Knoebel at 7:53 am, Aug 24, 2021*

Analyst Signature:

A handwritten signature in purple ink that reads "Nidia Fuentes".

Balance Check

BALANCE ID: #17

DATE: 7/26/2021

ANALYST: Christina Rice

WEIGHT SET ID: TROEMNER S/N: 4000026116

WGT SET # CONFIRMED: YES

WEIGHT SET 2 ID: _____

WGT SET # CONFIRMED: _____

*NOTE: Save as excel file and print to pdf. Store both files in balance check folders on the computer.

*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	0.0499	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	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	9.9999	9.9999	10.0001
20.0000		19.9999	20.0001
20.0000*		19.9999	20.0001
50.0000	50.0000	49.9999	50.0001
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: 21 weights

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

TROEMNER S/N: 06679: 5 weights

TROEMNER S/N: 4000026116: 22 weights

COMMENTS:

Standard Weight 0.001g Actual Weight 0.0009g

ANALYSIS REAGENTS/STANDARDS

21G2610



Environmental Protection Agency Region 5
Chicago Regional Laboratory

Print Date: 7/26/2021

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

Reagent Preparation Bench SheetParameter / SOP #: Toal Phosphorus/ AIG034B ver#7Prepared by: Nidia FuentesReagent: TP- Ascorbic AcidPreparation Date: Jul-26-21LIMS ID: 21G2610Expiration Date: Aug-09-21

Chemical Name (Formula)	LIMS ID	Mass or Volume (specify units)
Ascorbic acid (C ₆ H ₈ O ₆)	21D0503	6.0377
Acetone ((CH ₃) ₂ CO)	19J0101	2 mL

Total Volume : 100 mL**Comments :**

balance #17

Analyst Signature:

A handwritten signature in blue ink, reading "Nidia Fuentes", is written over a light blue grid background.

Balance Check

BALANCE ID: #17**DATE:** 7/26/2021**ANALYST:** Christina Rice**WEIGHT SET ID:** TROEMNER S/N: 4000026116**WGT SET # CONFIRMED:** YES**WEIGHT SET 2 ID:** _____**WGT SET # CONFIRMED:** _____

*NOTE: Save as excel file and print to pdf. Store both files in balance check folders on the computer.

*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	0.0499	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	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	9.9999	9.9999	10.0001
20.0000		19.9999	20.0001
20.0000*		19.9999	20.0001
50.0000	50.0000	49.9999	50.0001
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:** 21 weights**Denver Inst Co S/N: 01-25360-3A:** 1 weight**TROEMNER S/N: 06679:** 5 weights**TROEMNER S/N: 4000026116:** 22 weights**COMMENTS:**

Standard Weight 0.001g Actual Weight 0.0009g



Analytical Data Package

Prepared by:

Pace Analytical Services

Pace Project No.: 40229994

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InOrganic

Microbiology

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July 20, 2021

Cassidy Owen
Eastern Research Group, Inc.
14555 Avion Parkway
Suite 200
Chantilly, VA 20151

RE: Project: RANOVAEL
Pace Project No.: 40229994

Dear Cassidy Owen:

Enclosed are the analytical results for sample(s) received by the laboratory on July 15, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Green Bay

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Steven Mieczko
steve.mieczko@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Daniela Ayala, Eastern Research Group, Inc.
Jessica Gray, Eastern Research Group, Inc.



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RANOVAEL

Pace Project No.: 40229994

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RANOVAEL

Pace Project No.: 40229994

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40229994001	OVERFLOW FROM VTA	Water	07/15/21 11:49	07/15/21 14:05
40229994002	VTA	Water	07/15/21 11:52	07/15/21 14:05
40229994003	DOWNSTREAM DC	Water	07/15/21 12:00	07/15/21 14:05
40229994004	UPSTREAM DC	Water	07/15/21 12:07	07/15/21 14:05

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RANOVAEL

Pace Project No.: 40229994

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40229994001	OVERFLOW FROM VTA	SM 9222D	HNT	1
40229994002	VTA	SM 9222D	HNT	1
40229994003	DOWNSTREAM DC	SM 9222D	HNT	1
40229994004	UPSTREAM DC	SM 9222D	HNT	1

PASI-G = Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RANOVAEL

Pace Project No.: 40229994

Sample: OVERFLOW FROM VTA **Lab ID:** 40229994001 Collected: 07/15/21 11:49 Received: 07/15/21 14:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
9222D MICRO Fecal Coli by MF Analytical Method: SM 9222D Preparation Method: SM 9222D Pace Analytical Services - Green Bay									
Fecal Coliforms	45500	CFU/100 mL	9090	9090	9090	07/15/21 17:05	07/15/21 17:05		

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ANALYTICAL RESULTS

Project: RANOVAEL

Pace Project No.: 40229994

Sample: VTA		Lab ID: 40229994002		Collected: 07/15/21 11:52		Received: 07/15/21 14:05		Matrix: Water	
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
9222D MICRO Fecal Coli by MF Analytical Method: SM 9222D Preparation Method: SM 9222D Pace Analytical Services - Green Bay									
Fecal Coliforms	18200	CFU/100 mL	9090	9090	9090	07/15/21 17:05	07/15/21 17:05		

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ANALYTICAL RESULTS

Project: RANOVAEL

Pace Project No.: 40229994

Sample: DOWNSTREAM DC		Lab ID: 40229994003	Collected: 07/15/21 12:00	Received: 07/15/21 14:05	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
9222D MICRO Fecal Coli by MF		Analytical Method: SM 9222D Preparation Method: SM 9222D Pace Analytical Services - Green Bay							
Fecal Coliforms	173000	CFU/100 mL	9090	9090	9090	07/15/21 17:05	07/15/21 17:05		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RANOVAEL

Pace Project No.: 40229994

Sample: UPSTREAM DC		Lab ID: 40229994004	Collected: 07/15/21 12:07	Received: 07/15/21 14:05	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
9222D MICRO Fecal Coli by MF		Analytical Method: SM 9222D Preparation Method: SM 9222D Pace Analytical Services - Green Bay							
Fecal Coliforms	155000	CFU/100 mL	9090	9090	9090	07/15/21 17:05	07/15/21 17:05		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RANOVAEL
Pace Project No.: 40229994

QC Batch: 390759 Analysis Method: SM 9222D
QC Batch Method: SM 9222D Analysis Description: 9222D MICRO Fecal Coliform by MF
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40229994001, 40229994002, 40229994003, 40229994004

METHOD BLANK: 2252085 Matrix: Water
Associated Lab Samples: 40229994001, 40229994002, 40229994003, 40229994004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fecal Coliforms	CFU/100 mL	<1.00	1.0	07/15/21 17:05	

METHOD BLANK: 2252087 Matrix: Water
Associated Lab Samples: 40229994001, 40229994002, 40229994003, 40229994004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fecal Coliforms	CFU/100 mL	<1.00	1.0	07/15/21 17:05	

SAMPLE DUPLICATE: 2252086

Parameter	Units	40229994003 Result	Dup Result	RPD	Max RPD	Qualifiers
Fecal Coliforms	CFU/100 mL	10	12			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: RANOVAEL

Pace Project No.: 40229994

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RANOVAEL

Pace Project No.: 40229994

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40229994001	OVERFLOW FROM VTA	SM 9222D	390521	SM 9222D	390759
40229994002	VTA	SM 9222D	390521	SM 9222D	390759
40229994003	DOWNSTREAM DC	SM 9222D	390521	SM 9222D	390759
40229994004	UPSTREAM DC	SM 9222D	390521	SM 9222D	390759

REPORT OF LABORATORY ANALYSIS

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Activity Code:

Page 12 of 14

Sample Preservation Receipt Form

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Client Name: Ranovae1

Project # 40229994

All containers needing preservation have been checked and noted below: ☒ Yes ☐ No ☐ N/A

Lab Lot# of pH paper:

Lab Std #ID of preservation (if pH adjusted):

Initial when completed:

Date/Time:

Pace Lab #	Glass								Plastic					Vials					Jars				General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC							
001																								-						2.5 / 5 / 10		
002																								-						2.5 / 5 / 10		
003																								-						2.5 / 5 / 10		
004																								-						2.5 / 5 / 10		
005																														2.5 / 5 / 10		
006																														2.5 / 5 / 10		
007																														2.5 / 5 / 10		
008																														2.5 / 5 / 10		
009																														2.5 / 5 / 10		
010																														2.5 / 5 / 10		
011																														2.5 / 5 / 10		
012																														2.5 / 5 / 10		
013																														2.5 / 5 / 10		
014																														2.5 / 5 / 10		
015																														2.5 / 5 / 10		
016																														2.5 / 5 / 10		
017																														2.5 / 5 / 10		
018																														2.5 / 5 / 10		
019																														2.5 / 5 / 10		
020																														2.5 / 5 / 10		

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm) : ☐ Yes ☐ No ☒ N/A *If yes look in headspace column

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	VG9A	40 mL clear ascorbic	JGFU	4 oz amber jar unpres
BG1U	1 liter clear glass	BP3U	250 mL plastic unpres	DG9T	40 mL amber Na Thio	JG9U	9 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP3B	250 mL plastic NaOH	VG9U	40 mL clear vial unpres	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9H	40 mL clear vial HCL	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3S	250 mL plastic H2SO4	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG5U	100 mL amber glass unpres			VG9D	40 mL clear vial DI	ZPLC	ziploc bag
AG2S	500 mL amber glass H2SO4					GN	
BG3U	250 mL clear glass unpres						

 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 26Mar2020
	Document No.: ENV-FRM-GBAY-0014-Rev.00	Author: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: Ranovael
Courier: ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Walto
☒ Client ☐ Pace Other: _____

Project #: _____

WO# : 40229994



Tracking #: N/A
Custody Seal on Cooler/Box Present: ☐ yes ☒ no **Seals intact:** ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no **Seals intact:** ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other

Thermometer Used SR - 107 **Type of Ice:** ☒ Wet ☐ Blue ☐ Dry ☐ None

Cooler Temperature Uncorr: N/A ICorr: 2.5

Temp Blank Present: ☐ yes ☒ no

Biological Tissue is Frozen: ☐ yes ☐ no

☒ Samples on ice, cooling process has begun

Person examining contents:

Date: 7-15-21 Initials: MP

Labeled By Initials: WC

Temp should be above freezing to 6°C.

Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	☒ Yes ☐ No ☐ N/A	1.
Chain of Custody Filled Out:	☒ Yes ☐ No ☐ N/A	2.
Chain of Custody Relinquished:	☒ Yes ☐ No ☐ N/A	3.
Sampler Name & Signature on COC:	☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time:	☒ Yes ☐ No	5.
- VOA Samples frozen upon receipt	☐ Yes ☐ No	Date/Time:
Short Hold Time Analysis (<72hr):	☒ Yes ☐ No	6.
Rush Turn Around Time Requested:	☐ Yes ☒ No	7.
Sufficient Volume:		8.
For Analysis: ☒ Yes ☐ No MS/MSD: ☐ Yes ☒ No ☐ N/A		
Correct Containers Used:	☒ Yes ☐ No	9.
-Pace Containers Used:	☒ Yes ☐ No ☐ N/A	
-Pace IR Containers Used:	☐ Yes ☐ No ☒ N/A	
Containers Intact:	☒ Yes ☐ No	10.
Filtered volume received for Dissolved tests	☐ Yes ☐ No ☒ N/A	11.
Sample Labels match COC:	☐ Yes ☒ No ☐ N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		<u>001 "1149" 002 "1152"</u>
Trip Blank Present:	☐ Yes ☐ No ☒ N/A	13.
Trip Blank Custody Seals Present	☐ Yes ☐ No ☒ N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

Page 2 of 2



CASE NARRATIVE - GENERAL CHEMISTRY ANALYSIS

Lab Report Number (SDG): 40229994
Client: EASTERN RESEARCH GROUP, INC.
Project Name: RANOVAEL
Project Number: 02BA2021

1. RECEIPT

Samples were received on ice at 2.5°C.

2. HOLDING TIMES

- A. Sample Preparation:** All method specified holding times were met.
- B. Sample Analysis:** All method specified holding times were met.

3. METHOD

Preparation: Not Applicable
Analysis: SM 9222D

4. PREPARATION

Sample preparation proceeded normally.

5. ANALYSIS

- A. Calibration:**
 - 1. Positive Control (BOD Seed Check):** The method acceptance criteria were met. (TNTC = Too numerous to count.)
- B. Blanks:**
 - 1. Negative Control (Sterility Blank):** The method acceptance criteria were met.
 - 2. Method:** Not applicable to this SDG.
- C. Sample Duplicates:** A batch duplicate sample was analyzed with this SDG. The in-house precision criteria were met.
- D. Samples:** Sample analyses proceeded normally.
- E. Reanalysis:** None required for this SDG.
- F. Comments:** No additional comments are needed.

I certify that this data package is in compliance, with the terms and conditions agreed to by **Pace Analytical Services, LLC**, and by the client, both technically and for completeness, except for the conditions detailed above. The Laboratory Manager or his designee, as verified by the following signature, has authorized release of the data contained in this hard copy data package:

Signed: Leigh A Begalske Date: 07/20/21
Name: Leigh A. Begalske Position: Quality Assurance Auditor

FORM I INORGANIC-1
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

OVERFLOW FROM VTA

Lab Name: Pace Analytical - Green Bay SDG No. : 40229994 Contract: RANOVAEL
Lab Sample ID: 40229994001 Percent Moisture: _____

CAS No.	Analyte	Concentration	Q	Units	DF	Analysis Date/Time
	Fecal Coliforms	45500		CFU/100	9090	07/15/2021 17:05

FORM I INORGANIC-1
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

VTA

Lab Name: Pace Analytical - Green Bay SDG No. : 40229994 Contract: RANOVAEL
Lab Sample ID: 40229994002 Percent Moisture: _____

CAS No.	Analyte	Concentration	Q	Units	DF	Analysis Date/Time
	Fecal Coliforms	18200		CFU/100	9090	07/15/2021 17:05

FORM I INORGANIC-1
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

DOWNSTREAM DC

Lab Name: Pace Analytical - Green Bay SDG No. : 40229994 Contract: RANOVAEL
Lab Sample ID: 40229994003 Percent Moisture: _____

CAS No.	Analyte	Concentration	Q	Units	DF	Analysis Date/Time
	Fecal Coliforms	173000		CFU/100	9090	07/15/2021 17:05

FORM I INORGANIC-1
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

UPSTREAM DC

Lab Name: Pace Analytical - Green Bay SDG No. : 40229994 Contract: RANOVAEL
Lab Sample ID: 40229994004 Percent Moisture: _____

CAS No.	Analyte	Concentration	Q	Units	DF	Analysis Date/Time
	Fecal Coliforms	155000		CFU/100	9090	07/15/2021 17:05

FORM III INORGANIC-1
BLANKS

Lab Name: Pace Analytical - Green Bay SDG No. : 40229994 Contract : RANOVAEL

Method Blank Matrix: Water Instrument ID: 40INCA

Method Blank Concentration Units: CFU/100 mL

Analyte	Initial Calibration Blank		Continuing Calibration Blank						Method Blank	
		C		C		C		C	2252085	C
Fecal Coliforms									<1.0	U

FORM III INORGANIC-2
BLANKS

Lab Name: Pace Analytical - Green Bay SDG No. : 40229994 Contract : RANOVAEL

Method Blank Matrix: Water Instrument ID: 40INCA

Method Blank Concentration Units: CFU/100 mL

Analyte	Initial Calibration Blank		Continuing Calibration Blank						Method Blank	
		C		C		C		C	2252087	C
Fecal Coliforms									<1.0	U

 1241 Bellevue St, Ste 9, Green Bay, WI 54302	Document Name: Fecal DUP Analysis	Document Revised: 10-Apr-2020
	Document No.: ENV-FRM-GBAY-0072-Rev.00	Author: Pace Green Bay Quality Office

Fecal Duplicate Analysis

Analyst	Set Date	Batch	Matrix	Sample ID	Duplicate Analyses		Logarithms of Counts		Logarithms (R_{log}) (L_1-L_2)	Precision Criteria ($3.27 R_{log} < 0.1566$)
					D ₁	D ₂	L ₁	L ₂		
HNT	7/15/2021	7904	Water	40229964-003	10	12	1.0000	1.0792	0.0792	(Pass) ✓

✓	HNT	7/15/2021	7904	Water	40229964-003	10	12	1.0000	1.0792	0.0792	✓
---	-----	-----------	------	-------	--------------	----	----	--------	--------	--------	---

✓ No plates within preferred range

BAM
7/20/21

Fecal Coliform Benchsheet



Method: SM 9222D
 PQL: 1 CFU/100mL
 Analysis Date: 7-15-21
 Matrix: Water

Dilution Water Lot #: 4657AY
 Dilution Water Exp. Date: 7-22-22
 M-FC Broth Lot #: 104-2021
 M-FC Broth Exp. Date: 4-14-21
 BOD Seed Lot #: 285943

Filter Lot #: F0NB14759
 Filter Exp Date: 10-31-23
 Petri Dish Lot #: F0NB19065
 Petri Dish Exp. Date: 10-31-23
 Incubator ID: YUIMC1

Analyst: HUY ✓
 Queue/Batch #: MB10 7904

Lab ID #	Sample Date	Sample Time	Residual Chlorine (Positive = Purple) (Circle One)	Sample Volume (mL)	Date: 7-15-21 Time In:	Uncorrected Temp In (°C)	Corrected Temp In (°C)	Date: 7-16-21 Time Out:	Uncorrected Temp Out (°C)	Corrected Temp Out (°C)	Number of CFU (20 to 60)	% Solids (if Applicable)	Final Result CFU/100mL	PQL	Footnote	Duplicate Read (<5%)
Sterility Blank Start	—	—	Positive	100	17:05	44.5	44.3	15:10	44.5	44.3	0 ✓		4100	100		
BOD Seed Check	—	—	Positive	100							700 ✓					
Y0229941-003	7-15-21	9:30	Positive	5							0		10 ✓	200		
			Positive	15							5		↓			
Duplicate Analysis (<3.27R _{Log})			Positive	5							1		12 ✓			
			Positive	45							5		↓			
Y0229941-001	7-15-21	11:44	Positive	0.001							2		45500 ✓	9000		
			Positive	0.01							3		↓			
-002		11:52	Positive	0.001							0		18,200 ✓			
-002			Positive	0.01							2		↓			
-003		12:00	Positive	0.001							7		173,000 ✓			
-003			Positive	0.01							12 ②		↓			
-004		12:07	Positive	0.001							4		155,000 ✓			
-004			Positive	0.01							13 ②		↓			
			Positive													
			Positive													
			Positive													
			Positive													
			Positive													
			Positive													
Sterility Blank End	—	—	Positive	100	17:05	44.5	44.3	15:10	44.5	44.3	0 ✓		4100	100		

Duplicate Analysis (<3.27R_{Log}) A single sample must be plated and analyzed two times. The duplicate analysis must be performed once for every 20 samples during a preparation batch.

*Duplicate Read (<5%) A single sample is read two separate occasions, if possible by a second analyst (acceptance criteria for secondary analyst is <10% RPD in colony counts). If a second analyst is not available, the primary may perform the duplicate read, acceptance criteria is <5% RPD between colony counts.

① Entry Error
 HUY 7-15-21
 ② Nonfecal
 overgrowth

Analyst Review/Date: HUY 7-19-21

ENV-FRM-GBAY-0068-Rev.00 (10Apr2020) Fecal Coliform Water Benchsheet

Secondary Review/Date: HUY 7-20-21

Rec'd 03/10/2021 JM

CERTIFICATION

Fisher Scientific certifies that the membrane filter listed below :

Catalog Number : 09-719-555
Lot Number F0NB14759
Expiry Date : OCT-2022

With the lot number specified above has been manufactured for use in the bacteriological analysis of potable waters in accordance with the procedures referenced in Standard Methods, (current edition) and laboratory standards for equipment and materials set forth by the U.S. Environmental Protection Agency.

The filter specification and the acceptable limits are listed on the other side of this sheet.

Fisherbrand

PF10303 Vers. 2.0

SPECIFICATION	ACCEPTABLE LIMITS
Pore Size	0.45 µm*
Flow Rate	≥ 70 mL/min/cm ² at 13.5 psi
Water Extractables	≤ 2.5%
Extractables	
Inorganics:	
Ca	≤ 0.01 mg/filter
Zn	≤ 0.001 mg/filter
Ag	≤ 0.0001 mg/filter
Pb	≤ 0.0001 mg/filter
Hg	≤ 0.0001 mg/filter
Cu	≤ 0.0001 mg/filter
Cr	≤ 0.0001 mg/filter
Organic (TOC)	≤ 1.0 mg/filter
P (reported as phosphate)	≤ 0.02 mg/filter
Ammonia (NH ₃)	≤ 0.01 mg/filter
Na	≤ 0.01 mg/filter
Neutrality	
pH of Extract	≤ 8.3
Total acidity	≤ 0.001 mEq/filter
Biological Properties	
<i>Fertility/growth promotion</i>	
Fecal and total Coliform Recovery on membrane ≥ 90% of spread plates	
<i>E. coli</i> (ATCC 8739) & <i>E. aerogenes</i> (ATCC 49701) on finished product ≥ 90% of spread plates	
<i>Sterility</i>	
This product has been sterilized by Ethylene Oxide (EO).	
Each lot meets the acceptance criteria for the controlled and validated EO sterilization cycle.	
Country of Origin:	FRANCE
*Determined by retention of <i>S.marcescens</i> .	
Fisherbrand®	



~ CERTIFICATE OF ANALYSIS ~
DILU-LOK II™

408139

REC: 07/02/21 BY JXJ
Exp: ---/---/--- BY ---
Open: ---/---/--- BY ---

H285104 RGNT788 STOCK



22-JUL-22

DESC: Sterile DI H2O
LOT NUMBER: 408139
MANUFACTURER: Hardy Diagnostics
NOTES: Sterile buffer H2O. Received 07-02-21
CREATED: 02-JUL-21 BY: JXM
EXPIRES: 22-JUL-22
COMPOUND COUNT: 3

Product Name:	Phosphate Buffer with Magnesium Chloride (MgCl ₂), 99ml
Container Size:	145ml polypropylene flip-top vial
Catalog No:	D699 ✓
Lot No:	465724 ✓
Manufacture Date:	7/22/2020
Expiration Date:	7/22/2022 ✓
Certificate Date:	8/27/2020

This product lot is supplied by Hardy Diagnostics in accordance with its quality management system, which complies with the U.S. Food and Drug Administration's (FDA's) Quality Systems Regulation (QSR) and current Good Manufacturing Practices (cGMP) contained in Title 21 Part 820 of the Code of Federal Regulations (CFR). The company's manufacturing establishments are registered, and its medical devices are listed with the FDA. Hardy Diagnostics' quality management system is certified to ISO 13485 for medical devices.

Representative samples of this lot were tested and found to meet the specifications listed on this certificate and published on the Instructions for Use (IFU) for this product as located on the Hardy Diagnostics website, where applicable. In addition, this lot conforms to the quality control standards listed in the reference document, where indicated. End-users of commercially prepared culture media and reagents should perform QC testing in accordance with applicable government regulatory agencies and in compliance with accreditation requirements. Hardy Diagnostics recommends end-user to check for signs of contamination and deterioration and, if dictated by laboratory quality control procedures or regulation, perform QC testing to demonstrate a positive reaction and/or a negative reaction, if applicable.

Toxicity Testing

Hardy Diagnostics tests this product on a quarterly basis to ensure that it meets toxicity testing guidelines outlined in *Standard Methods for the Examination of Dairy Products, 16th Ed.* and *Standard Methods for the Examination of Water and Wastewater, 19th Ed.*

In addition, deionized water used to manufacture this product meets the requirements of the "Quality of Purified Water Used in Microbiology Testing" as described in *Standard Methods for the Examination of Water and Wastewater, 20th Ed.*

Physical Characteristics

Appearance: Clear, colorless; with no precipitate or debris

Fill: 99.0 ± 2.0ml

pH: 7.2 ± 0.1 at room temperature.

Note: The pH stated was determined at room temperature shortly after the date of manufacture. The pH may vary within the stated range depending on the age of the product, the probe used, and the type of pH meter used by the end user.

Microbial Load Testing

Acceptable microbial load (as described in the "Test for Microbial Load" section of the *Finished Product Quality Control*) was verified at the time of release. Please view the *Finished Product Quality Control* document for more information.

Ingredient Origin

All ingredients of animal origin in this lot have been sourced from Bovine Spongiform Encephalopathy (BSE)-free and Transmissible Spongiform Encephalopathy (TSE)-free countries as identified by the United States Department of Agriculture (USDA). This product complies with 9 CFR 94.18 "Restrictions on importation of meat and edible products from ruminants due to bovine spongiform encephalopathy."

Manufacturing Facility

Hardy Diagnostics maintains manufacturing facilities in Santa Maria, California and Springboro, Ohio. The manufacturing location can be determined from the lot number. If the lot number begins with the number 1, 2, or 3, the product was manufactured in Springboro, Ohio; if the lot number begins with the number 4 or higher, the product was manufactured in Santa Maria, California.

COA-11289[A]

CERTIFICATION

Fisher Scientific certifies that the Petri Dishes with Pad listed below :

Catalog Number : 09-720-501, 09-720-503

Lot Number : F0NB19665

Expiry Date : OCT-2023

With the lot number specified above has been manufactured for one-time, disposable use in the culturing of micro-organisms captured on a 47 mm filter in accordance with the procedures referenced in Standard Methods, (current edition) and laboratory standards for equipment and materials set forth by the U.S. Environmental Protection Agency. The absorbent capacity of the included absorbent pad is 1.8 to 2.2 mL.

The petri dish with pad specifications are listed on the other side of this sheet.

Fisherbrand®

Good Manufacturing Practices

This product was manufactured in a facility which adheres to Good Manufacturing Practice standards. Special emphasis has been placed on cleanliness and environmental conditions.

ISO® 9001 Quality Standards

This product was manufactured in a facility whose Quality Management System is approved and accredited registering body to ISO 9001 Quality System Standard.

ISO® 14001 Environmental Management

This product was manufactured in a facility whose Environmental Management program is approved by an accredited registering body to the appropriate ISO 14001 System Standard.

Quality Assurance Lot Release Criteria

This manufacturing lot was sampled, tested and released for compliance with the following characteristics :

100% Controls :

Visual Controls.

Statistical Controls :

- Package aspect
- Conformity of labeling and packaging
- Use test of the cassette.

Sterility :

The radiosterilization process was validated following AAMI guidelines. Each lot meets the acceptance criteria for the controlled and validated cycle. Revalidation of the irradiation done is performed on regular bands following AAMI requirements.

Lot Analysis

This product was designed and manufactured to meet the following specifications. Performance is confirmed by testing on each lot :

Criteria	Specifications	Results
Use Test Recovery	<i>Staphylococcus aureus</i> ATCC® 6538 <i>Escherichia coli</i> ATCC® 8739	Conforms

Country of Origin : FRANCE



J. Bann 6/24/21 Certificate of Analysis

Becton Dickinson and Company
BD Diagnostic Systems
PO Box 999
Sparks MD 21152-0999 US

Page: 1 of 3

Product Name : Tube Lauryl Sulfate Broth 100 Ea
Catalog Number : 297145 Manufacture Date: 2021/04/28
Batch Number : 1078401
Expiration Date : 2022/06/17

- 01 Appearance: Pale to medium light yellow; clear to trace hazy
02 Biological Performance: Samples were inoculated with the test organisms, incubated at 35±2°C for 18-48 hours and cultural responses as indicated:

CULTURE	ATCC®	RESULT
Enterobacter aerogenes	13048	Moderate to heavy growth w/ gas
Enterococcus faecalis	29212	No growth to light growth w/o gas
Escherichia coli	25922	Moderate to heavy growth w/ gas
Salmonella enterica subspecies enterica serotype Typhimurium	13311	Moderate to heavy growth w/o gas

Characteristic	Unit	Value	Lower Limit	Upper Limit
pH at 25°C :		6.8	6.6	7.0

Animal source	Country of Origin	BIC	Tissue Category SIC	ABC
Bovine	New Zealand	IV	IV	MLK
Bovine	USA	IV	IV	MLK
Porcine	USA	III	III	IB

The Batch Number on this certificate is synonymous with the Lot Number shown on the product label.

BD Diagnostics - Diagnostic Systems products are manufactured in ISO 13485:2016 Registered facilities. In addition, BD Diagnostics - Diagnostic Systems facilities are registered with the United States Food and Drug Administration (FDA), and are regulated by the FDA's Quality System Regulations (QSRs). This product met BDDS stringent quality standards at time of batch/lot release. Any test results reported on this certificate were obtained at time of release. This material is not for human or animal consumption.

BD Diagnostics - Diagnostic Systems' Certificates of Analysis (COA) typically contain animal origin information when products are

Creation Date: 2021/05/10 16:08:19



Certificate of Analysis

Becton Dickinson and Company
BD Diagnostic Systems
PO Box 999
Sparks MD 21152-0999 US

Page: 2 of 3

Product Name : Tube Lauryl Sulfate Broth 100 Ea
Catalog Number : 297145 **Manufacture Date**: 2021/04/28
Batch Number : 1078401
Expiration Date : 2022/06/17

manufactured using materials of animal origin. This information may be contained in the animal source table and/or in one or more of the additional paragraphs found on the COA. Following Quality Control release, the COA is created and published at www.bd.com/regdocs. For each batch of finished product that contains animal origin raw materials, the COA shows the animal origin data from the individual lots of animal origin raw materials used, as provided by the raw material suppliers.

At times, suppliers notify BD Diagnostics - Diagnostic Systems of new and/or additional information they have received from their raw material suppliers that modifies the animal origin information for lots previously provided to BD. See "COA Animal Origin Information Position Statement" located at www.bd.com/regdocs under "Position Statements" for the impact that retrospective information has on COAs and on customers enrolled in the BDDS and BDAB Automated Change Notification Program.

For complete details on animal origin information, refer to "BD Diagnostics - Diagnostic Systems, Animal Origin Position Statement", at www.bd.com/regdocs under "Position Statements".

Manufacturer is Becton Dickinson and Company, 7 Loveton Circle, Sparks, MD 21152 USA. To determine location of manufacturing for this product, please see www.bd.com/en-us/support/bd-life-sciences-diagnostic-systems-customer-regulatory-support-information.

Representative samples of this lot were tested for microbial viability or the Fo value for parametric release was examined and found to be acceptable.

Stability data for this product is on file.

The pH stated was obtained at the time of release, the pH may vary depending on the age of the product and the type of pH meter and probe used.

Creation Date: 2021/05/10 16:08:19



Certificate of Analysis

Becton Dickinson and Company
BD Diagnostic Systems
PO Box 999
Sparks MD 21152-0999 US

Page: 3 of 3

Product Name : Tube Lauryl Sulfate Broth 100 Ea
Catalog Number : 297145 Manufacture Date: 2021/04/28
Batch Number : 1078401
Expiration Date : 2022/06/17

Monty Hewick
Quality Director
Signature Date: 2021/05/10

#284315 RGNT457 REAGENT



17-JUN-22

DESC: Lauryl Tryptone Broth

LOT NUMBER: 488119

MANUFACTURER: Fisher Scientific

NOTE: Rec'd 06/23/2021 - BBL Lauryl Sulfate Broth with Durham

CREATED: 23-JUN-21 BY: EXH

EXPIRES: 17-JUN-22

COMPOUND COUNT: 1

408119

REC. 06/23/21 BY EXH

Exp. ---/---/--- BY ---

Open ---/---/--- BY ---

Creation Date: 2021/05/10 16:08:19