

# NEBRASKA

Good Life. Great Resources.

## DEPT. OF ENVIRONMENT AND ENERGY

April 27, 2021

Evelyn and Stan Keiser  
887 County Road 5  
Ashland, NE 68003

RE: Pond Pesticide Sampling  
Facility ID: 84069  
Program ID: NE0137634  
Subject: Surface Water Sampling Results

Dear Mr. and Mrs. Keiser:

This letter is an update to our April 9, 2021 letter concerning the sampling results for the March 26, 2021 surface water sampling conducted by the Nebraska Department of Environment and Energy (NDEE) from the pond on your property related to the environmental investigation at the AltEn, LLC facility.

Enclosed are the laboratory results for the surface water sample "21PE002251" collected from the pond on your property on March 26, 2021, as well as all previous laboratory results provided in previous correspondence. The first column of the laboratory report identifies each chemical that was tested for. The third column provides the numeric results of the chemical in units of Parts Per Billion (ppb) which is also equivalent to micrograms per liter, or  $\mu\text{g/L}$ . The J-coded results show estimated values for chemicals detected less than the detection limit for that chemical. A result followed by a result of "ND" indicates that the chemical was not detected.

Below is a comprehensive table showing all the sample results collected from your pond in comparison to levels that the Environmental Protection Agency (EPA) indicates may be of concern for fish or invertebrates. The March 26, 2021 sampling results indicate that Thiabendazole was detected at 50.1 ppb exceeding the EPA Invertebrate Chronic level; Clothianidin was detected at 50.3 ppb exceeding the EPA Invertebrate Acute and Chronic levels; and Thiamethoxam exceeded the EPA Invertebrate Acute and Chronic levels at 60.6 ppb. The remaining pesticides were either not detected or below the EPA levels.

| Chemical                | 3-26-2021<br>Results<br>(ppb or $\mu\text{g/L}$ )<br>21PE002251 | 3-02-21<br>Results<br>(ppb or $\mu\text{g/L}$ )<br>21PE001504 | Fish Acute<br>( $\mu\text{g/L}$ ) | Fish Chronic<br>( $\mu\text{g/L}$ ) | Invertebrate<br>Acute<br>( $\mu\text{g/L}$ ) | Invertebrate<br>Chronic<br>( $\mu\text{g/L}$ ) |
|-------------------------|---|---|-----------------------------------|-------------------------------------|--|--|
| Desthio-Prothioconazole | J 3.78  | J 1.38  | --                                | --                                  | --   | --   |
| Tebuconazole            | 7.62  | J 4.43  | 1,135                             | 11                                  | 1,440  | 120  |
| Thiabendazole           | 50.1  | 16.9  | 280                               | 110                                 | 155  | 42   |
| Clothianidin            | 50.3  | ND  | 50,750                            | 9,700                               | 11   | 0.05   |
| Fluoxastrobin           | 6.50  | ND  | --                                | --                                  | --   | --   |
| Thiamethoxam            | 60.6  | ND  | 57,000                            | 20,000                              | 17.5   | 0.74   |

**Bold** indicates data exceeds acceptable EPA levels

"J" indicates data is less than detection limit for chemical

"--" indicates that a benchmark is not available for this chemical



20210141637

The results also exceeded Title 117 – Nebraska Surface Water Quality Standards for Dissolved Oxygen, Total Phosphate as P and Ammonia as N as indicated in the table below.

| Parameter                     | 3-26-2021<br>Results (mg/L) | 2-22-2021<br>Results (mg/L) | Surface Water Quality Standard |
|-------------------------------|-----------------------------|-----------------------------|--------------------------------|
| Dissolved Oxygen              | <b>0.4</b>                  | 38.2#                       | Not less than 3.0*             |
| pH                            | 6.7                         | 8.3                         | Between 6.5-9.0                |
| Conductivity (umhos/cm)       | 483                         | 1,011                       | Not more than 2000             |
| Nitrate + Nitrite (as N)      | <RL                         | 1.06                        | --                             |
| Total Suspended Solids        | 30.0                        | 26                          | --                             |
| Total Kjeldahl Nitrogen       | 23.4                        | 4.52                        | --                             |
| Total Phosphate as P          | <b>7.12</b>                 | <b>0.735</b>                | 0.050                          |
| Ammonia as N                  | <b>13.4</b>                 | 0.126                       | 46.33/4.45**                   |
| Chloride                      | 17.9                        | 68.8                        | 860/230***                     |
| Temperature                   | 8.4°C                       | NA                          | --                             |
| Dissolved Oxygen (saturation) | 2.6 %                       | NA                          | --                             |
| Turbidity (NTU's)             | 36.1                        | NA                          | --                             |
| Sodium, Dissolved             | 13.8                        | NA                          | --                             |

**Bold** indicates data exceeds Surface Water Quality Standards

\* - One-day minimum criterion that applies October 1 through March 31

\*\* - Ammonia concentration exceeded the thirty-day average criteria for Title 117-Surface Water Standards, Chapter 4, Section 003, Warmwater Aquatic Life Use Class Specific Criteria, Specifically Section 003.04A2 (thirty-day average). Ammonia concentration does not exceed the one-hour average for Title 117-Surface Water Standards, Chapter 4, Section 003, Warmwater Aquatic Life Use Class Specific Criteria, Specifically Section 003.04A1, Total Ammonia (one-hour average). Since this was a single sample, there is no one hour average so the results are for comparison to Surface Water Standards.

\*\*\* - Not to exceed 860 mg/L at any time or a 4-day average concentration of 230 mg/L

# - pond was exhibiting super-saturated conditions of 283% likely due to heavy algal growth/photosynthesis occurring under ice.

"--" indicates that a standard is not available for this chemical

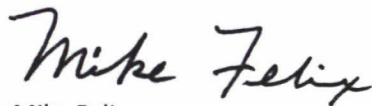
"NA" - Not analyzed

"<RL" - less than Reporting Limit. The lowest amount of analyte that can be accurately reported by the method used.

*Dissolved Oxygen, pH and Conductivity* - field measurements taken during sampling

If you have any questions, please contact me or Zoe DeGrande at (402) 471-2186 or [mike.felix@nebraska.gov](mailto:mike.felix@nebraska.gov) or [zoe.degrande@nebraska.gov](mailto:zoe.degrande@nebraska.gov). Thank you again for your assistance.

Sincerely,



Mike Felix  
Section Supervisor  
Superfund/VCP Section  
Monitoring and Remediation Division

Enclosure



Dave Ihrie

NDEE-SURFACE WATER UNIT

245 FALLBROOK BLVD

PO BOX 98922

Lincoln, NE 68509-8922

## ANALYTICAL RESULT QUALIFIERS

Workorder:

Profile: 03 FISH KILL, RTN:03 Fish Kill/Complaints

|            |                             |                 |                        |         |              |
|------------|-----------------------------|-----------------|------------------------|---------|--------------|
| Lab ID:    | <b>723847</b>               | Date Received:  | <b>2/22/2021</b>       | Matrix: | <b>Water</b> |
| Sample ID: | <b>723847</b>               | Date Collected: | <b>2/22/2021 11:20</b> |         |              |
| Sample By: | <b>BUBB, DAVE</b>           | Date Reported:  | <b>3/11/2021 11:22</b> |         |              |
| Location:  | <b>MIDLAKE01 KIZER POND</b> |                 |                        |         |              |

| Parameters  | Your Results | Units | Qual | Report Limit | MCL or AL | Analyzed  | By  |
|---|--------------|-------|------|--------------|-----------|-----------|-----|
| <b>Analytical Method: Lachat 10-107-04-1-A NO3+NO2</b>  |              |       |      |              |           |           |     |
| Nitrate + Nitrite (As N)                                | 1.06         | mg/L  |      | 0.05         | 10        | 2/23/2021 | JDL |
| <b>Analytical Method: EPA 160.2 - TSS</b>               |              |       |      |              |           |           |     |
| TSS (Non-Filterable Residue)                            | 26.0         | mg/L  |      | 5            |           | 2/25/2021 | SEP |
| <b>Analytical Method: TKN_TPO4</b>                      |              |       |      |              |           |           |     |
| Prep Date   | 2/24/2021    |       |      |              |           |           | AMJ |
| Total Kjeldahl Nitrogen                                 | 4.52         | mg/L  |      | 0.5          |           | 2/26/2021 | AMJ |
| Total Phosphate as P                                    | 0.735        | mg/L  |      | 0.04         |           | 2/26/2021 | AMJ |
| <b>Analytical Method: EPA 350.1 - Ammonia</b>           |              |       |      |              |           |           |     |
| Prep Date   | 03/09/2021   |       |      |              |           |           | JDL |
| Ammonia as N, Distilled                                 | 0.126        | mg/L  |      | 0.05         |           | 3/11/2021 | JDL |
| <b>Analytical Method: Lachat 10-117-07-1-A Chloride</b> |              |       |      |              |           |           |     |
| Chloride  | 68.8         | mg/L  |      | 1            |           | 3/1/2021  | AAP |

## SAMPLE COMMENTS:

[1] Rec'd on ice, 7.3°C

**REMARKS:** See reverse side of report for description of acronyms and data qualifiers. For inquiries on result interpretation call: (402) 471-6435.

### ACRONYMS

- MCL = Maximum Contaminant Level – The concentration of the analyte which has been determined by the EPA to put the public health at risk. Concentrations below this level are considered acceptable.
- AL = Action Levels (AL) apply only to lead and copper and are not based on known or expected health effects. An Action Level is the concentration of a contaminant in a sample which, if exceeded and grouped with other samples, triggers treatment techniques or other requirements which a water system must follow.
- <RL = Less than Reporting Limit. The lowest amount of the analyte that can be accurately reported by the method used.
- NG = Not Given. The information was not supplied by the collector on the request form or the information was not readable.
- ND or NT = Not determined or not tested.

### DATA QUALIFIERS

- A = The value given is an average value; determined by analyzing aliquots of the same sample two or more times
- B = The results are based upon colony counts outside the acceptable range. Fecal coliform results require that the plate count be in the range of 20-60. Fecal strep results require that the plate count be in the range of 20-100 colonies.
- C = The result given is a calculated value; it was not determined by direct analysis.
- E = Indication of possible interference.
- F = The sample was received in improper condition (container, temperature, preservative, sample container broken, paperwork discrepancies, air bubbles, insufficient volume, excess turbidity, chlorine smell, etc.)
- H = The sample was beyond the maximum holding time when received by the laboratory. It was therefore, not analyzed.
- J = The associated numerical value is an estimated quantity.
- K = The actual value is less than the value given.
- L = The actual value is greater than the value given.
- M = The analysis was inconclusive due to matrix interferences. The sample needs to be recollected.
- Q = The sample was beyond the maximum holding time prior to analysis.
- R = The sample was delivered to the lab, but due to laboratory accident, it was unable to be analyzed.
- S = Not all of the associated quality control criteria were met for this analyte.

### TOTAL COLIFORM TERMINOLOGY (DRINKING WATER)

**Total coliform / E.coli Routine Compliance Monitoring** – Required monitoring samples which are sent to each PWS System monthly or quarterly.

**Repeat Samples** – The method used for repeat samples, EPA 9223B-QT, provides the number of organisms in colony forming units (CFU) instead of presence or absence.

**OR – ORIGINAL** – One repeat sample must be taken from the same tap as the original positive.

**DN – DOWNSTREAM** – One repeat sample must be collected within 5 service connections downstream of the original positive sample site.

**UP – UPSTREAM** – One repeat sample must be collected within 5 service connections upstream of the original positive sample site.

**TG – TRIGGERED** – This water sample is to be collected from a source well (or a common or representative sample point for multiple wells) for systems required to conduct triggered sampling under the Ground Water Rule. If more than one well is being used by the system, additional samples should be collected using sample kits and submission forms designated as "TG". The system must request additional TG sample kits if needed.

**Additional Routines** – Systems collecting samples on a quarterly schedule must collect additional routine monitoring samples the month following one or more total coliform positive samples. Systems must collect at least three (3) routine samples during the next month.

**Special** – These samples are non-compliance samples and may be used to determine the presence of total coliform after a pressure loss, repairs, or routine maintenance.

**Units – cfu/100ml – Colony Forming Units per milliliters** – A unit of bacteria that will form one colony in 100 milliliters of sample.

**Excessive Age** – The sample was received at least 30 hours after it was collected. This test was not performed.

**Insufficient Amount** – The amount of samples the lab received was less than the 100 ml required to perform the test.

**Improper Container** – The container used to collect the sample was inappropriate for the test required.

**Damage** – Something damaged the sample before it could be tested. The bottle may have been broken or sample contaminated.

**Insufficient Sample Information** – The sample collector failed to include the laboratory request form with the sample, date of samples on the request form or the collector may have put the same lab number on multiple samples.

**Excess Chlorine Interference** – The results can not be determined due to excess chlorine in the sample.

**Total Coliform Present** – The test detected the presence of total coliform. The sample **does not** meet bacteriological standards.

**Total Coliform Absent** – The test did not detect the presence of any total coliform. The sample **meets** bacteriological standards.

**E. Coli Present** – The test detected the presence of E. Coli in the sample. The sample **does not** meet bacteriological standards.

**E. Coli Absent** – The test did not detect the presence of any E. Coli in the sample. The sample **meets** bacteriological standards.

**0** – The test did not detect the presence of any Total Coliform or E. Coli in the sample. The sample **meets** bacteriological standards.

**Any Number over 0** – The test detected Total Coliform or E. Coli present in the sample. The number indicated the total number of colony forming units present in 100 ml of the sample. The sample **does not** meet bacteriological standards.

**MPN-Most Probable Number.** An index of the number of bacteria that, more probably than any other number, would give the results shown by the lab examination; it is not an actual enumeration.



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245 FALLBROOK BLVD  
PO BOX 98922  
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## ANALYTICAL RESULT QUALIFIERS

Workorder: 8839 DEQ03262021

Profile: 03 FISH KILL, RTN:03 Fish Kill/Complaints

|            |                      |                 |                        |         |              |
|------------|----------------------|-----------------|------------------------|---------|--------------|
| Lab ID:    | <b>730797</b>        | Date Received:  | <b>3/29/2021</b>       | Matrix: | <b>Water</b> |
| Sample ID: | <b>CC03903262101</b> | Date Collected: | <b>3/26/2021 10:20</b> |         |              |
| Sample By: | <b>BUBB, DAVE</b>    | Date Reported:  | <b>4/14/2021</b>       |         |              |
| Location:  | <b>KEISER POND</b>   |                 |                        |         |              |

| Parameters                                       | Your Results | Units | Qual | Report Limit | MCL or AL | Analyzed  | By  |
|--|--------------|-------|------|--------------|-----------|-----------|-----|
| Analytical Method: Lachat 10-107-04-1-A NO3+NO2  |              |       |      |              |           |           |     |
| Nitrate + Nitrite (As N)                         | <RL          | mg/L  |      | 0.05         | 10        | 3/30/2021 | JDL |
| Analytical Method: SM 3111B - Minerals by AA     |              |       |      |              |           |           |     |
| Sodium, Dissolved                                | 13.8         | mg/L  |      | 0.15         |           | 4/9/2021  | TMG |
| Analytical Method: EPA 160.2 - TSS               |              |       |      |              |           |           |     |
| TSS (Non-Filterable Residue)                     | 30.0         | mg/L  |      | 5            |           | 4/1/2021  | JDL |
| Analytical Method: TKN_TPO4                      |              |       |      |              |           |           |     |
| Prep Date  | 4/6/2021     |       |      |              |           |           | AAP |
| Total Kjeldahl Nitrogen                          | 23.4         | mg/L  |      | 0.5          |           | 4/7/2021  | AAP |
| Total Phosphate as P                             | 7.12         | mg/L  |      | 0.04         |           | 4/7/2021  | AAP |
| Analytical Method: EPA 350.1 - Ammonia           |              |       |      |              |           |           |     |
| Prep Date  | 4/5/2021     |       |      |              |           |           | JDL |
| Ammonia as N, Distilled                          | 13.4         | mg/L  |      | 0.05         |           | 4/7/2021  | JDL |
| Analytical Method: Lachat 10-117-07-1-A Chloride |              |       |      |              |           |           |     |
| Chloride   | 17.9         | mg/L  |      | 1            |           | 3/29/2021 | AAP |

## SAMPLE COMMENTS:

[1] Rcv'd on ice 4.1C

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**Performed By:**

South Dakota Agricultural Laboratories  
 1335 Western Avenue  
 Brookings, South Dakota 57006  
 Phone: 605-692-7325  
 E-Mail: regina.wixon@sdaglabs.com

**Collected By:**

Nebraska Dept. of Environment & Energy-David  
 Schum  
 245 Fallbrook Blvd  
 Lincoln, NE 68521  
 Phone: 402-471-4709  
 E-Mail: david.schumacher@nebraska.gov

**Report Date: 2021-04-20****Final Report****South Dakota Agricultural Laboratories has examined the sample of**

Limfinite Package Id : 20210330-002  
 Lab Sample Id : 21PE002251  
 Customer Sample Id : Kaiser Pond #1  
 Sample Description : Water  
 Date Collected : 2021-03-26  
 Date Received : 2021-03-30  
 Cooler Temp :

**RESULTS**

| ANALYTE                       | UNIT | AS RECEIVED | LOD | DETECTION<br>LIMIT | METHOD   | DATE OF<br>EXTRACTION | DATE OF<br>ANALYSIS |
|-------------------------------|------|-------------|-----|--------------------|----------|-----------------------|---------------------|
| Abamectin                     | ppb  | ND          | 3   | 10                 | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Acetamprid                    | ppb  | ND          | 1   | 3                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Azoxystrobin                  | ppb  | ND          | 1   | 3                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Brassinazole                  | ppb  | ND          | 2   | 5                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Clothianidin                  | ppb  | 50.3        | 2.5 | 8                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Cyproconazole                 | ppb  | ND          | 2   | 5                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Desthio-Prothioconazole       | ppb  | J3.78       | 2   | 5                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Difenoconazole                | ppb  | ND          | 1   | 4                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Dimoxystrobin                 | ppb  | ND          | 3   | 8                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Dinotefuron                   | ppb  | ND          | 1.2 | 4                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Epoxiconazole                 | ppb  | ND          | 1   | 3                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Fluconazole                   | ppb  | ND          | 1   | 4                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Fluoxastrobin                 | ppb  | 6.50        | 1   | 3                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Glufosinate                   | ppb  | ND          | 3   | 10                 | LC-MS/MS | 2021-04-07            | 2021-04-16          |
| Glyphosate                    | ppb  | ND          | 3   | 10                 | LC-MS/MS | 2021-04-07            | 2021-04-16          |
| Imidacloprid                  | ppb  | ND          | 1.2 | 4                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Ipconazole                    | ppb  | ND          | 2   | 6                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Isavuconazole                 | ppb  | ND          | 1   | 4                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Itraconazole                  | ppb  | ND          | 1   | 5                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Metconazole                   | ppb  | ND          | 2   | 5                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Nitenpyram                    | ppb  | ND          | 2.5 | 8                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Orysastrobin                  | ppb  | ND          | 2   | 7                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Picoxystrobin                 | ppb  | ND          | 1   | 3                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Posaconazole                  | ppb  | ND          | 2   | 5                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Propiconazole                 | ppb  | ND          | 2   | 5                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Prothioconazole               | ppb  | ND          | 2   | 6                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Pyraclostrobin                | ppb  | ND          | 1   | 3                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Ravuconazole                  | ppb  | ND          | 1   | 3                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Sulfonic Acid Prothioconazole | ppb  | ND          | 3   | 8                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |
| Tebuconazole                  | ppb  | 7.62        | 2   | 5                  | LC-MS/MS | 2021-04-01            | 2021-04-01          |

|                 |     |      |   |   |          |            |            |
|-----------------|-----|------|---|---|----------|------------|------------|
| Tetraconazole   | ppb | ND   | 1 | 4 | LC-MS/MS | 2021-04-01 | 2021-04-01 |
| Thiabendazole   | ppb | 50.1 | 2 | 5 | LC-MS/MS | 2021-04-01 | 2021-04-01 |
| Thiacloprid     | ppb | ND   | 2 | 6 | LC-MS/MS | 2021-04-01 | 2021-04-01 |
| Thiamethoxam    | ppb | 60.6 | 1 | 3 | LC-MS/MS | 2021-04-01 | 2021-04-01 |
| Trifloxystrobin | ppb | ND   | 1 | 5 | LC-MS/MS | 2021-04-01 | 2021-04-01 |
| Uniconazole     | ppb | ND   | 1 | 3 | LC-MS/MS | 2021-04-01 | 2021-04-01 |
| Voriconazole    | ppb | ND   | 1 | 4 | LC-MS/MS | 2021-04-01 | 2021-04-01 |

## QUALITY ASSURANCE

| ANALYTE                       | UNIT | DUPLICATE  | SPIKE<br>RECOVERY | MATRIX<br>BLANK | PROCESS<br>BLANK | INSTRUMENT<br>BLANK |
|-------------------------------|------|------------|-------------------|-----------------|------------------|---------------------|
| Abamectin                     | ppb  | ND         | 128               | ND              | ND               | ND                  |
| Acetamprid                    | ppb  | 21PE002669 | 117               | ND              | ND               | ND                  |
| Azoxystrobin                  | ppb  | 21PE002267 | 109               | ND              | ND               | ND                  |
| Brassinazole                  | ppb  | 21PE002267 | 116               | ND              | ND               | ND                  |
| Clothianidin                  | ppb  | 21PE002669 | 89.4              | ND              | ND               | ND                  |
| Cyproconazole                 | ppb  | 21PE002267 | 102               | ND              | ND               | ND                  |
| Desthio-Prothioconazole       | ppb  | 21PE002267 | 103               | ND              | ND               | ND                  |
| Difenoconazole                | ppb  | 21PE002267 | 113               | ND              | ND               | ND                  |
| Dimoxystrobin                 | ppb  | 21PE002267 | 110               | ND              | ND               | ND                  |
| Dinotefuron                   | ppb  | 21PE002669 | 116               | ND              | ND               | ND                  |
| Epoxiconazole                 | ppb  | 21PE002267 | 102               | ND              | ND               | ND                  |
| Fluconazole                   | ppb  | 21PE002267 | 128               | ND              | ND               | ND                  |
| Fluoxastrobin                 | ppb  | 21PE002267 | 116               | ND              | ND               | ND                  |
| Glufosinate                   | ppb  | ND         | 87.9              | ND              | ND               | ND                  |
| Glyphosate                    | ppb  | ND         | 73.7              | ND              | ND               | ND                  |
| Imidacloprid                  | ppb  | 21PE002669 | 104               | ND              | ND               | ND                  |
| Ipconazole                    | ppb  | 21PE002267 | 112               | ND              | ND               | ND                  |
| Isavuconazole                 | ppb  | 21PE002267 | 115               | ND              | ND               | ND                  |
| Itraconazole                  | ppb  | 21PE002267 | 107               | ND              | ND               | ND                  |
| Metconazole                   | ppb  | 21PE002267 | 116               | ND              | ND               | ND                  |
| Nitenpyram                    | ppb  | 21PE002669 | 112               | ND              | ND               | ND                  |
| Orysastrobin                  | ppb  | 21PE002267 | 97.7              | ND              | ND               | ND                  |
| Picoxystrobin                 | ppb  | 21PE002267 | 114               | ND              | ND               | ND                  |
| Posaconazole                  | ppb  | 21PE002267 | 116               | ND              | ND               | ND                  |
| Propiconazole                 | ppb  | 21PE002267 | 109               | ND              | ND               | ND                  |
| Prothioconazole               | ppb  | 21PE002267 | 112               | ND              | ND               | ND                  |
| Pyraclostrobin                | ppb  | 21PE002267 | 115               | ND              | ND               | ND                  |
| Ravuconazole                  | ppb  | 21PE002267 | 123               | ND              | ND               | ND                  |
| Sulfonic Acid Prothioconazole | ppb  | 21PE002267 | 114               | ND              | ND               | ND                  |
| Tebuconazole                  | ppb  | 21PE002267 | 84.2              | ND              | ND               | ND                  |
| Tetraconazole                 | ppb  | 21PE002267 | 113               | ND              | ND               | ND                  |
| Thiabendazole                 | ppb  | 21PE002267 | 114               | ND              | ND               | ND                  |
| Thiacloprid                   | ppb  | 21PE002669 | 116               | ND              | ND               | ND                  |
| Thiamethoxam                  | ppb  | 21PE002669 | 117               | ND              | ND               | ND                  |
| Trifloxystrobin               | ppb  | 21PE002267 | 117               | ND              | ND               | ND                  |
| Uniconazole                   | ppb  | 21PE002267 | 106               | ND              | ND               | ND                  |
| Voriconazole                  | ppb  | 21PE002267 | 128               | ND              | ND               | ND                  |

Comments:

Definitions:



ppb - parts per billion

Detection Limit - Lowest concentration that can be quantitatively reported with confidence

ND - Not Detected above the limit of quantification

Duplicate - Concentration found in repeat sample analysis

Spike Recovery - Recovery based on a known amount of active ingredient spiked into a similar-matrix, blank sample

Matrix Blank - A similar-matrix, blank sample is evaluated

Process Blank - A sample without any matrix (soil, vegetation etc) is processed through the sample analysis procedure

Instrument Blank - Injection solvent is run to demonstrate no carryover between injections on the instrument

## **BRIEF METHOD DESCRIPTION**

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### **Strobins in Water - Purpose and Scope**

Strobins are fairly polar and are usually determined by LC-MS/MS. The limits of detection for the strobins are 1 ppb for limit of detection and 5 ppb for limit of quantitation.

### **Strobins in Water - References**

J. Klein and L. Alder, JAOACI 86(5): 101501037 (2003)

### **Strobins in Water - Basic Principles**

Strobin water samples are extracted into aqueous methanol followed by filtration and preparation for LC-MS/MS.

**This SOP is for the determination of Strobins in soil, water and vegetation. The limits of detection for soil, water and vegetation range from 1 ppb to 2 ppb. The limit of quantitation is 5 ppb for soil, water and vegetation.**

**The Strobins include: Fluoxastrobin, Trifloxystrobin, Orysastrobin, Pyraclostrobin, Azoxystrobin, Picoxystrobin and Dimoxystrobin.**

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### **Azoles in soil, vegetation and water - Purpose and Scope**

Azoles are not ionic and are soluble in many organic solvents. Several of them are volatile enough for gas chromatography, but in this laboratory, LC-MS/MS has been used for azole analysis. The limits of detection for the azoles are 1 ppb for limit of detection and 5 ppb for limit of quantitation.

### **Azoles in soil, vegetation and water - References**

Analytical Methods for Pesticides and Plant Growth Regulators. (G. Zweig, ed.) Vol.X, pp. 347 19.1.2.2 Klein and Alder. JAOAC. 86(5): 1015-37 (2003). 19.1.2.3 Ramsteiner et al. JAOAC. 57(1): 192-201 (1974).

### **Azoles in soil, vegetation and water - Basic Principles**

Azole soil, vegetation, and water samples can be extracted in aqueous methanol, filtered and prepared for LC-MS/MS analysis.

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### **Neonicotinoids in soil, water and vegetation - Purpose and Scope**

Neonicotinoids are a class of neuro-active insecticides chemically similar to nicotine. The limits of detection for the neonicotinoids are 1 ppb for limit of detection and 5 ppb for limit of quantitation.

### **Neonicotinoids in soil, water and vegetation - References**

J. Klein and L. Alder, JAOACI 86(5): 101501037 (2003)

### **Neonicotinoids in soil, water and vegetation - Basic Principles**

Neonicotinoids are fairly polar and are extracted with aqueous acetonitrile, filtered and prepared for LC-MS/MS analysis.

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**Reviewed and approved by Regina Wixon, Ph.D.**

Submitted by the customer:



20210330-002  
21PE002251

5  
1g

### Pesticide Residue Sample Submission Form

South Dakota Agricultural Laboratories  
1335 Western Avenue  
Brookings, SD. 57006  
(605) 692-7325

20210330-002

21PE002251

Kaiser Pond #1

Name: Dave Schumacher \*Sample ID: \_\_\_\_\_  
Address: 245 Fallbrook Blvd. City: Lincoln State: NE  
Zip: 68521 Phone: (402) 471-4709 Email: dave.schumacher@nebraska.gov

\*Sample ID must be marked clearly on the sample you submit. \*\*Results will be emailed to the provided email address.

Billing Information: ☐ Check box if billing is the same as the customer information PO Box 98922  
Name: Nebraska Dept. of Environment and Energy Address: 245 Fallbrook Blvd.  
City: Lincoln State: NE Zip: 68521  
Phone: (402) 471-4709 Email: NDEE.accounting@nebraska.gov

Individual tests are \$162 each, unless otherwise marked. Scans are \$212 and include all of the compounds in a particular category. Acceptable samples include Vegetation, Water or Soil. Call to confirm other substrates.

Thank you for choosing South Dakota Agricultural Labs! We do add analytes to our testing regiment throughout the year. If a chemical of interest is not listed, please call us:

(605) 692-7325.

#### How much sample should you send?

Please send 30g of vegetation or 100g of soil to run an individual test. What does this look like? For vegetation, it would be about a quart sized bag packed full. If more than one test is required, please fill a gallon sized bag. For soil samples, please send 2 cups, if more than one test is required send 4 cups.

#### Analyses offered

Please turn page over to view the current pesticide analyses.

If you are interested in a screen of active ingredients, please check the box next to the **bold-faced** heading. This will include all active ingredients within the PGR screen for \$212.

Example: PGR Screen ☒

If you are interested in single analyses, please circle the active ingredients. The cost of each individual analyte is \$162 unless otherwise marked.

Example: Mesotrione

Sample(s) Received at SD Ag Labs

Date 2021-03-30

Received by  
Alyssa Kennedy



**Performed By:**

South Dakota Agricultural Laboratories  
 1335 Western Avenue  
 Brookings, South Dakota 57006  
 Phone: 605-692-7325  
 E-Mail: regina.wixon@sdaglabs.com

**Collected By:**

Nebraska Dept. of Environment and Energy  
 PO Box 98922  
 Lincoln, NE 68509  
 Phone: 402-471-3377  
 E-Mail: wade.gregson@nebraska.gov

**Report Date: 2021-04-01****Amended Report****South Dakota Agricultural Laboratories has examined the sample of**

Limfinite Package Id : 20210305-002  
 Lab Sample Id : 21PE001504  
 Customer Sample Id : Off-site Surface Water  
 Sample Description : Water  
 Date Collected : 2021-03-03  
 Date Received : 2021-03-05  
 Cooler Temp :

**RESULTS**

| ANALYTE                       | UNIT | AS RECEIVED | LOD | DETECTION<br>LIMIT | METHOD   | DATE OF<br>EXTRACTION | DATE OF<br>ANALYSIS |
|-------------------------------|------|-------------|-----|--------------------|----------|-----------------------|---------------------|
| Abamectin                     | ppb  | ND          | 3   | 10                 | LC-MS/MS | 2021-03-12            | 2021-03-12          |
| Acetamprid                    | ppb  | ND          | 1   | 3                  | LC-MS/MS | 2021-03-08            | 2021-03-09          |
| Azoxystrobin                  | ppb  | ND          | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-10          |
| Brassinazole                  | ppb  | ND          | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-08          |
| Clothianidin                  | ppb  | ND          | 2.5 | 8                  | LC-MS/MS | 2021-03-08            | 2021-03-09          |
| Cyproconazole                 | ppb  | ND          | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-08          |
| Desthio-Prothioconazole       | ppb  | J1.38       | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-08          |
| Difenoconazole                | ppb  | ND          | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-08          |
| Dimoxystrobin                 | ppb  | ND          | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-10          |
| Dinotefuron                   | ppb  | ND          | 1.2 | 4                  | LC-MS/MS | 2021-03-08            | 2021-03-09          |
| Epoxiconazole                 | ppb  | ND          | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-08          |
| Fluconazole                   | ppb  | ND          | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-08          |
| Fluoxastrobin                 | ppb  | ND          | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-10          |
| Glufosinate                   | ppb  | ND          | 3   | 10                 | LC-MS/MS | 2021-03-09            | 2021-03-11          |
| Glyphosate                    | ppb  | ND          | 3   | 10                 | LC-MS/MS | 2021-03-09            | 2021-03-11          |
| Imidacloprid                  | ppb  | ND          | 1.2 | 4                  | LC-MS/MS | 2021-03-08            | 2021-03-09          |
| Ipconazole                    | ppb  | ND          | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-08          |
| Isavuconazole                 | ppb  | ND          | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-08          |
| Metconazole                   | ppb  | ND          | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-08          |
| Nitenpyram                    | ppb  | ND          | 2.5 | 8                  | LC-MS/MS | 2021-03-08            | 2021-03-09          |
| Orysastrobin                  | ppb  | ND          | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-10          |
| Picoxystrobin                 | ppb  | ND          | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-10          |
| Propiconazole                 | ppb  | ND          | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-08          |
| Prothioconazole               | ppb  | ND          | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-08          |
| Pyraclostrobin                | ppb  | ND          | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-10          |
| Ravuconazole                  | ppb  | ND          | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-08          |
| Sulfonic Acid Prothioconazole | ppb  | ND          | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-20          |
| Tebuconazole                  | ppb  | J4.43       | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-08          |
| Tetraconazole                 | ppb  | ND          | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-08          |
| Thiabendazole                 | ppb  | 16.9        | 1   | 5                  | LC-MS/MS | 2021-03-08            | 2021-03-08          |
| Thiacloprid                   | ppb  | ND          | 2   | 6                  | LC-MS/MS | 2021-03-08            | 2021-03-09          |

|                 |     |    |   |   |          |            |            |
|-----------------|-----|----|---|---|----------|------------|------------|
| Thiamethoxam    | ppb | ND | 1 | 3 | LC-MS/MS | 2021-03-08 | 2021-03-09 |
| Trifloxystrobin | ppb | ND | 1 | 5 | LC-MS/MS | 2021-03-08 | 2021-03-10 |
| Uniconazole     | ppb | ND | 1 | 5 | LC-MS/MS | 2021-03-08 | 2021-03-08 |
| Voriconazole    | ppb | ND | 1 | 5 | LC-MS/MS | 2021-03-08 | 2021-03-08 |

## QUALITY ASSURANCE

| ANALYTE                       | UNIT | DUPLICATE  | SPIKE<br>RECOVERY | MATRIX<br>BLANK | PROCESS<br>BLANK | INSTRUMENT<br>BLANK |
|-------------------------------|------|------------|-------------------|-----------------|------------------|---------------------|
| Abamectin                     | ppb  | 21PE001509 | 81.1              | ND              | ND               | ND                  |
| Acetamprid                    | ppb  | ND         | 106               | ND              | ND               | ND                  |
| Azoxystrobin                  | ppb  | 21PE001509 | 102               | ND              | ND               | ND                  |
| Brassinazole                  | ppb  | 21PE001509 | 106               | ND              | ND               | ND                  |
| Clothianidin                  | ppb  | ND         | 86.7              | ND              | ND               | ND                  |
| Cyproconazole                 | ppb  | 21PE001509 | 90.2              | ND              | ND               | ND                  |
| Desthio-Prothioconazole       | ppb  | 21PE001509 | 96.9              | ND              | ND               | ND                  |
| Difenoconazole                | ppb  | 21PE001509 | 92.3              | ND              | ND               | ND                  |
| Dimoxystrobin                 | ppb  | 21PE001509 | 110               | ND              | ND               | ND                  |
| Dinotefuron                   | ppb  | ND         | 109               | ND              | ND               | ND                  |
| Epoxiconazole                 | ppb  | 21PE001509 | 115               | ND              | ND               | ND                  |
| Fluconazole                   | ppb  | 21PE001509 | 98.3              | ND              | ND               | ND                  |
| Fluoxastrobin                 | ppb  | 21PE001509 | 108               | ND              | ND               | ND                  |
| Glufosinate                   | ppb  | 21PE001509 | 98.9              | ND              | ND               | ND                  |
| Glyphosate                    | ppb  | 21PE001509 | 102               | ND              | ND               | ND                  |
| Imidacloprid                  | ppb  | ND         | 109               | ND              | ND               | ND                  |
| Ipconazole                    | ppb  | 21PE001509 | 94.9              | ND              | ND               | ND                  |
| Isavuconazole                 | ppb  | 21PE001509 | 87.5              | ND              | ND               | ND                  |
| Metconazole                   | ppb  | 21PE001509 | 99.3              | ND              | ND               | ND                  |
| Nitenpyram                    | ppb  | ND         | 108               | ND              | ND               | ND                  |
| Orysastrobin                  | ppb  | 21PE001509 | 95.4              | ND              | ND               | ND                  |
| Picoxystrobin                 | ppb  | 21PE001509 | 98.2              | ND              | ND               | ND                  |
| Propiconazole                 | ppb  | 21PE001509 | 108               | ND              | ND               | ND                  |
| Prothioconazole               | ppb  | 21PE001509 | 120               | ND              | ND               | ND                  |
| Pyraclostrobin                | ppb  | 21PE001509 | 86.9              | ND              | ND               | ND                  |
| Ravuconazole                  | ppb  | 21PE001509 | 85.4              | ND              | ND               | ND                  |
| Sulfonic Acid Prothioconazole | ppb  | 21PE001509 | 85.7              | ND              | ND               | ND                  |
| Tebuconazole                  | ppb  | 21PE001509 | 90.0              | ND              | ND               | ND                  |
| Tetraconazole                 | ppb  | 21PE001509 | 86.4              | ND              | ND               | ND                  |
| Thiabendazole                 | ppb  | 21PE001509 | 101               | ND              | ND               | ND                  |
| Thiacloprid                   | ppb  | ND         | 102               | ND              | ND               | ND                  |
| Thiamethoxam                  | ppb  | ND         | 105               | ND              | ND               | ND                  |
| Trifloxystrobin               | ppb  | 21PE001509 | 79.1              | ND              | ND               | ND                  |
| Uniconazole                   | ppb  | 21PE001509 | 90.2              | ND              | ND               | ND                  |
| Voriconazole                  | ppb  | 21PE001509 | 100               | ND              | ND               | ND                  |

### Comments:

### Definitions:

ppb - parts per billion

Detection Limit - Lowest concentration that can be quantitatively reported with confidence

ND - Not Detected above the limit of quantification

Duplicate - Concentration found in repeat sample analysis

Spike Recovery - Recovery based on a known amount of active ingredient spiked into a similar-matrix, blank sample



Matrix Blank - A similar-matrix, blank sample is evaluated

Process Blank - A sample without any matrix (soil, vegetation etc) is processed through the sample analysis procedure

Instrument Blank - Injection solvent is run to demonstrate no carryover between injections on the instrument

## **BRIEF METHOD DESCRIPTION**

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### **Strobins in Water - Purpose and Scope**

Strobins are fairly polar and are usually determined by LC-MS/MS. The limits of detection for the strobins are 1 ppb for limit of detection and 5 ppb for limit of quantitation.

### **Strobins in Water - References**

J. Klein and L. Alder, JAOACI 86(5): 101501037 (2003)

### **Strobins in Water - Basic Principles**

Strobin water samples are extracted into aqueous methanol followed by filtration and preparation for LC-MS/MS.

**This SOP is for the determination of Strobins in soil, water and vegetation. The limits of detection for soil, water and vegetation range from 1 ppb to 2 ppb. The limit of quantitation is 5 ppb for soil, water and vegetation.**

**The Strobins include: Fluoxastrobin, Trifloxystrobin, Orysastrobin, Pyraclostrobin, Azoxystrobin, Picoxystrobin and Dimoxystrobin.**

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### **Azoles in soil, vegetation and water - Purpose and Scope**

Azoles are not ionic and are soluble in many organic solvents. Several of them are volatile enough for gas chromatography, but in this laboratory, LC-MS/MS has been used for azole analysis. The limits of detection for the azoles are 1 ppb for limit of detection and 5 ppb for limit of quantitation.

### **Azoles in soil, vegetation and water - References**

Analytical Methods for Pesticides and Plant Growth Regulators. (G. Zweig, ed.) Vol.X, pp. 347 19.1.2.2 Klein and Alder. JAOAC. 86(5): 1015-37 (2003). 19.1.2.3 Ramsteiner et al. JAOAC. 57(1): 192-201 (1974).

### **Azoles in soil, vegetation and water - Basic Principles**

Azole soil, vegetation, and water samples can be extracted in aqueous methanol, filtered and prepared for LC-MS/MS analysis.

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### **Neonicotinoids in soil, water and vegetation - Purpose and Scope**

Neonicotinoids are a class of neuro-active insecticides chemically similar to nicotine. The limits of detection for the neonicotinoids are 1 ppb for limit of detection and 5 ppb for limit of quantitation.

### **Neonicotinoids in soil, water and vegetation - References**

J. Klein and L. Alder, JAOACI 86(5): 101501037 (2003)

### **Neonicotinoids in soil, water and vegetation - Basic Principles**

Neonicotinoids are fairly polar and are extracted with aqueous acetonitrile, filtered and prepared for LC-MS/MS analysis.

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**Reviewed and approved by Regina Wixon, Ph.D.**