

# **SWAG Final Report**

## **Surface Water Assessment Grant (SWAG)**

Appendix C

Doc Type: Grant Application

**Instructions on Page 4** 

| Gra   | ntee information                    |   |   |   |
|-------|-------------------------------------|---|---|---|
| 3ran  | tee name: Lac qui Parle-Yellow B    | ank Watershed Dis                       | strict Contact name: Mary   | Homan   |
| Conta | act phone number: 320-598-3319      |   | Grant award: \$101  | ,916.37   |
| Conta | act email: mary.homan@lqpco.co      | om                                      |   |   |
| Proje | ct title: Lac qui Parle/Minnesota F | River Headwaters N                      | Monitoring  |   |
| •     |                                     | mm/dd/yyyy): 3/16/2                     |   | te (mm/dd/yyyy): 3/15/2017  |
| торо  | rung umo ponou.                     | , aa, yyyy). <u>0, 10, 2</u>            |   |   |
| Sec   | tion I - Workplan                   |   |   |   |
| 1.    | •                                   | s submitted to the                      | Minnesota Pollution Control A                                     | Agency (MPCA) by the due dates listed   |
|       | Quality Assurance Project Plan      | Yes □ No                                | Date submitted (mm/dd/yyyy):                                      | 5/4/2015  |
|       | Field and Laboratory Data           | Yes □ No                                | Date submitted (mm/dd/yyyy):                                      | 10/4/2016   |
|       | Stream Photos (If applicable)       |   | Date submitted (mm/dd/yyyy):                                      | 9/16/2016   |
|       | Interim Progress Report             | Yes □ No                                | Date submitted (mm/dd/yyyy):                                      | 12/24/2015  |
| 2.    |                                     | ne number of sche                       |   | ourse of the entire grant period.<br>and indicate the number of samples   |
|       | conditions (i.e. drought or low     | flow, upstream co<br>on, sampling error | onstruction, high waterfowl act<br>s, or flagged laboratory sampl | vents, noteworthy or adverse site ivity, beaver impoundments, or feedlot es (holding time or temperature last column and hit tab. |
|       | Table 1. Monitoring summar          | у                                       |   |   |

| Site ID# | Scheduled Sampling     |     | Actual Sampling       |     | Comments                                       |
|----------|------------------------|-----|-----------------------|-----|--|
|          | Parameter              | No. | Parameter             | No. |  |
| S008-463 | <b>2015</b> : DO, pH,  |     | <b>2015</b> : DO, pH, |     |  |
|          | temperature,           |     | temperature,          |     |  |
|          | conductivity, Physical |     | conductivity,         |     |  |
|          | Appearance,            |     | Physical Appearance,  |     |  |
|          | Recreational           |     | Recreational          |     |  |
|          | Suitability, Secchi    |     | Suitability, Secchi   |     |  |
|          | tube, TSVS, TSS,       |     | tube, TSVS, TSS,      |     |  |
|          | Total P, Ammonia-N,    |     | Total P, Ammonia-N,   |     |  |
|          | TKN, NO2+NO3,          |     | TKN, NO2+NO3,         |     |  |
|          | Sulfate, Chloride,     |     | Sulfate, Chloride,    |     | No sample blank was taken in July              |
|          | Hardness as CaCO3,     | 12  | Hardness as CaCO3,    | 11  | July 9 field meter did not record DO or pH     |
|          | E.coli                 | 10  | E.coli                | 10  |  |
|          | <b>2016:</b> DO, pH,   |     | <b>2016</b> : DO, pH, |     |  |
|          | temperature,           |     | temperature,          |     |  |
|          | Conductivity,          |     | Conductivity,         |     |  |
|          | Physical Appearance,   |     | Physical Appearance,  |     |  |
|          | Recreational           |     | Recreational          |     |  |
|          | Suitability, Secchi    | 7   | Suitability, Secchi   | 7   | Mid July field parameters taken to make-up for |
|          | tube,                  |     | tube,                 |     | missing samples in 2015                        |
|          | E. coli                | 6   | E. coli               | 6   |  |
| S008-461 | <b>2015</b> : DO, pH,  |     | <b>2015</b> : DO, pH, |     |  |

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|          | 1  |    |                                  |    |  |
|----------|--|----|----------------------------------|----|--|
|          | temperature,                                 |    | temperature,                     |    |  |
|          | conductivity, Physical                       |    | conductivity,                    |    |  |
|          | Appearance,                                  |    | Physical Appearance,             |    |  |
|          | Recreational                                 |    | Recreational                     |    |  |
|          | Suitability, Secchi                          |    | Suitability, Secchi              |    |  |
|          | tube, TSVS, TSS,                             |    | tube, TSVS, TSS,                 |    |  |
|          | Total P, Ammonia-N,                          |    | Total P, Ammonia-N,              |    |  |
|          | TKN, NO2+NO3,                                |    | TKN, NO2+NO3,                    |    |  |
|          | Sulfate, Chloride,                           |    | Sulfate, Chloride,               |    |  |
|          | Hardness as CaCO3,                           | 11 | Hardness as CaCO3,               | 11 | July 9 field meter did not record DO or pH   |
|          | E.coli                                       | 10 | E.coli                           | 10 | ,  |
|          | <b>2016</b> : DO, pH,                        |    | <b>2016</b> : DO, pH,            |    |  |
|          | temperature,                                 |    | temperature,                     |    |  |
|          | Conductivity,                                |    | Conductivity,                    |    |  |
|          | Physical Appearance,                         |    | Physical Appearance,             |    |  |
|          | Recreational                                 |    | Recreational                     |    |  |
|          | Suitability, Secchi                          | 7  | Suitability, Secchi              | 7  | Mid July field parameters taken to make up for   |
|          | · · · · · · · · · · · · · · · · · · ·        | '  | tube,                            | ′  | missing samples in 2015  |
|          | tube,  | 6  | ,                                | 6  | I IIII SAIII B SAIII AND S |
| 5000 463 | E. coli                                      | 6  | E. coli                          | O  |  |
| S008-462 | <b>2015</b> : DO, pH,                        |    | <b>2015</b> : DO, pH,            |    |  |
|          | temperature,                                 |    | temperature,                     |    |  |
|          | conductivity, Physical                       |    | conductivity,                    |    |  |
|          | Appearance,                                  |    | Physical Appearance,             |    |  |
|          | Recreational                                 |    | Recreational                     |    |  |
|          | Suitability, Secchi                          |    | Suitability, Secchi              |    |  |
|          | tube, TSVS, TSS,                             |    | tube, TSVS, TSS,                 |    |  |
|          | Total P, Ammonia-N,                          |    | Total P, Ammonia-N,              |    |  |
|          | TKN, NO2+NO3,                                |    | TKN, NO2+NO3,                    |    |  |
|          | Sulfate, Chloride,                           |    | Sulfate, Chloride,               |    |  |
|          | Hardness as CaCO3,                           | 11 | Hardness as CaCO3,               | 11 | July 9 field meter did not record DO or pH   |
|          | E.coli                                       | 10 | E.coli                           | 10 |  |
|          | <b>2016</b> : DO, pH,                        |    | <b>2016</b> : DO, pH,            |    |  |
|          | temperature,                                 |    | temperature,                     |    |  |
|          | Conductivity,                                |    | Conductivity,                    |    |  |
|          | Physical Appearance,                         |    | Physical Appearance,             |    |  |
|          | Recreational                                 |    | Recreational                     |    |  |
|          | Suitability, Secchi                          | 7  | Suitability, Secchi              | 7  | Mid July field parameters taken to make up for   |
|          | tube,  |    | tube,                            |    | missing samples in 2015  |
|          | E. coli                                      | 6  | E. coli                          | 6  |  |
| S008-468 | <b>2015</b> : DO, pH,                        |    | <b>2015</b> : DO, pH,            |    |  |
|          | temperature,                                 |    | temperature,                     |    |  |
|          | conductivity, Physical                       |    | conductivity,                    |    |  |
|          | Appearance,                                  |    | Physical Appearance,             |    |  |
|          | Recreational                                 |    | Recreational                     |    |  |
|          | Suitability, Secchi                          |    | Suitability, Secchi              |    |  |
|          | tube, TSVS, TSS,                             |    | tube, TSVS, TSS,                 |    |  |
|          | Total P, Ammonia-N,                          |    | Total P, Ammonia-N,              |    |  |
|          | TKN, NO2+NO3,                                |    | TKN, NO2+NO3,                    |    |  |
|          | Sulfate, Chloride,                           |    | Sulfate, Chloride,               |    |  |
|          | Hardness as CaCO3,                           | 11 | Hardness as CaCO3,               | 11 | July 9 field meter did not record DO or pH   |
|          | E.coli                                       | 10 | E.coli                           | 10 | sary 5 held frieter did not record 50 or pri   |
|          | <b>2016</b> : DO, pH,                        |    | <b>2016</b> : DO, pH,            | -0 |  |
|          | temperature,                                 |    | temperature,                     |    |  |
|          | Conductivity,                                |    | Conductivity,                    |    |  |
|          | Physical Appearance,                         |    | Physical Appearance,             |    |  |
|          | Recreational                                 |    | Recreational                     |    |  |
|          |  | -  |                                  | 7  | Mid July field parameters taken to make up for   |
|          | Suitability, Secchi                          | 7  | Suitability, Secchi              | ′  | Mid July field parameters taken to make up for   |
|          | tube,  | 6  | tube,                            | 6  | missing samples in 2015  |
| 5009 464 | E. coli                                      | 6  | E. coli                          | U  |  |
| S008-464 | <b>2015</b> : DO, pH,                        |    | <b>2015</b> : DO, pH,            |    |  |
|          | temperature,                                 |    | temperature,                     |    |  |
| i        | conductivity, Physical                       |    | conductivity,                    |    |  |
|          | A nn a a ra :                                |    |                                  |    |  |
|          | Appearance,                                  |    | Physical Appearance,             |    |  |
|          | Appearance, Recreational Suitability, Secchi |    | Recreational Suitability, Secchi |    |  |

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|          | tole TOVE TEE   |          | tule TOVE TEE  |          |  |
|----------|---|----------|--|----------|--|
|          | tube, TSVS, TSS,  |          | tube, TSVS, TSS,   |          |  |
|          | Total P, Ammonia-N,   |          | Total P, Ammonia-N,  |          |  |
|          | TKN, NO2+NO3,   |          | TKN, NO2+NO3,  |          |  |
|          | Sulfate, Chloride,  |          | Sulfate, Chloride,   |          |  |
|          | Hardness as CaCO3,  | 11       | Hardness as CaCO3,   | 11       | July 9 field meter did not record DO or pH     |
|          | E.coli  | 10       | E.coli   | 10       |  |
|          | <b>2016:</b> DO, pH,  |          | <b>2016</b> : DO, pH,  |          |  |
|          | temperature,  |          | temperature,   |          |  |
|          | Conductivity,   |          | Conductivity,  |          |  |
|          | Physical Appearance,  |          | Physical Appearance,   |          |  |
|          | Recreational  |          | Recreational   |          |  |
|          | Suitability, Secchi   | 7        | Suitability, Secchi  | 7        | Mid July field parameters taken to make up for |
|          | · ·   | '        | tube,  | <b>'</b> |  |
|          | tube,   |          | E. coli  | 6        | missing samples in 2015                        |
| 5002.005 | E. coli   | 6        |  | O        |  |
| S003-086 | <b>2015</b> : DO, pH,   |          | <b>2015</b> : DO, pH,  |          |  |
|          | temperature,  |          | temperature,   |          |  |
|          | conductivity, Physical  |          | conductivity,  |          |  |
|          | Appearance,   |          | Physical Appearance,   |          |  |
|          | Recreational  |          | Recreational   |          |  |
|          | Suitability, Secchi   |          | Suitability, Secchi  |          |  |
|          | tube, TSVS, TSS,  |          | tube, TSVS, TSS,   |          |  |
|          | Total P, Ammonia-N,   |          | Total P, Ammonia-N,  |          |  |
|          | TKN, NO2+NO3,   |          | TKN, NO2+NO3,  |          |  |
|          | Sulfate, Chloride,  |          | Sulfate, Chloride,   |          |  |
|          | Hardness as CaCO3,  | 11       | Hardness as CaCO3,   | 11       | July 9 field meter did not record DO or pH     |
|          | E.coli  | 10       | E.coli   | 10       | Tally 5 held meter did not record 50 or pri    |
|          |   | 10       |  | 10       |  |
|          | <b>2016:</b> DO, pH,  |          | <b>2016:</b> DO, pH,   |          |  |
|          | temperature,  |          | temperature,   |          |  |
|          | Conductivity,   |          | Conductivity,  |          |  |
|          | Physical Appearance,  |          | Physical Appearance,   |          |  |
|          | Recreational  |          | Recreational   |          |  |
|          | Suitability, Secchi   | 7        | Suitability, Secchi  | 7        | Mid July field parameters taken to make up for |
|          | tube,   |          | tube,  |          | missing samples in 2015                        |
|          | E. coli   | 6        | E. coli  | 6        |  |
| 5003 000 |   |          |  |          |  |
| S003-088 | <b>2015</b> : DO, pH,   |          | <b>2015</b> : DO, pH,  |          |  |
| 3003-088 | 2015: DO, pH, temperature,  |          | <b>2015</b> : DO, pH, temperature,   |          |  |
| 5003-088 | temperature,  |          | temperature,   |          |  |
| 3003-088 | temperature,<br>conductivity, Physical  |          | temperature, conductivity,   |          |  |
| 3003-088 | temperature,<br>conductivity, Physical<br>Appearance,   |          | temperature,<br>conductivity,<br>Physical Appearance,  |          |  |
| 3003-088 | temperature,<br>conductivity, Physical<br>Appearance,<br>Recreational   |          | temperature,<br>conductivity,<br>Physical Appearance,<br>Recreational  |          |  |
| 3003-088 | temperature,<br>conductivity, Physical<br>Appearance,<br>Recreational<br>Suitability, Secchi  |          | temperature,<br>conductivity,<br>Physical Appearance,<br>Recreational<br>Suitability, Secchi   |          |  |
| 3003-088 | temperature,<br>conductivity, Physical<br>Appearance,<br>Recreational<br>Suitability, Secchi<br>tube, TSVS, TSS,  |          | temperature,<br>conductivity,<br>Physical Appearance,<br>Recreational<br>Suitability, Secchi<br>tube, TSVS, TSS,   |          |  |
| 3003-088 | temperature,<br>conductivity, Physical<br>Appearance,<br>Recreational<br>Suitability, Secchi<br>tube, TSVS, TSS,<br>Total P, Ammonia-N,   |          | temperature,<br>conductivity,<br>Physical Appearance,<br>Recreational<br>Suitability, Secchi<br>tube, TSVS, TSS,<br>Total P, Ammonia-N,  |          |  |
| 3003-088 | temperature,<br>conductivity, Physical<br>Appearance,<br>Recreational<br>Suitability, Secchi<br>tube, TSVS, TSS,<br>Total P, Ammonia-N,<br>TKN, NO2+NO3,  |          | temperature,<br>conductivity,<br>Physical Appearance,<br>Recreational<br>Suitability, Secchi<br>tube, TSVS, TSS,<br>Total P, Ammonia-N,<br>TKN, NO2+NO3,   |          |  |
| 3003-088 | temperature,<br>conductivity, Physical<br>Appearance,<br>Recreational<br>Suitability, Secchi<br>tube, TSVS, TSS,<br>Total P, Ammonia-N,<br>TKN, NO2+NO3,<br>Sulfate, Chloride,  |          | temperature,<br>conductivity,<br>Physical Appearance,<br>Recreational<br>Suitability, Secchi<br>tube, TSVS, TSS,<br>Total P, Ammonia-N,<br>TKN, NO2+NO3,<br>Sulfate, Chloride,   |          |  |
| 3003-088 | temperature,<br>conductivity, Physical<br>Appearance,<br>Recreational<br>Suitability, Secchi<br>tube, TSVS, TSS,<br>Total P, Ammonia-N,<br>TKN, NO2+NO3,<br>Sulfate, Chloride,<br>Hardness as CaCO3,  | 11       | temperature,<br>conductivity,<br>Physical Appearance,<br>Recreational<br>Suitability, Secchi<br>tube, TSVS, TSS,<br>Total P, Ammonia-N,<br>TKN, NO2+NO3,<br>Sulfate, Chloride,<br>Hardness as CaCO3,   | 11       | July 9 field meter did not record DO or pH     |
| 3003-088 | temperature,<br>conductivity, Physical<br>Appearance,<br>Recreational<br>Suitability, Secchi<br>tube, TSVS, TSS,<br>Total P, Ammonia-N,<br>TKN, NO2+NO3,<br>Sulfate, Chloride,<br>Hardness as CaCO3,<br>E.coli  | 11<br>10 | temperature,<br>conductivity,<br>Physical Appearance,<br>Recreational<br>Suitability, Secchi<br>tube, TSVS, TSS,<br>Total P, Ammonia-N,<br>TKN, NO2+NO3,<br>Sulfate, Chloride,<br>Hardness as CaCO3,<br>E.coli   | 11<br>10 | July 9 field meter did not record DO or pH     |
| 3003-088 | temperature,<br>conductivity, Physical<br>Appearance,<br>Recreational<br>Suitability, Secchi<br>tube, TSVS, TSS,<br>Total P, Ammonia-N,<br>TKN, NO2+NO3,<br>Sulfate, Chloride,<br>Hardness as CaCO3,  |          | temperature,<br>conductivity,<br>Physical Appearance,<br>Recreational<br>Suitability, Secchi<br>tube, TSVS, TSS,<br>Total P, Ammonia-N,<br>TKN, NO2+NO3,<br>Sulfate, Chloride,<br>Hardness as CaCO3,   |          | July 9 field meter did not record DO or pH     |
| 3003-088 | temperature,<br>conductivity, Physical<br>Appearance,<br>Recreational<br>Suitability, Secchi<br>tube, TSVS, TSS,<br>Total P, Ammonia-N,<br>TKN, NO2+NO3,<br>Sulfate, Chloride,<br>Hardness as CaCO3,<br>E.coli  |          | temperature,<br>conductivity,<br>Physical Appearance,<br>Recreational<br>Suitability, Secchi<br>tube, TSVS, TSS,<br>Total P, Ammonia-N,<br>TKN, NO2+NO3,<br>Sulfate, Chloride,<br>Hardness as CaCO3,<br>E.coli   |          | July 9 field meter did not record DO or pH     |
| 3003-088 | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH,  |          | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH,   |          | July 9 field meter did not record DO or pH     |
| 3003-088 | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature,   |          | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature,  |          | July 9 field meter did not record DO or pH     |
| 3003-088 | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity,   |          | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity,  |          | July 9 field meter did not record DO or pH     |
| 3003-088 | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational   | 10       | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational  |          |  |
| 3003-088 | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi   |          | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi  | 10       | Mid July field parameters taken to make up for |
| 3003-088 | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube,   | 7        | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube,  | 7        |  |
|          | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli   | 10       | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli  | 10       | Mid July field parameters taken to make up for |
| S003-088 | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH,   | 7        | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH,  | 7        | Mid July field parameters taken to make up for |
|          | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature,  | 7        | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature,   | 7        | Mid July field parameters taken to make up for |
|          | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical   | 7        | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity,   | 7        | Mid July field parameters taken to make up for |
|          | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical Appearance,   | 7        | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical Appearance, Recreational   | 7        | Mid July field parameters taken to make up for |
|          | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical Appearance, Recreational  | 7        | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical Appearance, Recreational   | 7        | Mid July field parameters taken to make up for |
|          | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical Appearance,   | 7        | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical Appearance, Recreational   | 7        | Mid July field parameters taken to make up for |
|          | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical Appearance, Recreational  | 7        | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical Appearance, Recreational   | 7        | Mid July field parameters taken to make up for |
|          | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi Appearance, Recreational Suitability, Secchi       | 7        | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi  | 7        | Mid July field parameters taken to make up for |
|          | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS,                                   | 7        | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS,                                   | 7        | Mid July field parameters taken to make up for |
|          | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, | 7        | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, | 7        | Mid July field parameters taken to make up for |
|          | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N,               | 7        | temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 2015: DO, pH, temperature, conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N,               | 7        | Mid July field parameters taken to make up for |

|          | E coli                                  | 10 | E coli                | 10 |  |
|----------|---|----|-----------------------|----|--|
|          | E.coli                                  | 10 | E.coli                | 10 |  |
|          | <b>2016</b> : DO, pH,                   |    | <b>2016</b> : DO, pH, |    |  |
|          | temperature,                            |    | temperature,          |    |  |
|          | Conductivity,                           |    | Conductivity,         |    |  |
|          | Physical Appearance,                    |    | Physical Appearance,  |    |  |
|          | Recreational                            |    | Recreational          |    |  |
|          | Suitability, Secchi                     | 7  | Suitability, Secchi   | 7  | Mid July field parameters taken to make up for |
|          | tube,                                   |    | tube,                 |    | missing samples in 2015                        |
|          | E. coli                                 | 6  | E. coli               | 6  |  |
| S003-085 | <b>2015</b> : DO, pH,                   |    | <b>2015</b> : DO, pH, |    |  |
|          | temperature,                            |    | temperature,          |    |  |
|          | conductivity, Physical                  |    | conductivity,         |    |  |
|          | Appearance,                             |    | Physical Appearance,  |    |  |
|          | Recreational                            |    | Recreational          |    |  |
|          |   |    |                       |    |  |
|          | Suitability, Secchi                     |    | Suitability, Secchi   |    |  |
|          | tube, TSVS, TSS,                        |    | tube, TSVS, TSS,      |    |  |
|          | Total P, Ammonia-N,                     |    | Total P, Ammonia-N,   |    |  |
|          | TKN, NO2+NO3,                           |    | TKN, NO2+NO3,         |    |  |
|          | Sulfate, Chloride,                      |    | Sulfate, Chloride,    |    |  |
|          | Hardness as CaCO3,                      | 11 | Hardness as CaCO3,    | 11 | July 9 field meter did not record DO or pH     |
|          | E.coli                                  | 10 | E.coli                | 10 | ·  |
|          | <b>2016</b> : DO, pH,                   |    | <b>2016</b> : DO, pH, |    |  |
|          | temperature,                            |    | temperature,          |    |  |
|          | Conductivity,                           |    | Conductivity,         |    |  |
|          | • |    | ,,                    |    |  |
|          | Physical Appearance,                    |    | Physical Appearance,  |    |  |
|          | Recreational                            | _  | Recreational          | _  |  |
|          | Suitability, Secchi                     | 7  | Suitability, Secchi   | 7  | Mid July field parameters taken to make up for |
|          | tube,                                   |    | tube,                 |    | missing samples in 2015                        |
|          | E. coli                                 | 6  | E. coli               | 6  |  |
| S004-552 | <b>2015</b> : DO, pH,                   |    | <b>2015</b> : DO, pH, |    |  |
|          | temperature,                            |    | temperature,          |    |  |
|          | conductivity, Physical                  |    | conductivity,         |    |  |
|          | Appearance,                             |    | Physical Appearance,  |    |  |
|          | Recreational                            |    | Recreational          |    |  |
|          | Suitability, Secchi                     |    | Suitability, Secchi   |    |  |
|          | tube, TSVS, TSS,                        |    | tube, TSVS, TSS,      |    |  |
|          |   |    |                       |    |  |
|          | Total P, Ammonia-N,                     |    | Total P, Ammonia-N,   |    |  |
|          | TKN, NO2+NO3,                           |    | TKN, NO2+NO3,         |    |  |
|          | Sulfate, Chloride,                      |    | Sulfate, Chloride,    |    |  |
|          | Hardness as CaCO3,                      | 11 | Hardness as CaCO3,    | 11 | July 9 field meter did not record DO or pH     |
|          | E.coli                                  | 10 | E.coli                | 10 |  |
|          | <b>2016</b> : DO, pH,                   |    | <b>2016</b> : DO, pH, |    |  |
|          | temperature,                            |    | temperature,          |    |  |
|          | Conductivity,                           |    | Conductivity,         |    |  |
|          | Physical Appearance,                    |    | Physical Appearance,  |    |  |
|          | Recreational                            |    | Recreational          |    |  |
|          | Suitability, Secchi                     | 7  | Suitability, Secchi   | 7  | Mid July field parameters taken to make up for |
|          | · · · · · · · · · · · · · · · · · · ·   | '  |                       | ,  | missing samples in 2015                        |
|          | tube,                                   | _  | tube,                 | 6  | ווויסיוון אמווואובי ווו 2017                   |
| 5000 455 | E. coli                                 | 6  | E. coli               | U  |  |
| S008-465 | <b>2015</b> : DO, pH,                   |    | <b>2015</b> : DO, pH, |    |  |
|          | temperature,                            |    | temperature,          |    |  |
|          | conductivity, Physical                  |    | conductivity,         |    |  |
|          | Appearance,                             |    | Physical Appearance,  |    |  |
|          | Recreational                            |    | Recreational          |    |  |
|          | Suitability, Secchi                     |    | Suitability, Secchi   |    |  |
|          | tube, TSVS, TSS,                        |    | tube, TSVS, TSS,      |    |  |
|          | Total P, Ammonia-N,                     |    | Total P, Ammonia-N,   |    | Missed one sampling event in Mid-July stream   |
|          | TKN, NO2+NO3,                           |    | TKN, NO2+NO3,         |    | appeared dormant-will sample in mid-July 2016  |
|          | Sulfate, Chloride,                      |    | Sulfate, Chloride,    |    | July 9 field meter did not record DO or pH     |
|          | Hardness as CaCO3,                      | 11 | Hardness as CaCO3,    | 10 | 1, 2 mara mater and not record 20 or pri       |
|          | E.coli                                  | 10 | E.coli                | 9  |  |
|          |   | 10 |                       | 3  |  |
|          | <b>2016</b> : DO, pH,                   |    | <b>2016</b> : DO, pH, |    |  |
|          | temperature,                            |    | temperature,          |    |  |
|          | Conductivity,                           |    | Conductivity,         |    |  |
| 1        | Physical Appearance,                    | 1  | Physical Appearance,  |    |  |

|          | Recreational                            |    | Recreational                            |          | Mid July field parameters taken to make up for                 |
|----------|---|----|---|----------|--|
|          | Suitability, Secchi                     | 7  | Suitability, Secchi                     | 7        | missing samples in 2015. Extra <i>e. coli</i> sample taken for |
|          | tube,                                   | -  | tube,                                   |          | missing 2015 sample  |
|          | E. coli                                 | 7  | E. coli                                 | 7        |  |
| S003-381 | <b>2015</b> : DO, pH,                   |    | <b>2015</b> : DO, pH,                   |          |  |
|          | temperature,                            |    | temperature,                            |          |  |
|          | conductivity, Physical                  |    | conductivity,                           |          |  |
|          | Appearance,                             |    | Physical Appearance,                    |          |  |
|          | Recreational                            |    | Recreational                            |          |  |
|          | Suitability, Secchi                     |    | Suitability, Secchi                     |          |  |
|          | tube, TSVS, TSS,                        |    | tube, TSVS, TSS,                        |          |  |
|          | Total P, Ammonia-N,                     |    | Total P, Ammonia-N,                     |          |  |
|          | TKN, NO2+NO3,                           |    | TKN, NO2+NO3,                           |          |  |
|          | Sulfate, Chloride,                      |    | Sulfate, Chloride,                      |          |  |
|          | Hardness as CaCO3,                      | 11 | Hardness as CaCO3,                      | 11       | July 9 field meter did not record DO or pH                     |
|          | E.coli                                  | 10 | E.coli                                  | 10       |  |
|          | <b>2016</b> : DO, pH,                   |    | <b>2016</b> : DO, pH,                   |          |  |
|          | temperature,                            |    | temperature,                            |          |  |
|          | Conductivity,                           |    | Conductivity,                           |          |  |
|          | Physical Appearance,                    |    | Physical Appearance,                    |          |  |
|          | Recreational                            |    | Recreational                            | l _      |  |
|          | Suitability, Secchi                     | 7  | Suitability, Secchi                     | 7        | Mid July field parameters taken to make up for                 |
|          | tube,                                   |    | tube,                                   | _        | missing samples in 2015  |
| C004 FF4 | E. coli                                 | 6  | E. coli                                 | 6        |  |
| S004-554 | <b>2015</b> : DO, pH,                   |    | <b>2015</b> : DO, pH,                   |          |  |
|          | temperature,                            |    | temperature,                            |          |  |
|          | conductivity, Physical                  |    | conductivity,                           |          |  |
|          | Appearance,                             |    | Physical Appearance,                    |          |  |
|          | Recreational                            |    | Recreational                            |          |  |
|          | Suitability, Secchi                     |    | Suitability, Secchi                     |          |  |
|          | tube, TSVS, TSS,<br>Total P, Ammonia-N, |    | tube, TSVS, TSS,<br>Total P, Ammonia-N, |          |  |
|          | TKN, NO2+NO3,                           |    | TKN, NO2+NO3,                           |          |  |
|          | Sulfate, Chloride,                      |    | Sulfate, Chloride,                      |          |  |
|          | Hardness as CaCO3,                      | 11 | Hardness as CaCO3,                      | 11       | July 9 field meter did not record DO or pH                     |
|          | E.coli                                  | 10 | E.coli                                  | 10       | Tan, a more than more soon and a pro-                          |
|          | <b>2016</b> : DO, pH,                   |    | <b>2016</b> : DO, pH,                   |          |  |
|          | temperature,                            |    | temperature,                            |          |  |
|          | Conductivity,                           |    | Conductivity,                           |          |  |
|          | Physical Appearance,                    |    | Physical Appearance,                    |          |  |
|          | Recreational                            |    | Recreational                            |          |  |
|          | Suitability, Secchi                     | 7  | Suitability, Secchi                     | 7        | Mid July field parameters taken to make up for                 |
|          | tube,                                   |    | tube,                                   |          | missing samples in 2015  |
|          | E. coli                                 | 6  | E. coli                                 | 6        |  |
| S001-841 | <b>2015</b> : DO, pH,                   |    | <b>2015</b> : DO, pH,                   |          |  |
|          | temperature,                            |    | temperature,                            |          |  |
|          | conductivity, Physical                  |    | conductivity,                           |          |  |
|          | Appearance,                             |    | Physical Appearance,                    |          |  |
|          | Recreational                            |    | Recreational                            |          |  |
|          | Suitability, Secchi                     |    | Suitability, Secchi                     |          |  |
|          | tube, TSVS, TSS,                        |    | tube, TSVS, TSS,                        |          |  |
|          | Total P, Ammonia-N,                     |    | Total P, Ammonia-N,                     |          |  |
|          | TKN, NO2+NO3,                           |    | TKN, NO2+NO3,                           |          |  |
|          | Sulfate, Chloride,                      | 11 | Sulfate, Chloride,                      | 11       |  |
|          | Hardness as CaCO3,                      | 10 | Hardness as CaCO3,                      | 10       | July 9 field meter did not record DO or pH                     |
|          | E.coli                                  |    | E.coli                                  |          |  |
|          | <b>2016</b> : DO, pH,                   |    | <b>2016</b> : DO, pH,                   |          |  |
|          | temperature,                            |    | temperature,                            |          |  |
|          | Conductivity,                           |    | Conductivity,                           |          |  |
|          | Physical Appearance,                    |    | Physical Appearance,                    | _        |  |
|          | Recreational                            | 7  | Recreational                            | 7        |  |
|          | Suitability, Secchi                     |    | Suitability, Secchi                     | _        | Mid July field parameters taken to make up for                 |
|          | tube,                                   | 6  | tube,                                   | 6        | missing samples in 2015  |
|          | E. coli                                 |    | E. coli                                 | <u> </u> |  |

| C000 4CC | 201E, DO  |          | 201F. DO!!   | 1  |  |
|----------|---|----------|--|----|--|
| S008-466 | <b>2015</b> : DO, pH,   |          | <b>2015</b> : DO, pH,  |    |  |
|          | temperature,  |          | temperature,   |    |  |
|          | conductivity, Physical  |          | conductivity,  |    |  |
|          | Appearance,   |          | Physical Appearance,   |    |  |
|          | Recreational  |          | Recreational   |    |  |
|          | Suitability, Secchi   |          | Suitability, Secchi  |    |  |
|          | tube, TSVS, TSS,  |          | tube, TSVS, TSS,   |    |  |
|          | Total P, Ammonia-N,   |          | Total P, Ammonia-N,  |    |  |
|          | TKN, NO2+NO3,   |          | TKN, NO2+NO3,  |    |  |
|          | Sulfate, Chloride,  | 11       | Sulfate, Chloride,   | 11 |  |
|          | Hardness as CaCO3,  | 10       | Hardness as CaCO3,   | 10 | July 9 field meter did not record DO or pH     |
|          | E.coli  |          | E.coli   |    |  |
|          | <b>2016</b> : DO, pH,   |          | <b>2016:</b> DO, pH,   |    |  |
|          | temperature,  |          | temperature,   |    |  |
|          | Conductivity,   |          | Conductivity,  |    |  |
|          | Physical Appearance,  |          | Physical Appearance,   |    |  |
|          | Recreational  | 7        | Recreational   | 7  |  |
|          | Suitability, Secchi   |          | Suitability, Secchi  |    | Mid July field parameters taken to make up for |
|          | tube,   | 6        | tube,  | 6  | missing samples in 2015                        |
|          | E. coli,  |          | E. coli  |    |  |
| S000-143 | <b>2015</b> : DO, pH,   |          | <b>2015</b> : DO, pH,  |    |  |
|          | temperature,  |          | temperature,   |    |  |
|          | conductivity, Physical  |          | conductivity,  |    |  |
|          | Appearance,   |          | Physical Appearance,   |    |  |
|          | Recreational  |          | Recreational   |    |  |
|          | Suitability, Secchi   |          | Suitability, Secchi  |    |  |
|          | tube, TSVS, TSS,  |          | tube, TSVS, TSS,   |    |  |
|          | Total P, Ammonia-N,   |          | Total P, Ammonia-N,  |    |  |
|          | TKN, NO2+NO3,   |          | TKN, NO2+NO3,  |    |  |
|          | Sulfate, Chloride,  | 11       | Sulfate, Chloride,   | 11 |  |
|          | Hardness as CaCO3,  | 10       | Hardness as CaCO3,   | 10 | July 9 field meter did not record DO or pH     |
|          | E.coli, NO2+NO3,  |          | E.coli, NO2+NO3,   |    |  |
|          | TKN, Total P,   |          | TKN, Total P,  |    |  |
|          | Chlorophyll A   | 8        | Chlorophyll A  | 8  |  |
|          | corrected for   |          | corrected for  |    |  |
|          | pheophytin  |          | pheophytin   |    |  |
|          | <b>2016:</b> DO, pH,  |          | <b>2016</b> : DO, pH,  |    |  |
|          | temperature,  |          | temperature,   |    |  |
|          | Conductivity,   |          | Conductivity,  |    |  |
|          | Physical Appearance,  |          | Physical Appearance,   |    |  |
|          | Recreational  |          | Recreational   |    |  |
|          | Suitability, Secchi   |          | Suitability, Secchi  |    |  |
|          | tube,   | 7        | tube,  | 7  |  |
|          | E. coli, Pheophytin,  |          | E. coli, Pheophytin,   |    | Mid July field parameters taken to make up for |
|          | NO2+NO3, TKN,   |          | NO2+NO3, TKN,  |    | missing samples in 2015                        |
|          | Total P,  | 6        | Total P,   | 6  |  |
|          | Chlorophyll A   |          | Chlorophyll A  |    |  |
|          | corrected for   |          | corrected for  |    |  |
|          | pheophytin  |          | pheophytin   |    |  |
| S008-476 | <b>2015</b> : DO, pH,   |          | <b>2015</b> : DO, pH,  |    |  |
| 3000 470 | temperature,  |          | temperature,   |    |  |
|          | conductivity, Physical  |          | conductivity,  |    |  |
|          | Appearance,   |          | Physical Appearance,   |    |  |
|          | Recreational  |          | Recreational   |    |  |
|          | Suitability, Secchi   |          | Suitability, Secchi  |    |  |
|          | tube, TSVS, TSS,  |          | tube, TSVS, TSS,   |    |  |
|          |   |          |  |    |  |
|          | Total P, Ammonia-N,   |          | Total P, Ammonia-N,  |    |  |
|          | T TRNI NICO I NICO  | I        | TKN, NO2+NO3,  | 11 |  |
|          | TKN, NO2+NO3,   | 11       | Cultata Chlarida   |    |  |
|          | Sulfate, Chloride,  | 11       | Sulfate, Chloride,   |    | July 0 field motor did not record DO as all    |
|          | Sulfate, Chloride,<br>Hardness as CaCO3,  | 11<br>10 | Hardness as CaCO3,   | 10 | July 9 field meter did not record DO or pH     |
|          | Sulfate, Chloride,<br>Hardness as CaCO3,<br><i>E.coli</i>                             |          | Hardness as CaCO3,<br>E.coli   |    | July 9 field meter did not record DO or pH     |
|          | Sulfate, Chloride,<br>Hardness as CaCO3,<br><i>E.coli</i><br><b>2016:</b> DO, pH,     |          | Hardness as CaCO3,<br>E.coli<br><b>2016</b> : DO, pH,                |    | July 9 field meter did not record DO or pH     |
|          | Sulfate, Chloride, Hardness as CaCO3, <i>E.coli</i> <b>2016:</b> DO, pH, temperature, |          | Hardness as CaCO3,<br>E.coli<br><b>2016:</b> DO, pH,<br>temperature, |    | July 9 field meter did not record DO or pH     |
|          | Sulfate, Chloride,<br>Hardness as CaCO3,<br><i>E.coli</i><br><b>2016:</b> DO, pH,     |          | Hardness as CaCO3,<br>E.coli<br><b>2016</b> : DO, pH,                |    | July 9 field meter did not record DO or pH     |

|          | Recreational                            | 7   | Recreational                      | 7  |  |
|----------|---|-----|-----------------------------------|----|--|
|          | Suitability, Secchi                     |     | Suitability, Secchi               |    | Mid July field parameters taken to make up for                         |
|          | tube,                                   | 6   | tube,                             | 6  | missing samples in 2015  |
|          | E. coli                                 |     | E. coli                           |    |  |
| S008-473 | <b>2015</b> : DO, pH,                   |     | <b>2015</b> : DO, pH,             |    |  |
|          | temperature,                            |     | temperature,                      |    |  |
|          | conductivity, Physical                  |     | conductivity,                     |    |  |
|          | Appearance,                             |     | Physical Appearance,              |    |  |
|          | Recreational                            |     | Recreational                      |    |  |
|          | Suitability, Secchi                     |     | Suitability, Secchi               |    |  |
|          | tube, TSVS, TSS,                        |     | tube, TSVS, TSS,                  |    |  |
|          | Total P, Ammonia-N,                     |     | Total P, Ammonia-N,               |    |  |
|          | TKN, NO2+NO3,                           |     | TKN, NO2+NO3,                     |    |  |
|          | Sulfate, Chloride,                      | 11  | Sulfate, Chloride,                | 11 | E. coli sample bottle leaked out contents in cooler on                 |
|          | Hardness as CaCO3,                      | 10  | Hardness as CaCO3,                | 10 | July 22, 2015. Will collect sample in July, 2016.                      |
|          | E.coli                                  | 10  | E.coli                            | 9  | July 9 field meter did not record DO or pH                             |
|          | <b>2016:</b> DO, pH,                    |     | <b>2016</b> : DO, pH,             |    |  |
|          | temperature, Conductivity,              |     | temperature, Conductivity,        |    |  |
|          | Physical Appearance,                    |     | Physical Appearance,              |    | Mid July field parameters taken to make up for                         |
|          | Recreational                            |     | Recreational                      |    | missing samples in 2015. Extra <i>e. coli</i> sample taken for         |
|          | Suitability, Secchi                     | 7   | Suitability, Secchi               | 7  | missing 2015 sample  |
|          | tube,                                   | ′   | tube,                             | ′  | Thissing 2013 sample   |
|          | E. coli                                 | 7   | E. coli                           | 7  |  |
| S000-158 | <b>2015</b> : DO, pH,                   |     | <b>2015</b> : DO, pH,             |    |  |
| 3000 130 | temperature,                            |     | temperature,                      |    |  |
|          | conductivity, Physical                  |     | conductivity,                     |    |  |
|          | Appearance,                             |     | Physical Appearance,              |    |  |
|          | Recreational                            |     | Recreational                      |    |  |
|          | Suitability, Secchi                     |     | Suitability, Secchi               |    |  |
|          | tube, TSVS, TSS,                        |     | tube, TSVS, TSS,                  |    |  |
|          | Total P, Ammonia-N,                     |     | Total P, Ammonia-N,               |    |  |
|          | TKN, NO2+NO3,                           |     | TKN, NO2+NO3,                     |    |  |
|          | Sulfate, Chloride,                      |     | Sulfate, Chloride,                |    |  |
|          | Hardness as CaCO3,                      | 11  | Hardness as CaCO3,                | 11 | July 9 field meter did not record DO or pH                             |
|          | E.coli                                  | 10  | E.coli                            | 10 |  |
|          | <b>2016</b> : DO, pH,                   |     | <b>2016:</b> DO, pH,              |    |  |
|          | temperature,                            |     | temperature,                      |    |  |
|          | Conductivity,                           |     | Conductivity,                     |    |  |
|          | Physical Appearance,                    |     | Physical Appearance,              |    |  |
|          | Recreational                            | l _ | Recreational                      |    |  |
|          | Suitability, Secchi                     | 7   | Suitability, Secchi               | 7  | Mid July field parameters taken to make up for                         |
|          | tube,                                   |     | tube,                             |    | missing samples in 2015  |
|          | E. coli                                 | 6   | E. coli                           | 6  |  |
| S003-090 | <b>2015</b> : DO, pH,                   |     | <b>2015</b> : DO, pH,             |    |  |
|          | temperature,                            |     | temperature,                      |    |  |
|          | conductivity, Physical                  |     | conductivity,                     |    |  |
|          | Appearance, Recreational                |     | Physical Appearance, Recreational |    |  |
|          | Suitability, Secchi                     |     | Suitability, Secchi               |    |  |
|          | tube, TSVS, TSS,                        |     | tube, TSVS, TSS,                  |    |  |
|          | Total P, Ammonia-N,                     |     | Total P, Ammonia-N,               |    |  |
|          | TKN, NO2+NO3,                           |     | TKN, NO2+NO3,                     |    |  |
|          | Sulfate, Chloride,                      |     | Sulfate, Chloride,                |    |  |
|          | Hardness as CaCO3,                      | 11  | Hardness as CaCO3,                | 11 | July 9 field meter did not record DO or pH                             |
|          | E.coli                                  | 10  | E.coli                            | 10 | ,                                |
|          | <b>2016</b> : DO, pH,                   | -   | <b>2016</b> : DO, pH,             |    |  |
|          | temperature,                            |     | temperature,                      |    |  |
|          | Conductivity,                           |     | Conductivity,                     |    |  |
|          | Conductivity,                           | 1   |                                   | Ì  | 1  |
|          | • |     | Physical Appearance.              |    |  |
|          | Physical Appearance, Recreational       |     | Physical Appearance, Recreational |    |  |
|          | Physical Appearance,                    | 7   |                                   | 7  | Mid July field parameters taken to make up for                         |
|          | Physical Appearance,<br>Recreational    | 7   | Recreational                      | 7  | Mid July field parameters taken to make up for missing samples in 2015 |

| 5000 460 | 201F, DO!!                          |    | 201F: DO :=!!                     |    |  |
|----------|-------------------------------------|----|-----------------------------------|----|--|
| S008-469 | <b>2015</b> : DO, pH,               |    | <b>2015</b> : DO, pH,             |    |  |
|          | temperature, conductivity, Physical |    | temperature, conductivity,        |    |  |
|          |                                     |    | · ·                               |    |  |
|          | Appearance, Recreational            |    | Physical Appearance, Recreational |    |  |
|          | Suitability, Secchi                 |    | Suitability, Secchi               |    |  |
|          | tube, TSVS, TSS,                    |    | tube, TSVS, TSS,                  |    |  |
|          | Total P, Ammonia-N,                 |    | Total P, Ammonia-N,               |    |  |
|          | TKN, NO2+NO3,                       |    | TKN, NO2+NO3,                     |    |  |
|          | Sulfate, Chloride,                  | 11 | Sulfate, Chloride,                | 11 |  |
|          | Hardness as CaCO3,                  | 10 | Hardness as CaCO3,                | 10 | July 9 field meter did not record DO or pH                     |
|          | E.coli, NO2+NO3,                    | 10 | E.coli, NO2+NO3,                  | 10 | July 3 held meter did not record bo or pri                     |
|          | TKN, Total P,                       |    | TKN, Total P,                     |    |  |
|          | Chlorophyll A                       | 8  | Chlorophyll A                     | 8  |  |
|          | corrected for                       | Ü  | corrected for                     |    |  |
|          | pheophytin                          |    | pheophytin                        |    |  |
|          | <b>2016:</b> DO, pH,                |    | <b>2016</b> : DO, pH,             |    |  |
|          | temperature,                        |    | temperature,                      |    |  |
|          | Conductivity,                       |    | Conductivity,                     |    |  |
|          | Physical Appearance,                |    | Physical Appearance,              |    |  |
|          | Recreational                        |    | Recreational                      |    | Field Blank taken on July 6, 2016                              |
|          | Suitability, Secchi                 |    | Suitability, Secchi               |    |  |
|          | tube,                               | 7  | tube,                             | 7  |  |
|          | E. coli, Pheophytin,                |    | E. coli, Pheophytin,              |    | Mid July field parameters taken to make up for                 |
|          | NO2+NO3, TKN,                       |    | NO2+NO3, TKN,                     |    | missing samples in 2015  |
|          | Total P,                            | 6  | Total P,                          | 6  |  |
|          | Chlorophyll A                       |    | Chlorophyll A                     |    |  |
|          | corrected for                       |    | corrected for                     |    |  |
|          | pheophytin                          |    | pheophytin                        |    |  |
| S008-472 | <b>2015</b> : DO, pH,               |    | <b>2015</b> : DO, pH,             |    |  |
|          | temperature,                        |    | temperature,                      |    |  |
|          | conductivity, Physical              |    | conductivity,                     |    |  |
|          | Appearance,                         |    | Physical Appearance,              |    |  |
|          | Recreational                        |    | Recreational                      |    |  |
|          | Suitability, Secchi                 |    | Suitability, Secchi               |    |  |
|          | tube, TSVS, TSS,                    |    | tube, TSVS, TSS,                  |    |  |
|          | Total P, Ammonia-N,                 |    | Total P, Ammonia-N,               |    |  |
|          | TKN, NO2+NO3,                       |    | TKN, NO2+NO3,                     |    |  |
|          | Sulfate, Chloride,                  |    | Sulfate, Chloride,                |    |  |
|          | Hardness as CaCO3,                  | 11 | Hardness as CaCO3,                | 11 | July 9 field meter did not record DO or pH                     |
|          | E.coli                              | 10 | E.coli                            | 10 |  |
|          | <b>2016</b> : DO, pH,               |    | <b>2016</b> : DO, pH,             |    |  |
|          | temperature,                        |    | temperature,                      |    |  |
|          | Conductivity,                       |    | Conductivity,                     |    |  |
|          | Physical Appearance,                |    | Physical Appearance,              |    |  |
|          | Recreational                        |    | Recreational                      |    |  |
|          | Suitability, Secchi                 | 7  | Suitability, Secchi               | 7  | Mid July field parameters taken to make up for                 |
|          | tube,                               |    | tube,                             |    | missing samples in 2015  |
| 2000 474 | E. coli                             | 6  | E. coli                           | 6  |  |
| S008-471 | <b>2015</b> : DO, pH,               |    | <b>2015</b> : DO, pH,             |    |  |
|          | temperature,                        |    | temperature,                      |    |  |
|          | conductivity, Physical              |    | conductivity,                     |    |  |
|          | Appearance,                         |    | Physical Appearance,              |    |  |
|          | Recreational                        |    | Recreational                      |    |  |
|          | Suitability, Secchi                 |    | Suitability, Secchi               |    |  |
|          | tube, TSVS, TSS,                    |    | tube, TSVS, TSS,                  |    |  |
|          | Total P, Ammonia-N, TKN, NO2+NO3,   |    | Total P, Ammonia-N, TKN, NO2+NO3, |    | E. coli sample bottle leaked out contents in cooler on         |
|          | Sulfate, Chloride,                  | 11 | Sulfate, Chloride,                | 11 | July 22, 2015. Will collect sample in July, 2016.              |
|          | Hardness as CaCO3,                  | 10 | Hardness as CaCO3,                | 9  |  |
|          | E.coli                              | 10 | E.coli                            | 3  | July 9 field meter did not record DO or pH                     |
|          | <b>2016</b> : DO, pH,               |    | <b>2016</b> : DO, pH,             |    |  |
|          | temperature,                        |    | temperature,                      |    |  |
|          | Conductivity,                       |    | Conductivity,                     |    | Mid July field parameters taken to make up for                 |
|          | Physical Appearance,                |    | Physical Appearance,              |    | missing samples in 2015. Extra <i>e. coli</i> sample taken for |
| L        | i ilysical Appearance,              |    | i ilysical Appearance,            |    | missing sumples in 2015. Extra c. con sample taken for         |

|          | Recreational                           |    | Recreational                       |    | missing 2015 sample  |
|----------|--|----|------------------------------------|----|--|
|          | Suitability, Secchi                    | 7  | Suitability, Secchi                | 7  | 1111331116 2013 30111ptc   |
|          | tube,                                  | '  | tube,                              | ′  |  |
|          | E. coli                                | 7  | E. coli                            | 7  |  |
| S008-470 | <b>2015</b> : DO, pH,                  |    | <b>2015</b> : DO, pH,              | ,  |  |
|          | temperature,                           |    | temperature,                       |    |  |
|          | conductivity, Physical                 |    | conductivity,                      |    |  |
|          | Appearance,                            |    | Physical Appearance,               |    |  |
|          | Recreational                           |    | Recreational                       |    |  |
|          | Suitability, Secchi                    |    | Suitability, Secchi                |    |  |
|          | tube, TSVS, TSS,                       |    | tube, TSVS, TSS,                   |    |  |
|          | Total P, Ammonia-N,                    |    | Total P, Ammonia-N,                |    |  |
|          | TKN, NO2+NO3,                          |    | TKN, NO2+NO3,                      |    |  |
|          | Sulfate, Chloride,                     |    | Sulfate, Chloride,                 |    |  |
|          | Hardness as CaCO3,                     | 11 | Hardness as CaCO3,                 | 11 | July 9 field meter did not record DO or pH   |
|          | E.coli                                 | 10 | E.coli                             | 10 |  |
|          | <b>2016:</b> DO, pH,                   |    | <b>2016:</b> DO, pH,               |    |  |
|          | temperature,                           |    | temperature,                       |    |  |
|          | Conductivity,                          |    | Conductivity,                      |    |  |
|          | Physical Appearance,                   |    | Physical Appearance,               |    |  |
|          | Recreational                           | _  | Recreational                       | _  | Mid to be first a second state of the second |
|          | Suitability, Secchi                    | 7  | Suitability, Secchi                | 7  | Mid July field parameters taken to make up for   |
|          | tube,                                  | 6  | tube,                              | 6  | missing samples in 2015  |
| S002-881 | E. coli                                | 6  | E. coli                            | D  |  |
| 3002-881 | <b>2015</b> : DO, pH, temperature,     |    | <b>2015</b> : DO, pH, temperature, |    |  |
|          | conductivity, Physical                 |    | conductivity,                      |    |  |
|          | Appearance,                            |    | Physical Appearance,               |    |  |
|          | Recreational                           |    | Recreational                       |    |  |
|          | Suitability, Secchi                    |    | Suitability, Secchi                |    |  |
|          | tube, TSVS, TSS,                       |    | tube, TSVS, TSS,                   |    |  |
|          | Total P, Ammonia-N,                    |    | Total P, Ammonia-N,                |    |  |
|          | TKN, NO2+NO3,                          |    | TKN, NO2+NO3,                      |    |  |
|          | Sulfate, Chloride,                     |    | Sulfate, Chloride,                 |    |  |
|          | Hardness as CaCO3,                     | 11 | Hardness as CaCO3,                 | 11 | July 9 field meter did not record DO or pH   |
|          | E.coli                                 | 10 | E.coli                             | 10 |  |
|          | <b>2016:</b> DO, pH,                   |    | <b>2016</b> : DO, pH,              |    |  |
|          | temperature,                           |    | temperature,                       |    |  |
|          | Conductivity,                          |    | Conductivity,                      |    |  |
|          | Physical Appearance,                   |    | Physical Appearance,               |    |  |
|          | Recreational                           |    | Recreational                       | _  |  |
|          | Suitability, Secchi                    | 7  | Suitability, Secchi                | 7  | Mid July field parameters taken to make up for   |
|          | tube,                                  | _  | tube,                              |    | missing samples in 2015  |
| COOC 557 | E. coli                                | 6  | E. coli                            | 6  |  |
| S006-557 | <b>2015</b> : DO, pH,                  |    | <b>2015</b> : DO, pH,              |    |  |
|          | temperature,<br>conductivity, Physical |    | temperature, conductivity,         |    |  |
|          | Appearance,                            |    | Physical Appearance,               |    |  |
|          | Recreational                           |    | Recreational                       |    |  |
|          | Suitability, Secchi                    |    | Suitability, Secchi                |    |  |
|          | tube, TSVS, TSS,                       |    | tube, TSVS, TSS,                   |    |  |
|          | Total P, Ammonia-N,                    |    | Total P, Ammonia-N,                |    |  |
|          | TKN, NO2+NO3,                          |    | TKN, NO2+NO3,                      |    |  |
|          | Sulfate, Chloride,                     |    | Sulfate, Chloride,                 |    |  |
|          | Hardness as CaCO3,                     | 11 | Hardness as CaCO3,                 | 11 | July 9 field meter did not record DO or pH   |
|          | E.coli                                 | 10 | E.coli                             | 10 |  |
|          | <b>2016</b> : DO, pH,                  |    | <b>2016</b> : DO, pH,              |    |  |
|          | temperature,                           |    | temperature,                       |    |  |
|          | Conductivity,                          |    | Conductivity,                      |    |  |
|          | Physical Appearance,                   |    | Physical Appearance,               |    |  |
|          | Recreational                           |    | Recreational                       |    |  |
|          | Suitability, Secchi                    | 7  | Suitability, Secchi                | 7  | Mid July field parameters taken to make up for   |
|          | tube,                                  |    | tube,                              | _  | missing samples in 2015  |
|          | E. coli                                | 6  | E. coli                            | 6  |  |

| temperature, conductivity, Physical Appearance, Recreational Sultability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TRN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, conductivity, Physical Appearance, Recreational Sultability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TRN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, conductivity, Physical Appearance, Recreational Sultability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TRN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, conductivity, Physical Appearance, Recreational Sultability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TRN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, conductivity, Physical Appearance, Recreational Sultability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TRN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, conductivity, Physical Appearance, Recreational Sultability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TRN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, conductivity, Physical Appearance, Recreational Sultability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TRN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, conductivity, Physical Appearance, Recreational Sultability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TRN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, conductivity, Physical Appearance, Recreational Sultability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TRN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, conductivity, Physical Appearance, Recreational Sultability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TRN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, PH, temperature, conductivity, Physical Appearance, Recreational Sultability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TRN, NO2+NO3, Sulf | 5000 722       | 201F, DO   |     | 201F. DO!!                            |          |  |
|--|----------------|--|-----|---------------------------------------|----------|--|
| conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Sulfate, Chloride, Hardness as CaCO3, E.Coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NOZ-NO3, Suitability, Secchi tube, TSVS,  | S000-732       | <b>2015</b> : DO, pH,  |     | <b>2015</b> : DO, pH,                 |          |  |
| Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coil 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coil 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coil 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coil 6  S008-475 2015: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Sultability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coil 6  E.coil 6  E.coil 7  2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Sultability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coil 10  2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Sultability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coil 10  2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Sultability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coil 10  2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Sultability, Secchi tube, TSVS, TSS, TOtal P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coil 10  2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Sultability, Secchi tube, TSVS, TSS, TSS, Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coil 10  2016: DO, PH, temperature, Conductivity, Physical Appearance, Recreational Sultability, Secchi tube, TSVS, TSS, TSS, TOTAL P,  |                |  |     |                                       |          |  |
| Recreational Sustability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TRN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Sulfability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TRN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2015: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Sulfability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TRN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Sulfability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TRN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Sulfability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TRN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Sulfability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TRN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Sulfability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TRN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Sulfability, Secchi tube, TSVS, TSS, Total P, Ammonia-N, TRN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Sulfability, Secchi tube, TSVS, TSS, TSS, TSS, TSS, TSS, TSS, TS  |                |  |     | · ·                                   |          |  |
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| TRN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, 12   |                |  |     |                                       |          |  |
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| Total P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 6 06-0060-00-201 2016: P, Ammonia-N, TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 10 E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 6 2015: Total Phosphorus, Total Phosphoru |                | -  |     | •                                     |          |  |
| TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 06-0060-00-201  TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, 11 E.coli 10 E.coli 10 E.coli 10 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 6 2015: Total Phosphorus,  TKN, NO2+NO3, Sulfate, Chloride, Hardness as CaCO3, 11 July 9 field meter did not record DO or pH  10 Mid July  |                | , , ,  |     | l ' ' '                               |          |  |
| Sulfate, Chloride, Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli  06-0060-00-201  Sulfate, Chloride, Hardness as CaCO3, E. coli 10  E. coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 6  2015: Total Phosphorus,  Sulfate, Chloride, Hardness as CaCO3, 11 10  July 9 field meter did not record DO or pH  10  Mid July field parameters taken to make up for missing samples in 2015  Mid July field parameters taken to make up for missing samples in 2015  6  2015: Total Phosphorus, Phosphorus,  |                |  |     |                                       |          |  |
| Hardness as CaCO3, E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E.coli  06-0060-00-201  Hardness as CaCO3, E.coli 10  Hardness as CaCO3, E.coli 10  2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli 6  2015: Total Phosphorus,  Hardness as CaCO3, 11 10  July 9 field meter did not record DO or pH  10  Mid July field parameters taken to make up for missing samples in 2015  6  2015: Total Phosphorus, Phosphorus,   |                |  |     |                                       |          |  |
| E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli  06-0060-00-201  E.coli  10  E.coli 2016: DO, pH, temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli  6  2015: Total Phosphorus,  10  Authorized Appearance, Recreational Suitability, Secchi tube, E. coli  6  2015: Total Phosphorus,  |                |  | 11  | l '                                   | 11       | July 9 field meter did not record DO or pH     |
| temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli  06-0060-00-201  temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli  6  2015: Total Phosphorus,  temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, Suitability, Secchi tube, E. coli  6  2015: Total Phosphorus,  The physical Appearance, Recreational Suitability, Secchi tube, Suitability, Secchi tube, F. coli  6  2015: Total Phosphorus,  Formula in temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, Suitability, Secchi tube, F. coli  6  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, Suitability, Secchi tube, F. coli  6  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, Suitability, Secchi tube, F. coli  6  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, Suitability, Secchi tube, F. coli  6  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, Suitability, Secchi tube, F. coli  6  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, Suitability, Secchi tube, F. coli  6  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, Suitability, Secchi tube, F. coli  6  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, S |                | · ·  |     | ·                                     |          | '  |
| temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli  06-0060-00-201  temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli  6  2015: Total Phosphorus,  temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, Suitability, Secchi tube, E. coli  6  2015: Total Phosphorus,  The physical Appearance, Recreational Suitability, Secchi tube, Suitability, Secchi tube, F. coli  6  2015: Total Phosphorus,  Formula in temperature, Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, Suitability, Secchi tube, F. coli  6  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, Suitability, Secchi tube, F. coli  6  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, Suitability, Secchi tube, F. coli  6  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, Suitability, Secchi tube, F. coli  6  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, Suitability, Secchi tube, F. coli  6  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, Suitability, Secchi tube, F. coli  6  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, Suitability, Secchi tube, F. coli  6  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, S |                | <b>2016:</b> DO, pH,   |     | <b>2016:</b> DO, pH,                  |          |  |
| Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli  O6-0060-00-201  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli  Conductivity, Physical Appearance, Recreational Suitability, Secchi tube, E. coli  Co |                | ·  |     | -                                     |          |  |
| Recreational Suitability, Secchi tube, E. coli  O6-0060-00-201  Recreational Suitability, Secchi tube, E. coli  6  Recreational Suitability, Secchi tube, E. coli  6  Coli Coli Coli Coli Coli Coli Coli Col   |                |  |     |                                       |          |  |
| Recreational Suitability, Secchi tube, E. coli  O6-0060-00-201  Recreational Suitability, Secchi tube, E. coli  6  Recreational Suitability, Secchi tube, E. coli  6  Coli Coli Coli Coli Coli Coli Coli Col   |                | Physical Appearance,   |     | Physical Appearance,                  |          |  |
| tube,         tube,         tube,         missing samples in 2015           6         E. coli         6           06-0060-00-201         2015: Total Phosphorus,         6         2015: Total Phosphorus,         6   |                |  |     |                                       |          |  |
| tube,         tube,         tube,         missing samples in 2015           E. coli         6         E. coli         6           06-0060-00-201         2015: Total Phosphorus,         6         Phosphorus,         6   |                | Suitability, Secchi  | 7   | Suitability, Secchi                   | 7        | Mid July field parameters taken to make up for |
| E. coli         6         E. coli         6           06-0060-00-201         2015: Total<br>Phosphorus,         6         2015: Total<br>Phosphorus,         6   |                | -  |     |                                       |          |  |
| 06-0060-00-201   |                |  | 6   | · · · · · · · · · · · · · · · · · · · | 6        | -  |
| Phosphorus, Phosphorus,  | 06-0060-00-201 |  |     |                                       |          |  |
|  |                | Phosphorus,  |     | Phosphorus,                           |          |  |
|  |                |  |     |                                       |          |  |
| Secchi disk Secchi disk  |                |  |     |                                       | 1        |  |
| <b>2016:</b> Total 5 <b>2016:</b> Total 5  |                | Secchi disk  |     | Secchi disk                           |          |  |

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|                | Phosphorus,        |   | Phosphorus,         |   |
|----------------|--------------------|---|---------------------|---|
|                | Chlorophyll-a,     |   | Chlorophyll-a,      |   |
|                | Secchi disk        |   | Secchi disk         |   |
| 76-0141-00-202 | <b>2015:</b> Total | 6 | <b>2015:</b> Total  | 6 |
|                | Phosphorus,        |   | Phosphorus,         |   |
|                | Chlorophyll-a,     |   | Chlorophyll-a,      |   |
|                | Secchi disk        |   | Secchi disk         |   |
|                | <b>2016:</b> Total | 5 | <b>2016</b> : Total | 5 |
|                | Phosphorus,        |   | Phosphorus,         |   |
|                | Chlorophyll-a,     |   | Chlorophyll-a,      |   |
|                | Secchi disk        |   | Secchi disk         |   |
| 87-0180-00-201 | <b>2015:</b> Total | 6 | <b>2015:</b> Total  | 6 |
|                | Phosphorus,        |   | Phosphorus,         |   |
|                | Chlorophyll-a,     |   | Chlorophyll-a,      |   |
|                | Secchi disk        |   | Secchi disk         |   |
|                | <b>2016:</b> Total | 5 | <b>2016:</b> Total  | 5 |
|                | Phosphorus,        |   | Phosphorus,         |   |
|                | Chlorophyll-a,     |   | Chlorophyll-a,      |   |
|                | Secchi disk        |   | Secchi disk         |   |

#### 3. Were you successful in fulfilling the measures for success using the methods detailed within your workplan?

Staff reviewed sampling and field monitoring procedures with MPCA staff. The three lakes were monitored 5 times in 2015 with a QAQC field duplicate in July 2015 and montiored five times in 2016. The twenty-nine stream sites were sampled ten times from May through September 2015 for the basic regime. Sample blanks were collected at all sites in July 2015. The twenty-nine stream sites were also sampled for E. coli sixteen times from June through August 2015 and 2016 with the QAQC being collected in July 2015. Sites #S000-143 and #S008-469 were monitored according to the River Nutrient sampling regime in 2015 and 2016. Volunteer citizen monitoring included news releases in local newspapers, presentations at local organizations and radio programs encouraging residents to volunteer. One new volunteer was recruited and the existing volunteers continued their monitoring in the watershed.

4. Were there any changes to your workplan that were specific to staff and/or monitoring locations? If yes, describe and list the related change order.

Change Order 1: Adding Taylor Melone, MN Conservation Corp, to the workplan as a subcontractor. This is a volunteer position with no funds allocated for time spent monitoring streams with the Minnesota River Headwaters Watershed. Mileage reimbursement under the commissioner's plan is authorized.

Change Order 2: Adding Camille Perry, MN Conservation Corp, to the workplan as a subcontractor. This is a volunteer position with no funds allocated for time spent monitoring streams with the Minnesota River Headwaters Watershed. Mileage reimbursement under the commissioner's plan is authorized.

Change Order 4: Reduce Objective 4, Staff 1 by \$543.45 (15 hours). Add \$181.15 (5 hours) to Objective 2, Staff 1 and add \$362.30 (10 hours) to Objective 3, Staff 1. Change order done to allow additional time for project and data management.

Change Order 5: For Staff 1, move 15 hours (\$543.45) from Objective 4 (Volunteer Recruitment) to Objective 2 (Data Management). Deduct \$132.54 from per diem and adding to Equipment and supplies for the purchase of calibration standards.

Change Order 6: Deduct 3 hours (\$75.87) from Staff 3 Objective 4. Add \$75.87 to Laboratory analyses: streams.

- 5. Provide an annual quality assurance assessment that includes the following elements.
  - A. Submit field meter calibration records as an attachment to this report (records not previously submitted with Interim Report).
  - B. Complete Table 2 presenting quality control sample results with columns showing comparison to lab method detection limit for sampler blanks, and the relative percent difference (RPD) for field duplicates (see the SWAG Quality Assurance Project Plan). Use the "maximum expected relative percent difference" values presented on page 24 in Appendix D of the Volunteer Surface Water Monitoring Guide (http://www.pca.state.mn.us/yhiz8f0) to assess RPD on field duplicates. Field duplicates with values in excess of the expected RPD may be an indication of high variability within the stream, which is useful for data interpretation. Use the comment field to note RPD or sampler blank results outside of expectations.

Note: Add rows as necessary by placing cursor in the last row and of last column and hit tab.

Table 2. Quality control sample results and analysis

|                          |          |         | Sampler blanks |                    | Field duplicates |                  |     |          |
|--------------------------|----------|---------|----------------|--------------------|------------------|------------------|-----|----------|
| <b>Date</b> (mm/dd/yyyy) | Site ID# | Analyte | Result         | Detection<br>limit | Sample result    | Duplicate result | RPD | Comments |
|                          |          |         |                |                    |                  |                  |     |          |

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## Section II - Participants in project

6. Complete Table 3 if volunteers were involved with lake and/or stream monitoring.

Tennessen warning: Pursuant to Minn. Stat. § 13.43, information you are asked to provide is classified as private data on individuals as described in Minn. R. 1205.0200, subp. 9, Minn. R. 1205.0400 and Minn. Stat. § 13.02, subd. 12 (home contact information). You are not legally required to provide this private data however, should you choose to provide this information the MPCA will contact and invite volunteers to join the Citizen Monitoring Program (CMP) at the conclusion of your grant. All private volunteer information is kept secure and is not released to parties or individuals outside of SWAG or CMP.

Table 3. Volunteer contact information

| Site ID#     | Contact name             | Address   | Telephone   | Email address                             |
|--------------|--------------------------|---|---|---|
|              | Pat Stanley              | 109 Lac qui Parle Ave.<br>N, Canby, MN 56220                              |   |   |
| S001-<br>775 | Burton<br>Hendrickson    | 2240 160 <sup>th</sup> St.,<br>Madison, MN 56256                          |   | Burton.Hendrickson@mn.usda.gov            |
|              | Eugene Eilers            | 108 East View Rd,<br>Canby, MN 56220                                      |   | eeilers@frontiernet.net                   |
| S001-<br>843 | Jeff & Dustin<br>Johnson | 2195 361st Ave,<br>Montevideo, MN 56265                                   |   |   |
|              | S001-<br>775             | Pat Stanley  S001- Burton Hendrickson  Eugene Eilers  S001- Jeff & Dustin | Pat Stanley   109 Lac qui Parle Ave. N, Canby, MN 56220 | 109 Lac qui Parle Ave. N, Canby, MN 56220 |

## Section III - Budget

Were there any changes to your budget or equipment and supplies list? If yes, describe and list the related change orders and/or amendments.

Change Order 3: Moved \$300 from per diem to equipment. \$54.20 will be for the purchase of replacement rope and buckets and \$245.80 will be purchase of replacement DO caps.

Change Order 4: Reduced Objective 4, Staff 1 by \$543.45 (15 hours). Added \$181.15 (5 hours) to Objective 2, Staff 1 and added \$362.30 (10 hours) to Objective 3, Staff 1 to allow for additional time for project and data management.

Change Order 5: Move \$543.45 (15 hours) Staff 1 from Objective 4 (Volunteer Recruitment) to Objective 2 (Data Management). Deducted \$132.54 from per diem and added to Equipment and supplies for the purchase of calibration standards.

Complete Table 4 and indicate expenditures from the entire grant period.

Table 4. Project expenditures

| Project budget                  | MPCA grant funds available | Total MPCA funds expended | Total remaining balance | Percent of budget expended |
|---------------------------------|----------------------------|---------------------------|-------------------------|----------------------------|
| Staff 1: Program Coordinator    | \$30,795.50                | \$27,697.84               | \$3,097.66              | 90%                        |
| Staff 2: District Administrator | \$562.95                   | \$562.95                  | \$ 0.00                 | 100%                       |
| Staff 3: Support Staff          | \$2,099.07                 | \$1,451.90                | \$ 647.17               | 69%                        |
| Staff 4: Title                  |                            |                           | \$ 0.00                 |                            |
| Staff 5: Title                  |                            |                           | \$ 0.00                 |                            |
| Staff 6: Title                  |                            |                           | \$ 0.00                 |                            |
| Laboratory streams              | \$48,858.89                | \$48,858.89               | \$ 0.00                 | 100%                       |
| Laboratory lakes                | \$1,056.00                 | \$1,056.00                | \$ 0.00                 | 100%                       |

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| Travel reimbursement   | \$13,029.50  | \$11,276.07 | \$1,753.43 | 87% |
|------------------------|--------------|-------------|------------|-----|
| Shipping               | \$500.00     | \$52.02     | \$ 447.98  | 10% |
| Training materials     |              |             | \$ 0.00    |     |
| Equipment and supplies | \$4,919.00   | \$4,786.48  | \$ 132.52  | 97% |
| Per diem               | \$95.46      |             | \$ 95.46   | 0%  |
| Column total           | \$101,916.37 | \$95,742.15 | \$6,174.22 | 94% |

