

# Cypress WTP MicroFiltration Report



Date: 5-16-14

TEXAS  
Blue Space Airborne Opportunities

| Sample Point             | Unit | Combined Plant Data |       |         | Pressure Decay Test Information |                                   |         |         |         |         |
|--------------------------|------|---------------------|-------|---------|---------------------------------|-----------------------------------|---------|---------|---------|---------|
|                          |      | Morning             | Day   | Evening | Cell Numbers                    |                                   |         |         |         |         |
|                          |      |                     |       |         |                                 | 1                                 | 2       | 3       | 4       | 5       |
| Feed Water Turbidity     | NTU  | 1.230               | 1.187 | 0.871   | ↓ shift ↓<br>H. Night<br>Day    |                                   |         |         |         |         |
| Feed Water Temperature   | °C   | 21.14               | 19.86 | 25.12   |                                 | Pressure Decay Test: Test Time    |         |         |         |         |
| Feed Water pH            | pH   | 5.04                | 5.22  | 4.34    |                                 | 1:08 AM                           | 2:04 AM |         | 3:54 AM | 4:57    |
| Feed Water Chlorine      | mg/l | 5.00                | 5.00  | 5.00    |                                 |                                   |         | 8:17 AM |         |         |
| Filtrate Turbidity       | NTU  | 0.054               | 0.050 | 0.048   |                                 | Pressure Decay Test: Test Results |         |         |         |         |
| Filtrate Particle Counts | um   | 0                   | 0     | 0       |                                 |                                   |         |         |         |         |
| Filtrate Chlorine        | mg/l | 0.16                | 0.09  | 0.07    |                                 | 0.81                              | 0.78    |         | 0.39    | 0.37041 |
| Break Tank Level         | ft   | 17.95               | 17.24 | 15.46   | Day                             |                                   |         | .91     |         |         |

| Morning Shift Cell Data    |         |             |             |   |   | Morning Shift R.O. Facilities Sampling |                 |
|----------------------------|---------|-------------|-------------|---|---|----------------------------------------|-----------------|
| Cell Numbers               | 1       | 2           | 3           | 4 | 5 | ↓ Filter Effluent ↓                    | Flow: 1.90      |
| Cell Bench Top Turbidities |         |             |             |   |   |                                        | F.E. Ph: RD-6.5 |
| Flow                       | MGD     | 16.52       | 16.53       |   |   | Trough:                                | F.E. Temp:      |
| Transmembrane Pressure     | psi     | 4.42        | 3.99        |   |   | Final Concentrate                      | ORP'S           |
| Resistance                 |         | 4.3         | 3.9         |   |   | Train 1:                               | Other Tests     |
| Filtrate Turbidity         | NTU     | 0.044/0.018 | 0.150/0.018 |   |   | Train 2:                               |                 |
| Cell Level                 | ft      | 7.0         | 7.1         |   |   | Train 3:                               | Results         |
| Particle Count             | cnt/mL  | 0           | 0           |   |   | Train 4:                               |                 |
| Flux                       | G/ft²/D | 15.66       | 15.69       |   |   | Train 5:                               |                 |
| LRV                        |         | 4.94        | 5.06        |   |   | Train 6:                               |                 |

| Day Shift Cell Data        |         |             |             |   |   | Day Shift R.O. Facilities Sampling |             |
|----------------------------|---------|-------------|-------------|---|---|------------------------------------|-------------|
| Cell Numbers               | 1       | 2           | 3           | 4 | 5 | ↓ Filter Effluent ↓                | Flow:       |
| Cell Bench Top Turbidities |         |             |             |   |   |                                    | F.E. Ph:    |
| Flow                       | MGD     | 16.47       | 16.56       |   |   | Trough:                            | F.E. Temp:  |
| Transmembrane Pressure     | psi     | 4.04        | 3.89        |   |   |                                    |             |
| Resistance                 |         | 3.9         | 3.8         |   |   | Other Tests                        | Other Tests |
| Filtrate Turbidity         | NTU     | 0.065/0.018 | 0.107/0.012 |   |   | Results                            |             |
| Cell Level                 | ft      | 7.0         | 6.9         |   |   |                                    |             |
| Particle Count             | cnt/mL  | 0           | 0           |   |   |                                    |             |
| Flux                       | G/ft²/D | 15.67       | 15.70       |   |   |                                    |             |
| LRV                        |         | 5.03        | 5.07        |   |   |                                    |             |

| Evening Shift Cell Data    |         |             |             |   |   | Evening Shift R.O. Facilities Sampling |             |
|----------------------------|---------|-------------|-------------|---|---|----------------------------------------|-------------|
| Cell Numbers               | 1       | 2           | 3           | 4 | 5 | ↓ Filter Effluent ↓                    | Flow:       |
| Cell Bench Top Turbidities |         |             |             |   |   |                                        | F.E. Ph:    |
| Flow                       | MGD     | 15.72       | 16.46       |   |   | Trough:                                | F.E. Temp:  |
| Transmembrane Pressure     | psi     | 3.61        | 3.84        |   |   |                                        |             |
| Resistance                 |         | 3.8         | 3.9         |   |   | Other Tests                            | Other Tests |
| Filtrate Turbidity         | NTU     | 0.076/0.021 | 0.103/0.011 |   |   | Results                                |             |
| Cell Level                 | ft      | 7.1         | 7.0         |   |   |                                        |             |
| Particle Count             | cnt/mL  | 0.0         | 0.0         |   |   |                                        |             |
| Flux                       | G/ft²/D | 14.96       | 15.70       |   |   |                                        |             |
| LRV                        |         | 5.06        | 5.09        |   |   |                                        |             |

Comments:

Initials:

Morning:

JD JY EV

Day:

EA/PO/CE

Evening:

CO

# Calculation of Log Removal Credits

May 16, 2014

12am - 8am

|                       |                          | Process Receiving TCEQ Approved Log Removal Credits    | Virus | Giardia | Cryptosporidium |
|-----------------------|--------------------------|--------------------------------------------------------|-------|---------|-----------------|
| Max DIT = 0.81        | DIT Passes - Yes         | Pipeline between RRWWTP and CWTP (DZ 1)                | 0.35  | 0.17    | 0.00            |
|                       |                          | MF/RO Coagulation/Flocculation/Clarification           | 0.50  | 0.50    | 0.50            |
|                       |                          | MF/RO Clarifier Disinfection (DZ 2)                    | 0.00  | 0.00    | 0.00            |
|                       |                          | MF Filtration                                          | 1.50  | 2.80    | 2.80            |
|                       |                          | MF Disinfection (DZ 3)                                 | 0.00  | 0.00    | 0.00            |
|                       |                          | RO Filtration                                          | 0.00  | 0.00    | 0.00            |
| Max Turbidity = 0.102 | IFE Credit Awarded - Yes | 2010 SWTP Coagulation/Flocculation/Clarification       | 0.50  | 0.50    | 0.50            |
|                       |                          | 2010 SWTP Filtration                                   | 1.50  | 2.50    | 2.50            |
|                       |                          | Individual Filter Effluent Credit                      | 0.00  | 1.00    | 1.00            |
|                       |                          | 2010 SWTP Disinfection (DZ 4)                          | 3.53  | 1.76    | 0.00            |
|                       |                          | 2010 Clearwell/Ground Storage Tank Disinfection (DZ 5) | 11.75 | 5.84    | 0.00            |
|                       |                          | Total                                                  | 19.63 | 15.07   | 7.3             |
|                       |                          | Log Removal Required                                   | 9     | 8       | 5.5             |

8am - 4pm

|                       |                          |                                                        | Virus | Giardia | Cryptosporidium |
|-----------------------|--------------------------|--------------------------------------------------------|-------|---------|-----------------|
|                       |                          | Process Receiving TCEQ Approved Log Removal Credits    |       |         |                 |
| Max DIT = 0.81        | DIT Passes - Yes         | Pipeline between RRWWTP and CWTP (DZ 1)                | 7.27  | 3.63    | 0.00            |
|                       |                          | MF/RO Coagulation/Flocculation/Clarification           | 0.50  | 0.50    | 0.50            |
|                       |                          | MF/RO Clarifier Disinfection (DZ 2)                    | 0.00  | 0.00    | 0.00            |
|                       |                          | MF Filtration                                          | 1.50  | 2.80    | 2.80            |
|                       |                          | MF Disinfection (DZ 3)                                 | 0.00  | 0.00    | 0.00            |
|                       |                          | RO Filtration                                          | 0.00  | 0.00    | 0.00            |
| Max Turbidity = 0.102 | IFE Credit Awarded - Yes | 2010 SWTP Coagulation/Flocculation/Clarification       | 0.50  | 0.50    | 0.50            |
|                       |                          | 2010 SWTP Filtration                                   | 1.50  | 2.50    | 2.50            |
|                       |                          | Individual Filter Effluent Credit                      | 0.00  | 1.00    | 1.00            |
|                       |                          | 2010 SWTP Disinfection (DZ 4)                          | 3.81  | 1.89    | 0.00            |
|                       |                          | 2010 Clearwell/Ground Storage Tank Disinfection (DZ 5) | 12.68 | 6.28    | 0.00            |
|                       |                          | Total                                                  | 27.76 | 19.1    | 7.3             |
|                       |                          | Log Removal Required                                   | 9     | 8       | 5.5             |

4pm - 12pm

|                       |                          |                                                        | Virus | Giardia | Cryptosporidium |
|-----------------------|--------------------------|--------------------------------------------------------|-------|---------|-----------------|
|                       |                          | Process Receiving TCEQ Approved Log Removal Credits    |       |         |                 |
| Max DIT = 0.81        | DIT Passes - Yes         | Pipeline between RRWWTP and CWTP (DZ 1)                | 0.00  | 0.00    | 0.00            |
|                       |                          | MF/RO Coagulation/Flocculation/Clarification           | 0.50  | 0.50    | 0.50            |
|                       |                          | MF/RO Clarifier Disinfection (DZ 2)                    | 0.00  | 0.00    | 0.00            |
|                       |                          | MF Filtration                                          | 1.50  | 2.80    | 2.80            |
|                       |                          | MF Disinfection (DZ 3)                                 | 0.00  | 0.00    | 0.00            |
|                       |                          | RO Filtration                                          | 0.00  | 0.00    | 0.00            |
| Max Turbidity = 0.102 | IFE Credit Awarded - Yes | 2010 SWTP Coagulation/Flocculation/Clarification       | 0.50  | 0.50    | 0.50            |
|                       |                          | 2010 SWTP Filtration                                   | 1.50  | 2.50    | 2.50            |
|                       |                          | Individual Filter Effluent Credit                      | 0.00  | 1.00    | 1.00            |
|                       |                          | 2010 SWTP Disinfection (DZ 4)                          | 3.43  | 1.70    | 0.00            |
|                       |                          | 2010 Clearwell/Ground Storage Tank Disinfection (DZ 5) | 11.43 | 5.66    | 0.00            |
|                       |                          | Total                                                  | 18.86 | 14.66   | 7.3             |
|                       |                          | Log Removal Required                                   | 9     | 8       | 5.5             |

# Cypress WTP RO Conductivity Report

Train # 2

Month: May-2014 16

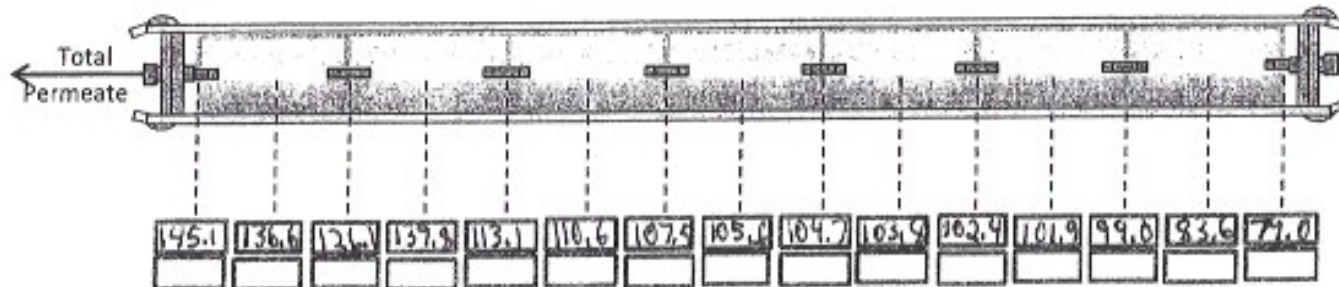
|             | Sample # | Date:         |     |     |  |  |  |     | Train #2 Probing Areas |
|-------------|----------|---------------|-----|-----|--|--|--|-----|------------------------|
|             |          | 12            | 8   | 4   |  |  |  |     |                        |
|             |          | Conductivity: |     |     |  |  |  |     |                        |
| 1st Stage   | 1        | 77            | 77  | 76  |  |  |  |     | 230                    |
|             | 2        | 64            | 68  | 66  |  |  |  |     | 198                    |
|             | 3        | 86            | 88  | 87  |  |  |  |     | 261                    |
|             | 4        | 66            | 69  | 69  |  |  |  |     | 204                    |
|             | 5        | 65            | 66  | 68  |  |  |  |     | 199                    |
|             | 6        | 74            | 75  | 76  |  |  |  |     | 225                    |
|             | 7        | 57            | 58  | 70  |  |  |  |     | 185                    |
|             | 8        | 70            | 78  | 78  |  |  |  |     | 226                    |
|             | 9        | 85            | 87  | 84  |  |  |  |     | 256                    |
|             | 10       | 68            | 67  | 70  |  |  |  |     | 205                    |
|             | 11       | 81            | 79  | 83  |  |  |  |     | 243                    |
|             | 12       | 84            | 56  | 59  |  |  |  |     | 199                    |
|             | 13       | 68            | 71  | 73  |  |  |  |     | 212                    |
|             | 14       | 72            | 73  | 76  |  |  |  |     | 221                    |
|             | 15       | 87            | 91  | 93  |  |  |  |     | 271                    |
|             | 16       | 66            | 69  | 71  |  |  |  |     | 206                    |
|             | 17       | 87            | 95  | 98  |  |  |  |     | 280                    |
|             | 18       | 90            | 113 | 92  |  |  |  |     | 295                    |
|             | 19       | 83            | 84  | 87  |  |  |  |     | 254                    |
|             | 20       | 87            | 90  | 92  |  |  |  |     | 269                    |
|             | 21       | 70            | 70  | 70  |  |  |  |     | 210                    |
|             | 22       | 83            | 86  | 85  |  |  |  |     | 254                    |
|             | 23       | 86            | 68  | 69  |  |  |  |     | 223                    |
|             | 24       | 67            | 67  | 69  |  |  |  |     | 203                    |
|             | 25       | 91            | 95  | 93  |  |  |  |     | 279                    |
|             | 26       | 72            | 71  | 72  |  |  |  |     | 215                    |
|             | 27       | 88            | 81  | 90  |  |  |  |     | 259                    |
|             | 28       | 71            | 72  | 73  |  |  |  |     | 216                    |
|             | 29       | 85            | 91  | 83  |  |  |  |     | 259                    |
|             | 30       | 67            | 66  | 69  |  |  |  |     | 202                    |
|             | 31       | 75            | 75  | 76  |  |  |  |     | 226                    |
|             | 32       | 69            | 68  | 70  |  |  |  |     | 207                    |
| Average     | 76       | 77            | 78  |     |  |  |  | 231 |                        |
| 20%         | 15       | 15            | 16  |     |  |  |  | 46  |                        |
| Max Allowed | 92       | 92            | 93  |     |  |  |  | 277 |                        |
| 2nd Stage   | 33       | 500           | 524 | 598 |  |  |  |     | 1622                   |
|             | 34       | 490           | 495 | 512 |  |  |  |     | 1497                   |
|             | 35       | 500           | 503 | 521 |  |  |  |     | 1524                   |
|             | 36       | 516           | 519 | 536 |  |  |  |     | 1571                   |
|             | 37       | 484           | 486 | 504 |  |  |  |     | 1474                   |
|             | 38       | 507           | 509 | 530 |  |  |  |     | 1546                   |
|             | 39       | 483           | 484 | 503 |  |  |  |     | 1470                   |
|             | 40       | 463           | 467 | 461 |  |  |  |     | 1391                   |
|             | 41       | 482           | 481 | 504 |  |  |  |     | 1467                   |
|             | 42       | 486           | 487 | 510 |  |  |  |     | 1483                   |
|             | 43       | 503           | 502 | 525 |  |  |  |     | 1530                   |
|             | 44       | 491           | 490 | 514 |  |  |  |     | 1495                   |
|             | 45       | 470           | 469 | 491 |  |  |  |     | 1430                   |
|             | 46       | 485           | 488 | 507 |  |  |  |     | 1480                   |
|             | 47       | 474           | 475 | 495 |  |  |  |     | 1444                   |
|             | 48       | 459           | 461 | 481 |  |  |  |     | 1401                   |
|             | Average  | 487           | 490 | 512 |  |  |  |     | 1489                   |
|             | 20%      | 97            | 98  | 102 |  |  |  |     | 298                    |
|             | 48       | 584           | 588 | 614 |  |  |  |     | 1787                   |

## Feed Direction

Date: 5-16-14

:RO Unit#

:Vessel #

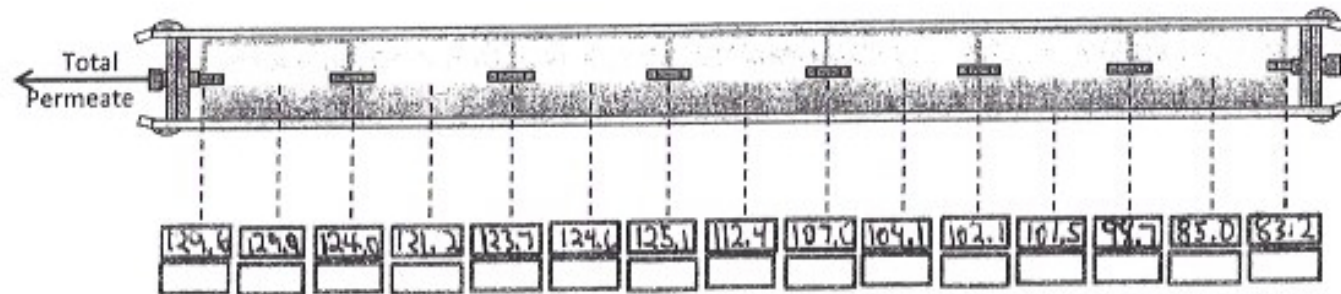


## Feed Direction

Date: 5-16-14

:RO Unit#

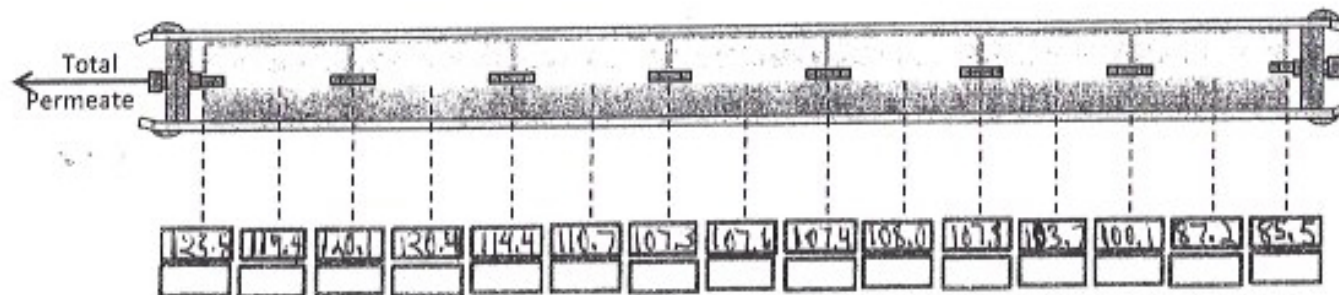
:Vessel #

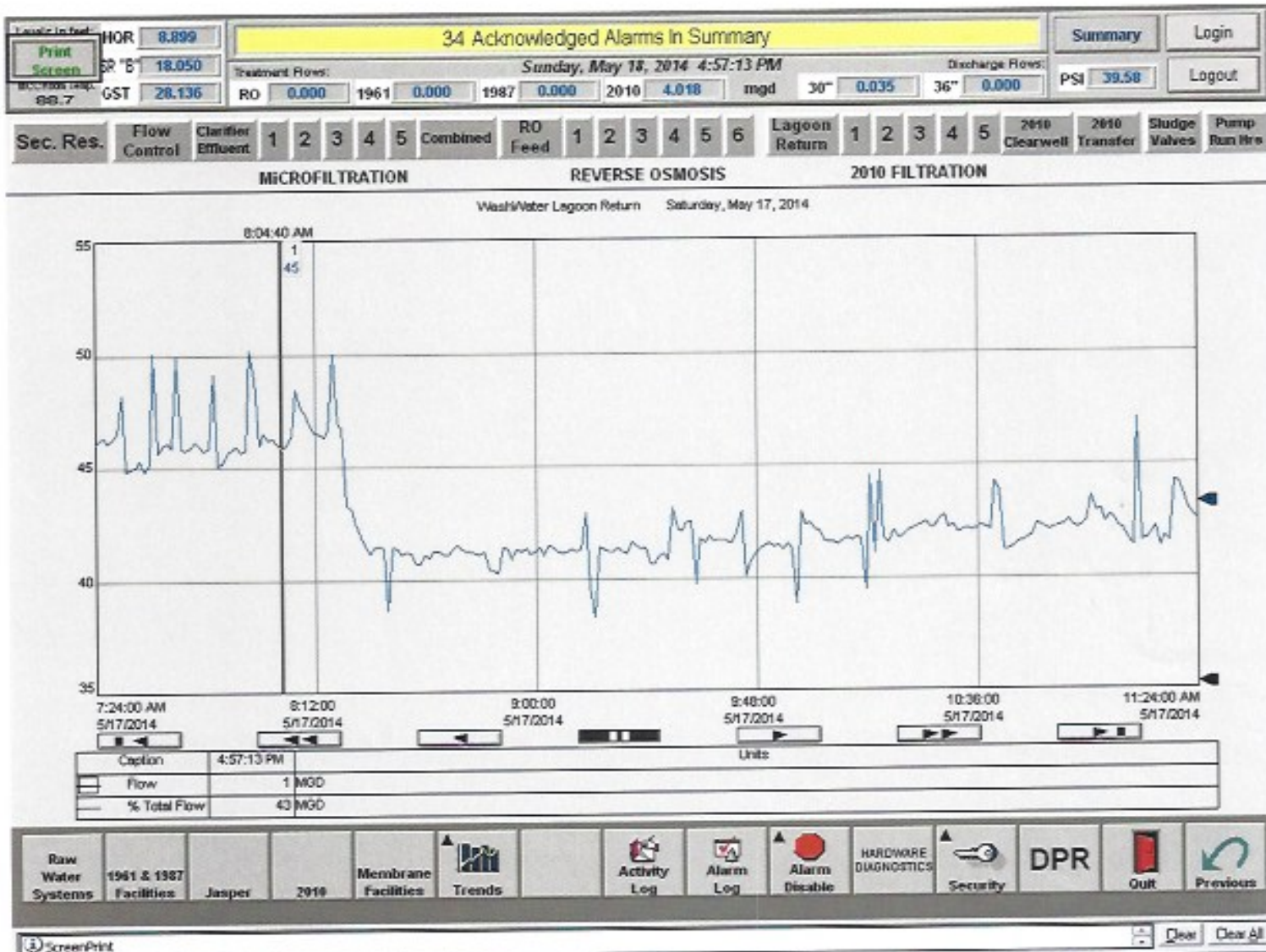


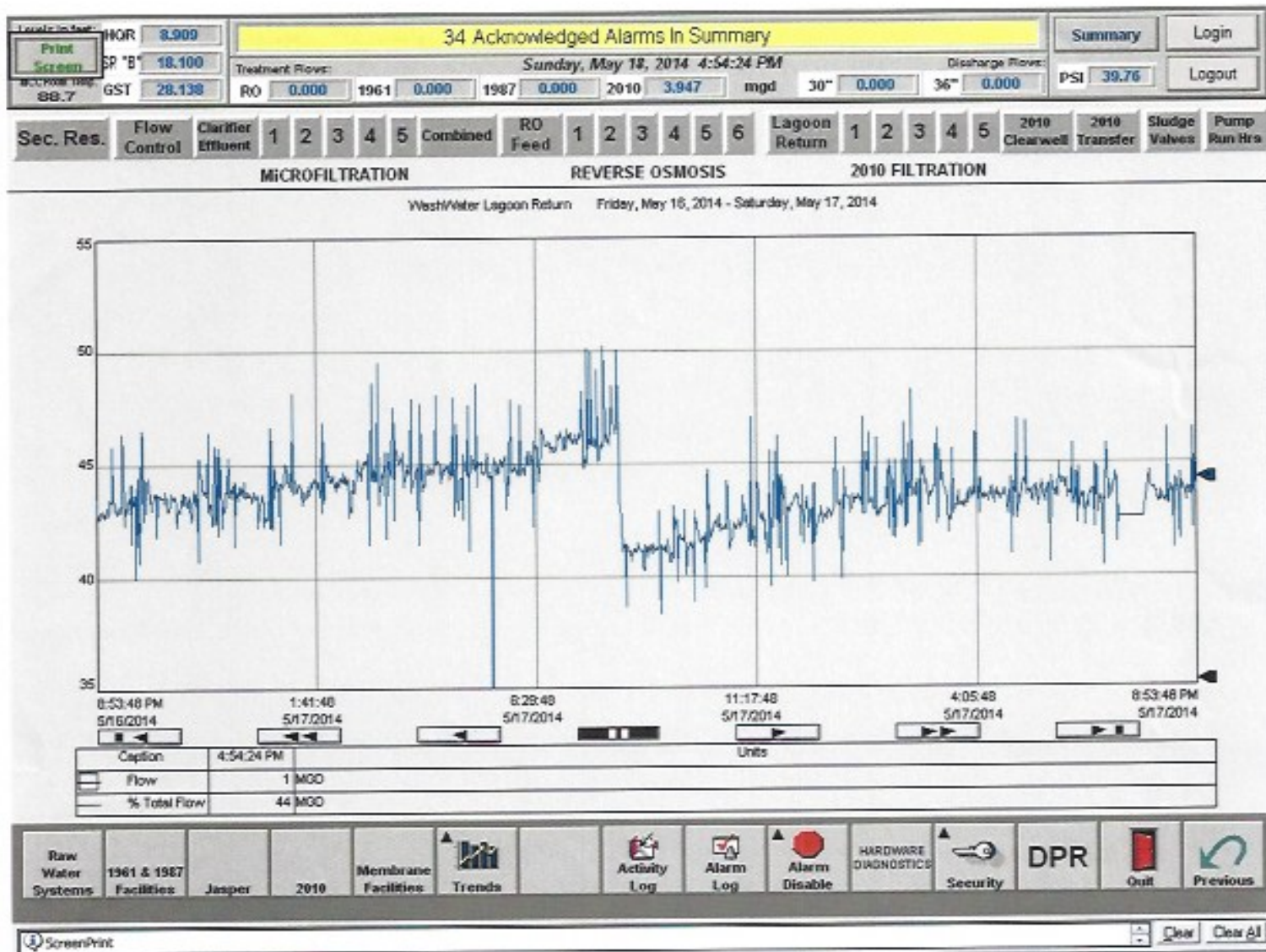
## Feed Direction

Feed Direction

:Vessel #







**Enclosure H2: CT STUDY**  
 FOR PUBLIC WATER SYSTEMS THAT ARE USING SURFACE WATER SOURCES  
 OR GROUND WATER SOURCES UNDER THE INFLUENCE OF SURFACE WATER (cont.)  
 CT Calculator Worksheet

PUBLIC WATER  
SYSTEM NAME:

City of Wichita Falls

PLANT NAME  
OR NUMBER:

2010 Cypress Water Treatment Plant

PWS ID No.:

2430001

Date:

5.16.14

4AM

**DISINFECTION PROCESS PARAMETERS**

| APPROVED CT STUDY PARAMETERS |                    |       |       |        |        | PERFORMANCE STANDARDS |         |
|------------------------------|--------------------|-------|-------|--------|--------|-----------------------|---------|
| Parameters                   | Disinfection Zones |       |       |        |        | Log Inactivations     |         |
|                              | D1A                | D1B   | D1C   | D2     | D3     | Giardia lamblia Cysts | Viruses |
| Flow Rate (MGD)              | 5.000              | 5.000 | 5.000 | 10.000 | 10.000 |                       |         |
| T <sub>10</sub> (minutes)    | 8.3                | 18.7  | 134.7 | 67.1   | 223.3  | 0.5                   | 2.0     |

**DISINFECTION PROCESS DATA**

| INDIVIDUAL DISINFECTION ZONES |          |            |           |     |                    |                            |                          |             |           | PLANT TOTAL |           |              |
|-------------------------------|----------|------------|-----------|-----|--------------------|----------------------------|--------------------------|-------------|-----------|-------------|-----------|--------------|
| Disinfectant                  | C (mg/L) | Flow (MGD) | Temp (°C) | pH  | CT <sub>calc</sub> | Giardia CT <sub>reqd</sub> | Virus CT <sub>reqd</sub> | Giardia Log | Virus Log | Giardia Log | Virus Log | Inact. Ratio |
| NA D1A                        |          |            |           |     | NA                 | NA                         | NA                       | NA          | NA        |             |           |              |
| NA D1B                        |          |            |           |     | NA                 | NA                         | NA                       | NA          | NA        |             |           |              |
| CL02 D1C                      | 0.11     | 2.200      | 20.1      | 8.4 | 33.7               | 2.4                        | 2.0                      | 6.89        | 33.55     | 14.45       | 52.05     | 26.03        |
| CLA D2                        | 3.80     | 4.000      | 20.0      | 8.4 | 637.7              | 185.0                      | 303.0                    | 1.72        | 4.21      |             |           |              |
| CLA D3                        | 3.80     | 4.000      | 20.3      | 8.4 | 2121.3             | 181.6                      | 295.8                    | 5.84        | 14.30     |             |           |              |

SUBMITTED BY:

Certificate No.  
and Grade:

Date:

TCEQ - (86-01-13)

CT STUDY

## Enclosure H2: CT STUDY

FOR PUBLIC WATER SYSTEMS THAT ARE USING SURFACE WATER SOURCES  
OR GROUND WATER SOURCES UNDER THE INFLUENCE OF SURFACE WATER (cont.)  
CT Calculator Worksheet

PUBLIC WATER  
SYSTEM NAME:

City of Wichita Falls

PLANT NAME  
OR NUMBER:

2010 Cypress Water Treatment Plant

PWS ID No.:

2430001

Date:

5-16-14 12PM

| DISINFECTION PROCESS PARAMETERS |                    |       |       |        |        |                       |  |         |  |
|---------------------------------|--------------------|-------|-------|--------|--------|-----------------------|--|---------|--|
| APPROVED CT STUDY PARAMETERS    |                    |       |       |        |        | PERFORMANCE STANDARDS |  |         |  |
| Parameters                      | Disinfection Zones |       |       |        |        | Log Inactivations     |  |         |  |
|                                 | D1A                | D1B   | D1C   | D2     | D3     | Giardia lamblia Cysts |  | Viruses |  |
| Flow Rate (MGD)                 | 5.000              | 5.000 | 5.000 | 10.000 | 10.000 | 0.5                   |  | 2.0     |  |
| T <sub>10</sub> (minutes)       | 8.3                | 16.7  | 134.7 | 67.1   | 223.3  |                       |  |         |  |

| DISINFECTION PROCESS DATA     |          |            |           |     |                    |                            |                          |             |           |             |           |              |
|-------------------------------|----------|------------|-----------|-----|--------------------|----------------------------|--------------------------|-------------|-----------|-------------|-----------|--------------|
| INDIVIDUAL DISINFECTION ZONES |          |            |           |     |                    |                            |                          |             |           | PLANT TOTAL |           |              |
| Disinfectant                  | C (mg/L) | Flow (MGD) | Temp (°C) | pH  | CT <sub>calc</sub> | Giardia CT <sub>reqd</sub> | Virus CT <sub>reqd</sub> | Giardia Log | Virus Log | Giardia Log | Virus Log | Inact. Ratio |
| NA D1A                        |          |            |           |     | NA                 | NA                         | NA                       | NA          | NA        |             |           |              |
| NA D1B                        |          |            |           |     | NA                 | NA                         | NA                       | NA          | NA        |             |           |              |
| CLO2 D1C                      | 0.09     | 2.200      | 20.4      | 8.4 | 27.6               | 2.4                        | 2.0                      | 5.73        | 28.02     | 13.89       | 48.09     | 24.05        |
| CLA D2                        | 3.80     | 4.000      | 21.4      | 8.2 | 637.7              | 168.9                      | 275.0                    | 1.89        | 4.64      |             |           |              |
| CLA D3                        | 3.80     | 4.000      | 21.4      | 8.2 | 2121.3             | 168.9                      | 275.0                    | 6.28        | 15.43     |             |           |              |

SUBMITTED BY:

Certificate No.  
and Grade:

Date:

TCEQ - (05-01-13)

CT STUDY

## Enclosure H2: CT STUDY

FOR PUBLIC WATER SYSTEMS THAT ARE USING SURFACE WATER SOURCES  
OR GROUND WATER SOURCES UNDER THE INFLUENCE OF SURFACE WATER (cont.)  
CT Calculator Worksheet

PUBLIC WATER  
SYSTEM NAME:

City of Wichita Falls

PLANT NAME  
OR NUMBER:

2010 Cypress Water Treatment Plant

PWS ID No.:

2430001

Date:

5-16-14 8PM

### DISINFECTION PROCESS PARAMETERS

| APPROVED CT STUDY PARAMETERS |                    |       |       |        |        | PERFORMANCE STANDARDS |         |
|------------------------------|--------------------|-------|-------|--------|--------|-----------------------|---------|
| Parameters                   | Disinfection Zones |       |       |        |        | Log Inactivations     |         |
|                              | D1A                | D1B   | D1C   | D2     | D3     | Giardia lamblia Cysts | Viruses |
| Flow Rate (MGD)              | 5.000              | 5.000 | 5.000 | 10.000 | 10.000 |                       |         |
| T <sub>10</sub> (minutes)    | 8.3                | 18.7  | 134.7 | 67.1   | 223.3  | 0.5                   | 2.0     |

### DISINFECTION PROCESS DATA

| INDIVIDUAL DISINFECTION ZONES |          |            |           |     |                    |                            |                          |             |           | PLANT TOTAL |           |              |
|-------------------------------|----------|------------|-----------|-----|--------------------|----------------------------|--------------------------|-------------|-----------|-------------|-----------|--------------|
| Disinfectant                  | C (mg/L) | Flow (MGD) | Temp (°C) | pH  | CT <sub>calc</sub> | Giardia CT <sub>reqd</sub> | Virus CT <sub>reqd</sub> | Giardia Log | Virus Log | Giardia Log | Virus Log | Inact. Ratio |
| NA D1A                        |          |            |           |     | NA                 | NA                         | NA                       | NA          | NA        |             |           |              |
| NA D1B                        |          |            |           |     | NA                 | NA                         | NA                       | NA          | NA        |             |           |              |
| CLO2 D1C                      | 0.25     | 2.200      | 20.2      | 8.4 | 76.6               | 2.4                        | 2.0                      | 15.74       | 76.77     | 23.09       | 94.85     | 46.19        |
| CLA D2                        | 3.40     | 4.000      | 21.5      | 8.9 | 570.6              | 167.8                      | 273.1                    | 1.70        | 4.18      |             |           |              |
| CLA D3                        | 3.40     | 4.000      | 21.5      | 8.9 | 1898.0             | 167.8                      | 273.1                    | 5.66        | 13.90     |             |           |              |

SUBMITTED BY:

Certificate No.  
and Grade:

Date:

TCEQ - (86-01-13)

CT STUDY

**City of Wichita Falls - DPR Full Scale Operation**  
**Cypress Water Treatment Plant Lab Analysis**

Date: 5-16-14

|          |                        |                      | 12 M | 1 AM | 2 AM | 3 AM | 4 AM | 5 AM | 6 AM | 7 AM | 8 AM | 9 AM | 10 AM | 11 AM | 12 N | 1 PM | 2 PM | 3 PM | 4 PM | 5 PM | 6 PM | 7 PM | 8 PM | 9 PM | 10 PM | 11 PM |
|----------|------------------------|----------------------|------|------|------|------|------|------|------|------|------|------|-------|-------|------|------|------|------|------|------|------|------|------|------|-------|-------|
| TCEQ-3J  | Raw Flow Control Vault | Mono-Cl <sub>2</sub> |      |      |      |      | 0.6  |      |      |      |      |      |       |       | 1.1  |      |      |      |      |      |      |      | 0    |      |       |       |
|          |                        | pH                   |      |      |      |      | 6.6  |      |      |      |      |      |       |       | 6.9  |      |      |      |      |      |      |      | 6.9  |      |       |       |
|          |                        | Temperature          |      |      |      |      | 21.8 |      |      |      |      |      |       |       | 23.5 |      |      |      |      |      |      |      | 30.1 |      |       |       |
|          |                        | Flow                 |      |      |      |      | 2.8  |      |      |      |      |      |       |       | 2.8  |      |      |      |      |      |      |      | 2.8  |      |       |       |
|          |                        | Turbidity            |      |      |      |      | 2.77 |      |      |      |      |      |       |       | 2.1  |      |      |      |      |      |      |      | 2.3  |      |       |       |
|          |                        | Alkalinity           |      |      |      |      | 95   |      |      |      |      |      |       |       | 97   |      |      |      |      |      |      |      | 154  |      |       |       |
| TCEQ-6J  | RO Settled             | Turbidity            |      |      | 1.37 |      |      |      |      |      |      |      | 3.2   | 1.2   |      |      |      |      |      |      | 1.36 |      |      |      |       |       |
| TCEQ-7J  | MF Clarifier Effluent  | Mono-Cl <sub>2</sub> |      |      |      |      | 6.5  | 0    | 34   |      |      |      |       |       | 0    |      |      |      |      |      |      |      | 0    |      |       |       |
|          |                        | pH                   |      |      |      |      | 6.5  |      |      |      |      |      |       |       | 6.6  |      |      |      |      |      |      |      | 7.0  |      |       |       |
|          |                        | Temperature          |      |      |      |      | 20.3 |      |      |      |      |      |       |       | 23.4 |      |      |      |      |      |      |      | 29.4 |      |       |       |
|          |                        | Flow                 |      |      |      |      | 2.8  |      |      |      |      |      |       |       | 2.8  |      |      |      |      |      |      |      | 2.8  |      |       |       |
| TCEQ-11J | MF Combined Filtrate   | Mono-Cl <sub>2</sub> |      |      |      |      | 6.7  | 0    | 34   |      |      |      |       |       | 0    |      |      |      |      |      |      |      | 0    |      |       |       |
|          |                        | pH                   |      |      |      |      | 6.7  |      |      |      |      |      |       |       | 6.9  |      |      |      |      |      |      |      | 6.6  |      |       |       |
|          |                        | Temperature          |      |      |      |      | 20.2 |      |      |      |      |      |       |       | 22.4 |      |      |      |      |      |      |      | 23.1 |      |       |       |
|          |                        | Flow                 |      |      |      |      | 2.4  |      |      |      |      |      |       |       | 2.4  |      |      |      |      |      |      |      | 2.4  |      |       |       |
| TCEQ-25J | *ClO <sub>2</sub> D1A  | ClO <sub>2</sub>     |      |      |      |      | NA   |      |      |      |      |      |       |       | NA   |      |      |      |      |      |      |      | NA   |      |       |       |
|          |                        | pH                   |      |      |      |      | NA   |      |      |      |      |      |       |       | NA   |      |      |      |      |      |      |      | NA   |      |       |       |
|          |                        | Temperature          |      |      |      |      | NA   |      |      |      |      |      |       |       | NA   |      |      |      |      |      |      |      | NA   |      |       |       |
| TCEQ-26J | *ClO <sub>2</sub> D1B  | ClO <sub>2</sub>     |      |      |      |      | NA   |      |      |      |      |      |       |       | NA   |      |      |      |      |      |      |      | NA   |      |       |       |
|          |                        | pH                   |      |      |      |      | NA   |      |      |      |      |      |       |       | NA   |      |      |      |      |      |      |      | NA   |      |       |       |
|          |                        | Temperature          |      |      |      |      | NA   |      |      |      |      |      |       |       | NA   |      |      |      |      |      |      |      | NA   |      |       |       |
| TCEQ-27J | ClO <sub>2</sub> D1C   | ClO <sub>2</sub>     |      |      |      |      | .11  |      |      |      |      |      |       |       | .09  |      |      |      |      |      |      |      | .25  |      |       |       |
|          |                        | pH                   |      |      |      |      | 8.4  |      |      |      |      |      |       |       | 8.4  |      |      |      |      |      |      |      | 8.4  |      |       |       |
|          |                        | Temperature          |      |      |      |      | 20.1 |      |      |      |      |      |       |       | 20.4 |      |      |      |      |      |      |      | 20.2 |      |       |       |
|          |                        | Turbidity            |      |      |      |      | 57.0 |      |      |      |      |      |       |       | 35.1 |      |      |      |      |      |      |      | 156  | 56.5 |       |       |

Flow

2.2

2.2

2.2

\*The ClO<sub>2</sub> D1B sample site is ONLY required if the ClO<sub>2</sub> D1C is <0.05 mg/L

\*The ClO<sub>2</sub> D1A sample site is ONLY required if the ClO<sub>2</sub> D1B is <0.05 mg/L

Operator Initials:

Morning Shift:

EBV J D J

Day Shift:

GA / ce

Evening Shift:

BB

**City of Wichita Falls - DPR Full Scale Operation**  
**Cypress Water Treatment Plant Lab Analysis**

Date: 5-16-14

|          |                        |                       | 12 M | 1 AM | 2 AM | 3 AM | 4 AM | 5 AM | 6 AM | 7 AM | 8 AM | 9 AM | 10 AM | 11 AM | 12 N | 1 PM | 2 PM | 3 PM | 4 PM | 5 PM | 6 PM | 7 PM | 8 PM | 9 PM | 10 PM | 11 PM |
|----------|------------------------|-----------------------|------|------|------|------|------|------|------|------|------|------|-------|-------|------|------|------|------|------|------|------|------|------|------|-------|-------|
| TCEQ-28J | Splitter Box           | Turbidity             |      | 42.3 |      |      |      |      |      |      |      | 302  |       |       |      |      |      |      |      | 337  |      |      |      |      |       |       |
|          |                        | Alkalinity            |      | 136  |      |      |      |      |      |      |      | 130  |       |       |      |      |      |      |      |      | 126  |      |      |      |       |       |
| TCEQ-32J | 2010 Settled           | Turbidity             |      | 3.90 |      |      |      |      |      |      |      | 3.2  |       |       |      |      |      |      |      | 3.6  |      |      |      |      |       |       |
| TCEQ-36J | 2010 Combined Filtrate | Total Cl <sub>2</sub> |      |      |      |      | 3.8  |      |      |      |      |      |       |       | 3.8  |      |      |      |      |      |      |      | 3.4  |      |       |       |
|          |                        | pH                    |      |      |      |      | 8.4  |      |      |      |      |      |       |       | 8.2  |      |      |      |      |      |      |      | 8.9  |      |       |       |
|          |                        | Temperature           |      |      |      |      | 20.3 |      |      |      |      |      |       |       | 21.4 |      |      |      |      |      |      |      | 21.5 |      |       |       |
|          |                        | Flow                  |      |      |      |      | 4    |      |      |      |      |      |       |       | 4    |      |      |      |      |      |      |      | 4    |      |       |       |
| TCEQ-38J | 10 Clearwell           | Turbidity             |      | .068 |      |      |      | .084 |      |      |      | .08  |       |       |      | .09  |      |      |      | .08  |      |      |      | .09  |       |       |
| TCEQ-42J | Plant Discharge @ HSPS | Total Cl <sub>2</sub> |      |      |      |      | 3.8  |      |      |      |      |      |       |       | 3.8  |      |      |      |      |      |      | 3.4  | 3.3  |      |       |       |
|          |                        | pH                    |      |      |      |      | 8.4  |      |      |      |      |      |       |       | 8.2  |      |      |      |      |      |      | 8.9  | 8.8  |      |       |       |
|          |                        | Temperature           |      |      |      |      | 20.3 |      |      |      |      |      |       |       | 21.4 |      |      |      |      |      |      | 21.5 | 21.1 |      |       |       |
|          |                        | Flow                  |      |      |      |      | 4    |      |      |      |      |      |       |       | 4    |      |      |      |      |      |      | 4    | 4    |      |       |       |
|          |                        |                       |      |      |      |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |       |       |
|          |                        |                       |      |      |      |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |       |       |

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Operator Initials:

Morning Shift:

JY/ER/JO

Day Shift:

JK/CE/PB

Evening Shift:

CO BB

City of Wichita Falls  
RIVER ROAD WWTP LAB  
1005 RIVER ROAD  
WICHITATA FALLS TX 76305

Fe

E COLI

SAMPLE NAME:

2J-B

|                         |      |               |   |
|-------------------------|------|---------------|---|
| Volume filtered(ml): #1 | 1.00 | Colony count: | / |
| #2                      | 10.0 | Colony count  |   |
| #3                      | 25.0 | Colony count  |   |

|            |    |              |  |
|------------|----|--------------|--|
| DUPLICATE: | #1 | Colony count |  |
|            | #2 | Colony count |  |
|            | #3 | Colony count |  |

BLANK

|                      |         |              |  |
|----------------------|---------|--------------|--|
| #1. Volume filtered: | 10.0 ml | Colony count |  |
| #2. Volume filtered: | 10.0 ml | Colony count |  |

|               |           |       |         |       |         |
|---------------|-----------|-------|---------|-------|---------|
| Collected by: | PC        | Date: | 5-16-14 | Time: | 1:27 PM |
| Delivered by: | PC        | Date: | 5-16-14 | Time: | 1:36 PM |
| Received by:  | P. Sample | Date: | 5-16-14 | Time: | 1:38    |
| Tested by:    | P. Sample | Date: | 5-16-14 | Time: | 2:28 PM |

INCUBATED TIME: 2:52 PM TEMP: 35.0 °C

Read by: P. Sample Date: 5-18-14 Time 2:04

Calculation:  $\frac{100\text{ml} \times \text{Colony count}}{\text{Volume (ml) used}}$

RESULT: <4.00 CFU/100 ml

Reported by: P. Sample Date 5/18/14 Time 5:00 PM

NOTE: Dup @ c = 5.07 Dev

City of Wichita Falls  
RIVER ROAD WWTP LAB  
1005 RIVER ROAD  
WICHITATA FALLS TX 76305

E COLI

SAMPLE NAME:

15

Volume filtered(ml): #1 0.10 Colony count:             
#2 1.00 Colony count:             
#3 10.0 Colony count: 27

$$\frac{100 \times 27}{10} = 270$$

DUPLICATE: #1 0.10 Colony count:             
#2 1.00 Colony count:             
#3 10.0 Colony count: 32

$$\text{DUP } \frac{100 \times 32}{10} = 320$$

BLANK.

#1. Volume filtered: 10.0 ml Colony count: 0  
#2. Volume filtered: 10.0 ml Colony count: 0

Collected by: PC Date: 5-16-14 Time: 1:30 PM  
Delivered by: PC Date: 5-16-14 Time: 1:36 PM  
Received by: B. Simpson Date: 5-16-14 Time: 1:38 PM  
Tested by: B. Simpson Date: 5-16-14 Time: 2:35 PM

INCUBATED TIME: 2:52 PM TEMP: 35.0 °C

Read by: Delank Simpson Date: 5-17-14 Time: 2:18

Calculation:  $\frac{100\text{ml} \times \text{Colony count}}{\text{Volume (ml) used}}$

RESULT: 270 CFU/100 ml

Reported by: Delank Simpson Date: 5-17-14 Time: 2:25 PM

NOTE: QC = 8.47% Dev.

|           |  | TCEQ 1J         | TCEQ 22J        | TCEQ 23J            | TCEQ 28J              | TCEQ 40J       |
|-----------|--|-----------------|-----------------|---------------------|-----------------------|----------------|
|           |  | RRWWTP Effluent | Lagoon Effluent | Secondary Reservoir | Splitter Box Effluent | Transfer Pumps |
|           |  | TOC (ppm)       | TOC (ppm)       | TOC (ppm)           | TOC (ppm)             | TOC (ppm)      |
| 5/16/2014 |  | 12.95           | 1.39            | 6.54                | 4.39                  | 2.4            |
|           |  |                 |                 |                     |                       |                |

[illegible]

## Ph Verification

Date 5-16-14

[illegible]

## DPR FSVT(2) PROJECT

USE THE (STRAYLIGHT) STANDARD WITH  
EVERY SAMPLE SET

DATE: 5-14-14

[illegible]

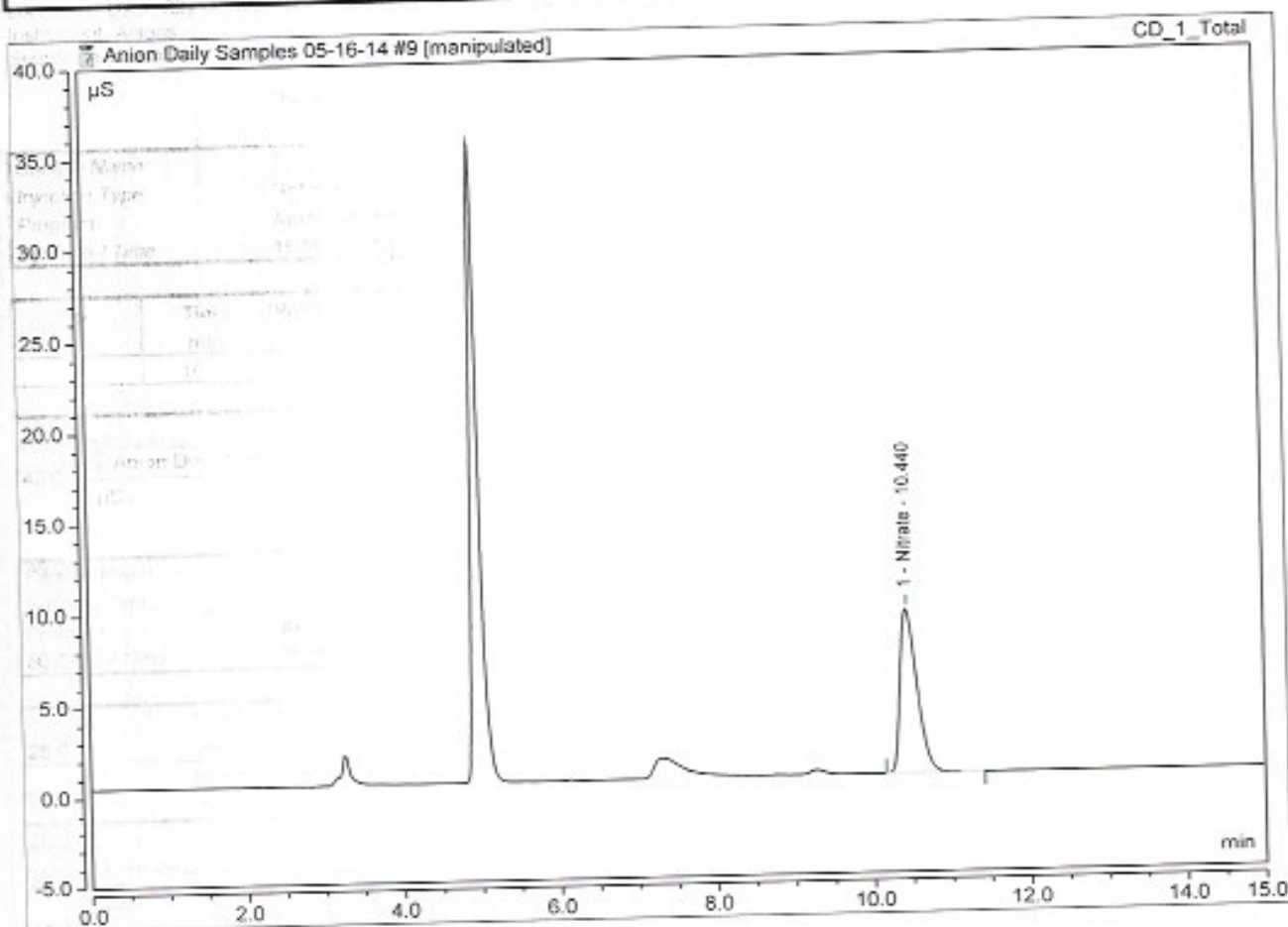
Logged on User: City of Wichita Fall  
 Instrument: Anions  
 Sequence: Anion Daily Samples 05-16-14

## Peak Integration Report

|                   |                              |                  |                      |
|-------------------|------------------------------|------------------|----------------------|
| Sample Name:      | TCEQ 20J RO Permeate 5-16-14 | Inj. Vol.:       | 25.00                |
| Injection Type:   | Unknown                      | Dilution Factor: | 1.0000               |
| Program:          | Anion_Program_4mm            | Operator:        | City of Wichita Fall |
| Inj. Date / Time: | 16-May-2014 / 11:12          | Run Time:        | 15.00                |

| No.    | Time min | Peak Name | Peak Type | Area $\mu\text{S}\cdot\text{min}$ | Height $\mu\text{S}$ | Amount |
|--------|----------|-----------|-----------|-----------------------------------|----------------------|--------|
| 1      | 10.44    | Nitrate   | BMB       | 2.248                             | 8.944                | 3.5998 |
| TOTAL: |          |           |           | 2.25                              | 8.94                 | 3.60   |

0.791



# Peak Integration Report

|                   |                                   |                  |                      |
|-------------------|-----------------------------------|------------------|----------------------|
| Sample Name:      | TCEQ 40J - Transfer Pumps 5-16-14 | Inj. Vol.:       | 25.00                |
| Injection Type:   | Unknown                           | Dilution Factor: | 1.0000               |
| Program:          | Anion_Program_4mm                 | Operator:        | City of Wichita Fall |
| Inj. Date / Time: | 16-May-2014 / 11:30               | Run Time:        | 15.00                |

| No.    | Time min | Peak Name | Peak Type | Area $\mu\text{S} \cdot \text{min}$ | Height $\mu\text{S}$ | Amount |
|--------|----------|-----------|-----------|-------------------------------------|----------------------|--------|
| 1      | 6.13     | Nitrite   | BMB       | 0.007                               | 0.046                | 0.0913 |
| 2      | 10.51    | Nitrate   | BMB       | 0.659                               | 2.828                | 1.0562 |
| TOTAL: |          |           |           | 0.67                                | 2.87                 | 1.15   |

0.027  
0.232

